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Lehrstuhl für Entrepreneurship

## **Formation of new venture organizational identity**

A longitudinal examination of the impact of external and  
internal feedback

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## List of abbreviations

B2B	Business-to-Business
CEO	Chief executive officer
CITS	College of interdisciplinary technology studies
CMV	Common method variance
FIML	Full information maximum likelihood
HLM	Hierarchical linear modeling
LR	Likelihood ratio
ML	Maximum likelihood
MOOC	Massive open online courses
OC	Organizational culture
OI	Organizational identity
REML	Restricted maximum likelihood
RIFSM	Random intercept fixed slope model
RIRSM	Random intercept random slope model
S.D.	Standard deviation
S.E.	Standard error

## **Abstract**

This dissertation aims to shed light on how new ventures incorporate feedback into their organizational identity (OI) in their attempt to become a legitimate player on the market. OI helps to achieve legitimacy which is critical for resource acquisition and survival of the company. This is of special importance as technological advances and societal changes increase the importance of OI due to growing external visibility and transparency. Because stakeholders change as the ventures grow, their legitimization and therefore a strong OI is an ongoing requirement and effort for emerging organizations.

The organizational context in which OI is strengthening is determined by the founders and their reactions based on their previous founding experiences, the organization and the organizational vision describing what the venture wants to become in the future, and the environmental hostility in which the organization operates. Acknowledging the importance of the organizational context, a general model about how organizations incorporate feedback is developed, which considers four different types of feedback. It highlights how the OI strength is affected by positive or negative, internal or external feedback. Moreover, the influence of the context variables on how feedback affects the OI strength of new ventures is hypothesized.

In a longitudinal study examining and surveying 98 ventures for 1.3 years, the hypotheses are tested with hierarchical linear modeling. It is found that a strong organizational vision strengthens the OI, while a hostile environment weakens the OI. The start-up experience of the founding team has no influence on the OI strength directly. Moreover, it can be seen that positive feedback is strengthening the OI independent of the organizational parameters. In contrast, the effect of negative feedback is heavily dependent on the organizational characteristics. A high founding team's start-up experience is always weakening the negative effects of negative feedback. Moreover, a strong organizational vision and strong environmental hostility negatively influence the effects of negative internal feedback, while they support OI in case of negative external feedback.

**Keywords:** Organizational identity, legitimacy, entrepreneurship, organizational vision, entrepreneurial experience, environmental hostility, feedback, adverse events, longitudinal setting, hierarchical linear modeling

## **Zusammenfassung**

Diese Dissertation will aufzeigen, wie neue Unternehmen Feedback in ihre organisationale Identität (OI) integrieren, um am Markt legitimiert zu werden. OI hilft dabei Legitimität zu erhalten, was für den Erhalt von Ressourcen und letztlich für den Unternehmensbestand kritisch ist. Dies ist insbesondere von Bedeutung, weil technologischer Fortschritt und gesellschaftliche Veränderungen den Einfluss von OI durch gestiegene Transparenz und Visibilität erhöhen. Da sich die Interessensgruppen im Laufe der Unternehmensentwicklung ändern, sind die Legitimierung des Unternehmens und deshalb auch eine starke OI eine ständige Anforderung und entsprechender Aufwand für ein junges Unternehmen.

Der Unternehmenskontext, in dem OI gestärkt wird, wird von den Gründern und deren auf ihrer Erfahrung basierenden Handlungen, der Unternehmen und seiner Zukunftsvision und dem Wettbewerbsumfeld, in dem das Unternehmen agiert, bestimmt. Die Relevanz des Unternehmenskontextes berücksichtigend wird ein allgemeines Modell über die Aufnahme und Integration von Feedback entwickelt, das vier Arten von Feedback berücksichtigt. Es stellt dar, wie die Stärke der OI von positivem oder negativem, internem oder externem Feedback beeinflusst wird und welchen Einfluss der Kontext auf das Zusammenspiel von Feedback und Stärke der OI von jungen Unternehmen hat.

In einer longitudinalen Studie, die 98 Start-ups über 1,3 Jahre hinweg untersucht und befragt, werden die Hypothesen mit hierarchischen linearen Modellen untersucht. Dabei wird deutlich, dass eine starke Unternehmensvision die OI stärkt, während ein wettbewerbsintensives Umfeld die OI schwächt. Die Start-up-Erfahrung des Gründungsteams hat keinen direkten Einfluss auf die Stärke der OI. Außerdem ist ersichtlich, dass positives Feedback die OI unabhängig vom Unternehmenskontext stärkt. Die Auswirkung von negativem Feedback dagegen ist stark abhängig von den Gegebenheiten im Unternehmen. Eine hohe Gründungserfahrung des Gründerteams schwächt die negativen Effekte von negativem Feedback ab. Eine starke Unternehmensvision und eine hohe Wettbewerbsintensität beeinflussen die Wirkung von negativem internem Feedback negativ, während sie die OI im Fall von negativem externem Feedback stärken.

**Stichwörter:** Organisationsidentität, Legitimität, Entrepreneurship, Unternehmensvision, Start-up Erfahrung, Wettbewerbsintensität, Feedback, widrige Ereignisse, longitudinaler Ansatz, Hierarchisches Lineares Modellieren

# 1 Introduction

## 1.1 Relevance of organizational identity in emerging organizations

*"It's not hard to make decisions once you know what your values are."* – Roy E. Disney

A promising approach, which has become increasingly popular for emerging organizations, is the lean start-up approach (Blank, 2013; Ries, 2011). It emphasizes early experimentation, customer feedback and iterative business development. Starting with only little central claims and a "minimum viable product", organizations try to receive as much information as possible in order to improve their service or product as fast as possible. The approach is framed around key questions about the organization itself ("who should be our customers", "what should we offer to customers", "what should be our business model to endure", etc.). They all revolve around the core of an organization (Aulet, 2013) and serve one purpose: To give answers to the question of "Who should we as an organization be?". It might be necessary and even highly successful to ask these defining questions in the early stages of an emerging organization over and over again to iterate business ideas and business models quickly. Yet, finding enduring answers is of similar importance to become successful and to be able to make strategic decisions and act instead of just reacting. Organizations need to determine who they are, what they stand for to guide members internally through core values and an emerging organizational culture, and to communicate to the outside in the form of an image. This link between culture and image is called organizational identity (Hatch & Schultz, 2002).

Organizational identity (OI) describes central, distinctive and enduring characteristics of an organization which guide leaders and members of an organization in their decisions and daily work (e.g., Albert & Whetten, 1985; Ashforth, Rogers, & Corley, 2011). Moreover, it is impressed to outsiders in order to legitimate the business and invokes reactions of external stakeholders (e.g., Gioia, Schultz, & Corley, 2000; He & Baruch, 2010). Not only does OI have strategic implications and influences decision making (e.g., Gioia & Thomas, 1996; Ravasi & Phillips, 2011; Rindova, Dalpiaz, & Ravasi, 2011) and affects stakeholder relations (Brickson, 2005) but it also increases commitment of employees (e.g., Foreman & Whetten, 2002), supports legitimization (He & Baruch, 2010; Wry, Lounsbury, & Glynn, 2011), and is regarded as central construct in organizational sciences (Ravasi & Canato, 2013). Moreover, OI is an important component of entrepreneurial venture development (Navis & Glynn,



2011), which needs to be carefully managed and adapted over time (Fisher, Kotha, & Lahiri, 2015).

## **1.2 Challenges in the formation of a strong organizational identity**

*"A sense of identity serves as a rudder for navigating difficult waters" (Albert, Ashforth, & Dutton, 2000, p. 13)*

Yet, a careful formation and management of an OI becomes increasingly challenging for a new venture in a current economic landscape, which is characterized by rapid technological advances and societal change (Albert, Ashforth, & Dutton, 2000; Castells, 2009). To capture market opportunities, new organizations even willingly intensify their exposure to outsiders through extension of organizational boundaries to external parties (e.g., membership clubs, loyalty programs) or to investors (e.g., investments for social purposes). In doing so, the frequency of customer interactions and feedback rises (Hatch & Schultz, 2002). For example, massive open online courses (MOOC) become increasingly important for universities (Pappano, 2012). Specific courses, which are available online, can be followed by millions of students all over the world without additional cost. However they are only successful if they are better than similar courses offered by any other institution as students have full transparency through feedback and ratings from fellow students. New universities can more easily build their reputation of offering high quality courses and legitimate their existence since this transparency has been established. Similarly, hotels face increasing price and quality competitions since online search and booking platforms like booking.com, tripadvisor.com or expedia.com made the opinion of visitors and prices of comparable hotels accessible to millions of tourists. New and unknown hotels can easily become famous and frequented through exceptional ratings on these platforms independent of brand and size. This environment of change and low entrance barriers offers great opportunities for new organizations to emerge and become successful (Hirt & Willmott, 2014; Moen, Koed Madsen, Aspelund, & Matthyssens, 2008; Reuber & Fischer, 2011). Yet, organizations need to know exactly who they are and how they want to be recognized. Thus, a strong OI to guide founders and employees of emerging organizations seems essential in this environment of constant exposure to external stakeholders and frequent feedback.

However, not only the frequency of feedback is increasing, also the handling of feedback becomes more important for the success or failure of a venture. The power of customers and

media increased extremely so that single comments can lead to significant revenue increases or drops and need to be addressed immediately by organizations in accordance to their values and their OI (Denegri-Knott, Zwick, & Schroeder, 2006; Rezaabakhsh, Bornemann, Hansen, & Schrader, 2006). Yet, research about the formation of a strong OI in the context of new venture formation as well as about organizations' reactions to feedback is limited.

OI develops in an organizational context, which is to be set up by the leaders of the organization. Members need to spend significant efforts to determine who they want to be and who they want to become in an environment, which is determined by uncertainty and frequent changes (Fisher et al., 2015). Hence, establishing and maintaining OI is a challenge for new organizations because they cannot always build on positive, supporting and legitimizing feedback. Sometimes they have to manage feedback that questions what the emerging organization has done so far and thus challenge the very core of the organization. In accordance with the uncertain and risky environment, the quality of the feedback is hardly controllable and unpredictable, which influences the OI development for emerging organizations.

First, new organizations enter markets with new products or services. In this situation, the organization and the product are unknown and reactions of external stakeholders are not clear (e.g., McMullen & Shepherd, 2006; Milliken, 1987). Initially, it is uncertain if the business idea really works which leads to short planning horizons and frequent adjustments of the business model (Blank, 2013; Ries, 2011). A strong OI, which guides the decisions, emerges only over time building on feedback and the history of the organization. Slowly and in close interaction with customers and other stakeholders like new members or investors, new organizations get a sense of how they want to be regarded internally and externally and can develop accordingly. Feedback tends to be more similar when organizations gain legitimacy, once they know what they want to achieve, and once they become established players in the field or industry except for major transitions in the company lifecycle (Fisher et al., 2015).

Second, successful new organizations grow in size, which leads to more diverse opinions through new members within the organizations. Organizational structures have to be incorporated and processes become established (Schein, 1995). Organizational leaders influence both, the selection of new members and the definition of organizational structures. The intra-organizational redefinition and growth can invoke different reactions from members and diverging understandings about the correct way of doing things (Wry et al., 2011). Reactions and understandings are grounded in the perceptions, expectations, and identities of

individuals (Brickson, 2013) and the feedback about the organization and its identity is hardly predictable. Once, the rate of changes slows and the amount of new members becomes small compared to the amount of existing members, the organization might become more stable and feedback is better foreseeable.

Third, new organizations often operate in competitive environments (Green, Covin, & Slevin, 2008). Neither do they know how other organizations might react to the new entrant nor can they estimate how customers might decide between two products (Navis & Glynn, 2011). The feedback can be both, positive or negative and ultimately, the OI is influenced by actions and reactions of others (Gioia et al., 2000).

Thus, managing feedback effectively is core to a successful formation of OI. It is essential for the success of a new organization as a legitimized OI influences the acquisition of monetary and human capital (Fisher et al., 2015). Therefore, the incorporation of feedback in the research setting is necessary to enhance the understanding about the formation of a strong OI in emerging organizations. How feedback is perceived and how it influences OI is subject to powerful members and decision makers of the organization (Fauchart & Gruber, 2011), the organization's aspirations (Gioia, Price, Hamilton, & Thomas, 2010) and the organization's environment (Corley & Gioia, 2004). This study aims to unveil the influence of the founding team's start-up experience, the organizational vision, and the environmental hostility on emerging organizations' identity and the interactions with feedback.

### **1.3 Structure of this dissertation**

OI is examined as it changes over time and is analyzed with a multilevel approach. Accordingly, the structure of this dissertation follows a basic framework for multilevel research proposed by Rousseau (1985), in which she demands a threefold definition of the investigated levels: the definition of the examined levels in hypotheses and theory, the definition of the examined levels in the measurement and research design, and the definition of the examined levels in the data analysis. For multilevel research, the levels need to be explicitly defined in this sequence and aligned before drawing conclusions in order to ensure replication and extension of this model by the research community (Chan, 1998; Schriesheim, Wu, & Scandura, 2009; Yammarino, Dionne, Uk Chun, & Dansereau, 2005).

In *Chapter 2: Theoretical foundations* the definition of the levels of theory is described. It "refers to focal level to which generalizations are meant to apply" (Hitt, Beamish, Jackson, & Mathieu, 2007, p. 1387) or, put differently, it refers to the "entity about which the researcher draws conclusions (individuals, subunits, firms, etc.) and to which generalizations they are designed to apply" (Costa et al., 2013, p. 2). After giving an overview about the OI literature and different research perspectives in this domain, the process of OI formation and legitimization is described and applied to the context of entrepreneurship. Influencing factors for the formation of OI are outlined and sources of influence on the perceived strength of OI are highlighted as positive and negative, internal and external feedback. Finally, the interactions of the organizational parameters with the incoming feedback are described.

The levels of measurement are depicted in *Chapter 3: Methodology* as the "entities from which the data are drawn" (Costa et al., 2013, p. 2). It begins with an overview about the Startup-EKG study before describing the sample and the survey elements. As the data is gathered by surveying employees and founders of start-up companies, the chapter continues with the aggregation to the higher level of organizations. Finally, the statistical model is developed using hierarchical linear modeling, for multilevel research which determines the levels of analysis and applies it to test the hypotheses.

In *Chapter 4: Results* the results of the statistical analysis are outlined. After examining descriptive statistics, the outcomes of the full model are investigated. The main effects are highlighted and interactions of feedback events with organizational context variables are described.

The outcomes of the statistical analysis are further discussed in *Chapter 5: Discussion*. The general findings of this study are depicted, compared to the developed hypotheses, and associated with current research. Congruent findings are outlined while diverging results are further elaborated to advance the models proposed in chapter 2. The contributions to research as well as practical implications are highlighted. Finally limitations of this study are summarized.

The dissertation concludes with findings of this study and proposes an outlook for future research.

## 2 Theoretical foundations

As described in the introduction, in their efforts of legitimizing their existence and finding the optimal position in the market, new organizations develop an OI. The subsequent sections describe the current literature on OI and the relationships in identity construction. Different research streams about legitimacy and identity threats are combined and applied to the entrepreneurial context to develop a comprehensive model for the process of identity formation and legitimization based on founding experience, organizational vision and environmental hostility. Finally, the effect of feedback on the formation of OI is depicted and integrated in the model.

### 2.1 Organizational identity as daily guide

*“Organizations that lack a strong OI, at least among top management, are essentially rudderless” (Ashforth & Mael, 1996, p. 32).*

OI is commonly defined as what is central, enduring and distinctive in an organization (based on the work of Albert and Whetten (1985)) and serves to answer the question "Who am I" or "Who are we as an organization" (Corley et al., 2006).

OI research has become increasingly popular in recent years (Gioia, Price, Hamilton, & Thomas, 2010; Ravasi & Canato, 2013). It is considered to be *"the central construct in organization studies"* (Ravasi & Canato, 2013, p. 185) as it provides a guideline about the sense of an entity (Albert et al., 2000), facilitates strategic decisions (e.g., Ashforth, Rogers, & Corley, 2011; Gioia & Thomas, 1996; Ravasi & Schultz, 2006), or is a core construct of effects like organizational commitment (Foreman & Whetten, 2002) or organizational communication (He & Brown, 2013).

Historically, OI combines research about individual identity (e.g., Tajfel & Turner, 1979) with institutional theory. On the individual level, the answer to "Who am I?" is a self-referential meaning of the individual, which is then compared to other individuals (Corley et al., 2006). It is driven by the need for self-categorization and social identity (Ashforth & Mael, 1989; Hogg & Terry, 2000; Tajfel & Turner, 1979). On the institutional level, the question "Who we are as an organization" is related to the self as a collective (Corley et al., 2006; He & Brown, 2013). According to the social constructionist perspective, which is grounded in the identity theory and which is described in greater detail in 2.1.2.2, this understanding can be more or

less explicitly expressed and shared among members (Harquail & King, 2003). As for individuals, organizations search for both, commonalities with other organizations and distinctive features, which make them unique<sup>1</sup> (Scott & Lane, 2000; Whetten, 2006). Yet, in a collective some members might perceive the organization's identity as strong and clear, whereas others might perceive it as ambiguous and vague (Cole & Bruch, 2006). The social constructionist perspective acknowledges the different perceptions of organizational members. In contrast, according to a social actor perspective, which is grounded in the institutional theory, organizations are more than the collective understandings of members. They behave as social actors with own characteristics. The OI might be investigated in terms of its gestalt but can also be operationalized as the aggregated understanding of all members.

Based on this multidisciplinary heritage, a large diversity in approaches to identity research and various interpretations of the definition have emerged (Corley et al., 2006; Pratt et al., 2000). This is both, an advantage and a disadvantage: it is advantageous, as it brings different disciplines together and stimulates discussion; but disadvantageous as it leads to a variety of theories and conclusions. In a special issue of *Academy of Management Review* about OI, Pratt et al. (2000, p. 142) called this state "*identity confusion*" among identity researchers. Since then numerous articles were published which tried to combine standpoints, yet different perspectives on OI remained (e.g., Ravasi & Canato, 2013; Whetten, 2006). The definitions differ depending on the research discipline and theoretical basis (self-categorization, social identity, institutional theory, organizational behavior, ...), the source of identity (individuals, teams, groups, organizations, external stakeholders, ...), the audience (internal or external), and time frame (future, current, or past). Thus, it is necessary to be precise about the definition and the underlying assumptions when investigating phenomena linked to OI (Ravasi & Canato, 2013). The perspectives from different research domains are further explained in the subsequent sections of this chapter.

### **2.1.1 Characteristics of organizational identity**

If OI is regarded as what is central, enduring and distinctive in an organization (Albert & Whetten, 1985), OI is based on (i) the shared understanding of central characteristics of an organization, (ii) which are enduring and changing only slowly, and (iii) which make an organization unique and distinguishable from others.

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<sup>1</sup> Whetten (2006) compares the characteristic "distinctive" with Brewer's (1991) concept of "optimal distinctiveness", which illustrates how one tries to find the optimum between uniqueness and comparability.

As previously mentioned, researchers with epistemologically different perspectives interpret aspects of distinctiveness, centrality, and endurance differently.

Distinctive features are those, which help distinguish one organization from another. Thus, identity is construed by comparing the self with others in their core and enduring features. External parties consider an organization as legitimate only if it has some distinctive features compared to its competitors (Whetten, 2006). OI is defined as a set of features but not all of those features need to be distinctive (Albert & Whetten, 1985). As Gioia & Thomas (1996) note in their research about a university, which wants to become a top 10 university, the managers actively want their university to become similar in specific characteristics to these top 10 universities. Thus, similar and unique characteristics are part of identity. However, there is little research about what components of an identity should to be unique (Corley et al., 2006).

OI researchers define OI centrality differently and examine different aspects of it (Corley et al., 2006). Central components can be understood as the deeply rooted assumptions, which guide the sensemaking process of organizational members. These assumptions are in many cases unobservable and implicit. On the other hand, explicated identity claims – explicit statements about what the organization is – that are shared by most members of an organization can be interpreted as central. In this case the members' understanding and their actions are aligned to and in congruence with the claims. Centrality is thus characterized by the clarity and a shared understanding of existing claims. In this view, core assumptions might be explicitly expressed through claims. Both perspectives – implicit assumptions and explicit claims – have in common that there is one central identity all understandings converge to. In contrast, some researchers emphasize the existence of hybrid (e.g., Glynn, 2000) or even multiple identities (e.g., Pratt & Foreman, 2000). Hybrid identities are seen as two different types of identity which have to be fulfilled by one organization. They compete against each other but organizations need to find a compromise to satisfy organizational proponents for each identity. For example, Gioia & Thomas (1996) differentiate OIs of universities as more utilitarian or normative. Similarly, Foreman and Whetten (2002) investigated the identity of rural cooperatives as being either "business" or "family" like. Glynn (2000) describes the struggle of the Atlanta Symphony Orchestra to be more either artistic or utilitarian. Multiple identities as defined by Pratt and Foreman (2000, p. 20) are different "*conceptualizations [...] regarding what is central, distinctive, and enduring*" and refer to the whole organization, may or may not be in competition to each other, and might be shared by all members or by

subunits. By following this view, researchers typically investigate to what extent these multiple identities are conflicting or complementary, the level of overlap between supporters of different identities, or what the temporal and structural dynamics of the identities are (e.g., Pratt & Foreman, 2000). In this study centrality is conceptualized as the extent to which one OI is commonly understood and shared among members of the organization. The level of centrality of an OI is later defined as perceived OI strength.

Most debate culminated on the definition of endurance (see e.g., Corley et al., 2006). While Albert and Whetten (1985) acknowledged that OI might be subject to change, they described change as slowly happening and defined it as enduring in its nature. In contrast, Gioia et al. (2000) argued that identity needs to be "*relatively fluid and unstable*" (p. 63) in order to fulfill the role of constant negotiation of external feedback with internal perceptions in a social constructionist perspective. Most researchers examining organizational change processes or the (re-)construction of identity consider identity as continuous, emphasizing the relevance of history for identity reconstruction and a potential resistance to change (e.g., Ashforth, Rogers, & Corley, 2011; Corley et al., 2006; Corley & Gioia, 2004; Fiol, 2002; Gioia, Schultz, & Corley, 2000; Hatch & Schultz, 2002; Pratt et al., 2000; Ravasi & Schultz, 2006). Consistent with previous research, this study regards OI as continuous.

### **2.1.2 Components of identity (re-)construction**

OI is commonly understood as being constructed by a collective. However, there are different theories about who is part of this collective and how identity construction works. While some pursue a more general stakeholder approach (Scott & Lane, 2000) with internal and external contributors to OI, most researchers build on the interplay of OI (as construed by internal members) and construed external image (as construed by external stakeholders) in the process of identity (re-)construction.

Following this conceptualization, OI is distinct from, yet closely related to organizational image. Image reflects the external perception of an organization rather than the views of internal members (Gioia & Thomas, 1996). By receiving feedback on external perceptions and construing an external image, members of the organization compare their own internal perception with that of external stakeholders and interpret issues in the context of identity and image congruence (Dutton, Dukerich, & Harquail, 1994; Gioia & Thomas, 1996). Because organizational members are at the same time members of external groups like customers, activists, or political parties, a misalignment of identity and image initiates questioning the



own perceptions (Gioia et al., 2000). The interaction of image and identity displays the temporal dynamics of OI (Gioia, Schultz, & Corley, 2000; Hatch & Schultz, 2002) and its relevance for identity (re-)construction. As long as the identity of organizational members is congruent with the image of a company, identification of members with the organization is high (Brickson, 2013; Dukerich, Golden, & Shortell, 2002; Foreman & Whetten, 2002) and a central and distinctive identity endures. According to social identity and self-categorization theory, the identities of members of an organization are at least in parts congruent with the OI (Hogg & Terry, 2000). To protect this congruence and to maintain the level of consistency, managers and employees try to preserve the OI and limit change.

However, as other empirical studies highlight, once the image is misaligned from OI – e.g., through negative external images (Dutton & Dukerich, 1991), company restructuring (Schultz & Hernes, 2013), environmental changes (Gioia & Thomas, 1996), external threats (Ravasi & Schultz, 2006), or spin-off procedures (Corley & Gioia, 2004) – and feedback on this misalignment is received, the existing identity is challenged. The feedback as construed external image is compared to the current OI and organizational members decide if the organization needs to react. Depending on the amount of discrepancy and misalignment, on the source of feedback, and depending on organizational characteristics, either the identity is subject to reconstruction or efforts are made to adjust external perceptions through impression management (Scott & Lane, 2000). Once image or identity are changed, this affects the reputation through transient impressions which in turn influence the feedback. This process of identity-image interdependence is depicted in Figure 1 based on the model proposed by Gioia et al. (2000). In its original form, Gioia et al. (2000) further outlined effects of OI and transient impressions before converging on a transient reputation.

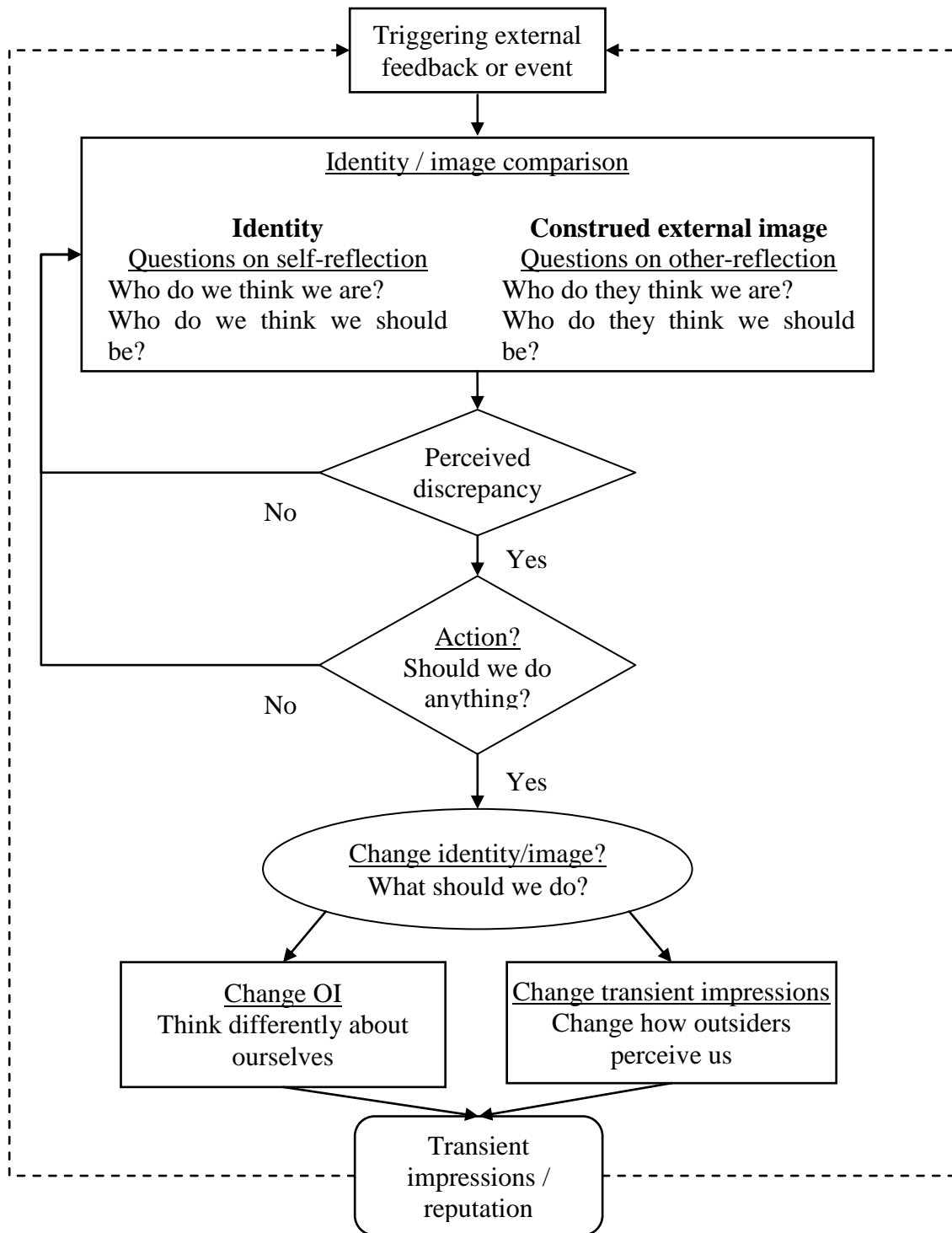


Figure 1: Feedback interpretation and reactions in organizations, based on Gioia et al. (2000)

As mentioned before, there are two perspectives on the construction of identity by a collective. Either OI is reflecting an objectively perceivable reality through identity *claims* (i.e., social actor perspective, see e.g., Whetten, 2006) or it is a subjective *understanding* about the inner core of an organization (i.e. social constructionist perspective, see e.g., Corley

& Gioia, 2004; Harquail & Wilcox King, 2010). The (re-)construction of OI follows the arguments of the two perspectives. Both theories are helpful to understand the different mechanisms in identity construction. A social actor perspective emphasizes the guiding power of claims in the interpretation of feedback whereas a social constructionist view emphasizes the sensemaking activities of members in their collective comparison of feedback with OI. While Whetten (2006) states that research would profit from considering the specific characteristics of the social actor perspective, the social constructionist perspective of OI is emphasized in most research about identity (re-)construction. Recent research has tried to combine these theories and to move away from exclusionary perspectives (e.g., Gioia & Patvardhan, 2012; Gioia, Price, Hamilton, & Thomas, 2010; Ravasi & Schultz, 2006). *"One needs, therefore, to account for both perspectives to fully understand organizational responses to identity-threatening environmental changes"* (Ravasi & Schultz, 2006, p. 436). Following this, subsequent chapters build on both theoretical foundations.

### ***2.1.2.1 Identity construction from a social actor perspective***

The social actor perspective originates from institutional theory. In this view, organizations are actors and have their own characteristics. They are more than the sum of their members (Alvesson & Sandberg, 2011; Whetten, 2006). OI resides in institutional properties and identity *claims*, which have been defined by founders and top managers. Identity claims are *"self-referential claims that define the essence of an entity, signaling or specifying its core attributes; they may be tacit or explicit, or taken for granted or more consciously available"* (Fisher et al., 2015, p. 11). They are central, enduring, and distinctive (Albert & Whetten, 1985) and hard to change once institutionalized. Therefore, OI management is a central task of the organizational leaders to create *"favorable portraits of what the organization supposedly represents"* (Ashforth & Mael, 1996, p. 34). A certain amount of resistance to identity change is *"desirable"* (Ashforth & Mael, 1996, p. 53; see also Piderit, 2000) because identity answers the question of "what the company is" and how individuals and others should interact as part of the company. For example, Ravasi and Schultz (2006) describe the former claims of Bang & Olufsen as *"Seven Corporate Identity Components: authenticity, autovisuality, credibility, domesticity, essentiality, individuality, and inventiveness"* which developed to *"The best of both worlds – Bang & Olufsen, the unique combination of technological excellence and emotional appeal"* (p. 442). The identity claims are a guide to all members, which is seen as legitimate and coherent with stakeholder images (Whetten, 2006). They *give sense* to organizational members when they become members of a collective

(Ravasi & Schultz, 2006) and support self-categorization (Ashforth, Rogers, & Corley, 2011; Navis & Glynn, 2011; Whetten, 2006; Whetten & Mackey, 2002).

However, even if the claims are explicit and shared, members might or might not believe and follow all claims. The level of shared identity can be "*experienced, assessed, appreciated, and possibly managed*" (Corley et al., 2006, p. 90). In case of identity misalignment between members, identity claims are subject to new interpretation and new claims are developed. Identity change is an active and self-determined process by organizational members. Hence, imposed change by third parties (non-organizational members) is unlikely as members would defend their deepest beliefs and values.

### ***2.1.2.2 Identity construction from a social constructionist perspective***

From a social constructionist perspective, OI is shared collectively by members of the organization and serves as a guide during daily work (He & Baruch, 2010; Scott & Lane, 2000). OI resides in the collective values, beliefs, and history of all members of the organization. While members are tied to these core beliefs (Maitlis & Sonenshein, 2010), OI understandings are subject to constant renegotiation in a *sensemaking* process as interpretation of values, narratives, beliefs, history or even members of the organization change (Alvesson, Lee Ashcraft, & Thomas, 2008; Chreim, 2005; Corley et al., 2006; He & Brown, 2013; Weick, 2010). It is central, distinctive and relatively stable in its core but adaptable in its interpretation and *understanding* of claims (Clegg, Rhodes, & Kornberger, 2007; Corley & Gioia, 2004; Dutton & Dukerich, 1991; Fiol, 2002; Gioia, Schultz, & Corley, 2000; Gioia & Thomas, 1996; Harquail & Wilcox King, 2010; Hatch & Schultz, 1997, 2002). It builds on the history of the organization and revises interpretations of past events based on the current situation of the company (Gioia, Schultz, & Corley, 2000; Schultz & Hernes, 2013). Moreover, it reflects the organization's history and its desired future in assumptions about the present (Brickson, 2013; Corley & Gioia, 2004; Gioia & Thomas, 1996).

There is no need for explicit identity claims as OI is constructed implicitly and collectively through shared beliefs. All members negotiate and collectively construct an identity, which supports their demand for self-categorization and which is in line with the external image. Thus, OI is dynamic and subject to constant challenging from internal stakeholders and external images (Hatch & Schultz, 2002). This makes it difficult to steer and manage the direction of change in case of strategic decisions or identity threats. Proponents of this view recognize the efforts, which internal members need to invest in changing an OI. Significant

attention is necessary for realigning the collectively shared beliefs of all members of an organization (Maitlis & Sonenshein, 2010).

### **2.1.3 Studying organizational identity**

Both views, social actor and social constructionist, indicate that individual understandings and organizational claims are interrelated. The social actor perspective emphasizes the power of claims on the understandings whereas a social constructionist view highlights that claims are always subject to interpretation and that members adapt their understandings based on the current situation, the past, and the expectations for the future. Recent research has acknowledged the co-existence of both and tries to combine them. (Gioia et al., 2010, p. 6) conclude that a combined view *"not only produced a better sense of the processes and practices involved in the forging of an identity but also provided an avenue for understanding these processes [...] as mutually recursive and constitutive"*. Following this concept, OI is *"objectively held – that is, it has a reality independent of individual observers [and follows the social actor perspective, the author] – although it is subjectively arrived at [which is based on a social constructionist view, the author]"* (Scott & Lane, 2000, p. 43). Therefore, even if OI is unique for each individual organization and if OI is incorporated in their subjective understandings and thus in an *"unobservable state"* (Whetten, 2006, p. 221), its existence or perceived extent is measurable. Following this conceptualization, OI can be investigated *"as such"* (Ravasi & Canato, 2013, p. 189) in its gestalt or the *perceptions* of the organizational members about one or more of the three characteristics *central, distinctive* and *enduring* can be examined. The perceptual investigation of OI offers several advantages and differs from the direct empirical examination of OI which is difficult to conduct (Ravasi & Canato, 2013).

To get a comprehensive picture about the OI in a direct examination, features, which are often not explicitly shown, have to be identified as distinctive characteristics of an organization. For comparing specific identity features or claims between different organizations one would have to first find out which of these characteristics are common and shared between the organizations. Only then one could assess organizations based on the extent to which each characteristic is part of the OIs. However, there is no agreement about what are common yet distinctive characteristics (Corley et al., 2006). Moreover, each dimension needs not only to be distinctive but also central and enduring.

Even in the more indirect perceptual conceptualization, the examination of single OI characteristics remains challenging. If single distinctive characteristics are not subject of interest but the overall distinctiveness is focus of the research, it is difficult to assess because distinctiveness always requires references. Yet, finding a homogeneous group of organizations in which each compares itself with all others and only those of the group is nearly impossible. For example, a young and innovative company like Uber might compare itself with taxi companies, car sharing providers, other apps, public transportation or simply say that they are not comparable with any of them. On the other hand public transportation companies might just look at local competition or few highly recognized public transportation companies from other cities. It would not consider Uber as a company it compares itself with. Thus, comparing the perceptions of transportation companies about their distinctiveness would lead to biased results. Similarly, a university might consider itself distinctive only because it compares itself to a specific reference group of other universities while there might be very similar ones outside this group. In addition to difficulties with comparisons to others, each organization might define other individual characteristics as their source of identity. Referring back to the universities, another university of this group might emphasize specific fields of research or institutes and considers itself distinctive by focusing their OI on these specific institutes only, while neglecting the very average ones in their definition of distinctiveness. Thus, even if a group is found in which each organization compares itself exclusively within the particular group, they also need to emphasize the same characteristics for identity construction to be comparable to each other. Due to these unresolved questions regarding the approach for the investigation of distinctive features across many organizations and the ambiguous role of distinctiveness in OI (Whetten, 2006), it is not focus of this research.

In contrast to the distinctiveness, levels of centrality and endurance are less difficult to examine because they are self-referential within an organization.

The centrality of OI is conceptualized as the *strength of OI*, which is defined as a "*more embedded and firmly understood*" identity (Gioia & Thomas, 1996, p. 397; see also Kreiner & Ashforth, 2004; Ashforth & Mael, 1996). It reflects the central component of OI because in organizations with strong identities claims are at the core of the organization, are clearly understood, and shared among all members (see chapter 2.1.1; Ashforth & Mael, 1996). It mirrors the aggregated perceptions of all members of the organization (Cole & Bruch, 2006)

and focuses on central properties (Corley et al., 2006). An entity with a strong OI thus "*appears to have a clear sense of who/what it is*" (Ashforth et al., 2011, p. 1145).

Endurance of OI is the level of continuity or stability in members' understandings of OI. The higher the endurance, the longer was the period of relatively constant claims about the identity. Feedback and misalignment in the understanding of the identity did not lead to a renegotiation of claims but rather to efforts changing the perceptions (Ashforth & Mael, 1996). In contrast to *adaptive instability*, which is used by Gioia et al. (2000) to describe the constant renegotiation of identity understandings through feedback on external image, the focus of *perceived stability* and endurance is grounded in each actor's wish for self-continuity (Dutton et al., 1994) and a more active choice about the handling of external feedback (Ashforth & Mael, 1996).

#### ***2.1.3.1 Connectedness of strength and endurance of organizational identity***

Gioia et al. (2000) elaborate that OI is more concerned with achieving continuity than being enduring. Identity builds upon a central core while the interpretation and translations into action are subject to change. The perceived stability or endurance of OI refers to the stable core with dynamic interpretations of this core. On the other hand, the perceived strength reflects to what extent all members of the organization perceive that there is a common understanding of not only the core but especially about the interpretation of it (Ashforth & Mael, 1996).

Endurance and strength are linked because an OI which is stable over some periods of time tends to be more firmly understood by its members and is becoming more incorporated in the core assumptions of the organization. Thus, the desired state of an organization is at a position with a strong and stable identity, which is intertwined with the identity of top managers (Scott & Lane, 2000). They communicate in images and narratives and are trying to clarify the nature of organizational claims, until an agreement about the identity is reached. The managers' sensegiving activities are initiators for sensemaking processes of organizational members. Finally, OI will reach an enduring state and gets stronger as top managers and other members continue to communicate in congruence with the content of the OI. The interrelatedness of perceived strength and perceived stability or endurance in the case of identity renegotiation is illustrated in Figure 2. Only if some change occurs, the OI moves away from the desired state in the lower right corner of the figure to a transitional state by either losing its stability or strength and managers try to stabilize it again.

This process of identity (re-)construction is described by Gioia et al. (2000) and further depicted by arrows and letters in Figure 2. First, feedback about how others perceive the organization leads to (a) a questioning of the identity and a renegotiation or reconstruction of shared understandings (Dutton, Dukerich, & Harquail, 1994; Ravasi & Schultz, 2006; Albert & Whetten, 1985). Depending on the severity of the feedback and other organizational characteristics, the company starts (b) defending its core and relapses into the stable status with little change of OI (Brown & Starkey, 2000; Elsbach & Kramer, 1996) or (c) it loses some of its strength and starts challenging its core assumptions (Schultz & Hernes, 2013). If the organization reaches a state, which is characterized by ambiguity and unclear direction, the management needs to give sense to the new organizational environment by setting refined claims in response to the challenges (d) or the organization declines and eventually fails.

A more extreme change might lead to losing the perceived strength while initially maintaining stability. Corley & Gioia (2004) observe identity ambiguity and thus a lack of strength in a corporate spin-off, which is characterized by various identity claims and understandings from different members of the organization and even from the same members or sources at different points in time. This process started once organizational members noticed a misalignment of internal and external stakeholders but they initially tried to protect their identity (1). As this did not show the aspired effects, the organization eventually became instable and their identity was subject for renegotiation (2). Various members interpreted the claim of being a premier company differently; interpretations included being innovative, quality focused, and being market leader (Corley & Gioia, 2004). The described transitional state is characterized by a lack of clarity of the central and core parts of the organization as well as a lack of shared understandings. Yet, managers were able to give sense through a refined desired future image after spin-off and started to "*walk the talk*" (p. 184) (d). An understanding about the refined identity emerged and became stable again.



	<i>Low stability</i>	<i>High stability</i>
<i>Low strength</i>	Organization with changing claims but unclear core and ambiguity	Organization in which misaligned image and identity lead to ambiguity before OI is subject to change
<i>High strength</i>	Changing organization with clear direction and shared understanding about the change	Stable organization defending its core

**Figure 2: Renegotiation processes of organizational identity (own source)**

Thus, the arrows from the bottom right cell to the upper left corner represent two options for identity negotiations. In both cases of change, minor and major, the decline is triggered by either internal or external events or identity threats. The renegotiation of OI in a state with a weak and instable OI is started by the redefinition of central claims in a sensegiving process through the organizational leaders before generalization occurs in a sensemaking process (Nag, Corley, & Gioia, 2007; Sluss, Ployhart, Cobb, & Ashforth, 2012) which is depicted by the arrow back to the state of high strength and high stability. In each field sensegiving actions or events can take place, which cause a change of the current identity state of the organization. Comparing the four fields, one can see that a strong OI seems to be preferable to a state with a weak OI, while a stable OI is only advantageous if the OI is at the same time strong.

### ***2.1.3.2 Assessment of organizational identity strength and endurance***

The last section highlights two perspectives on OI. First, OI can be described as the claims and the exact gestalt of what members understand about who they are as an organization. In case of threats or adverse events, the understandings and claims are subject to renegotiation and might be adapted and changed. Alternatively, OI is examined by the extent to which it is central and stable in an organization. Once it is threatened, the level of strength and perceived stability or endurance changes. As mentioned before, following the approach of assessing the perceived levels of strength and endurance of OI resolves some problems of measurement, which arise when assessing OI itself (Corley et al., 2006). One does not need to measure the

specific claims of managers or gain detailed knowledge about all organizational members' understandings about these specific claims. When assessing perceived levels in contrast to specific claims, a detailed understanding about the underlying values or assumptions is not required. It is sufficient to measure the members' opinions and assessments. All members of an organization perceive the extent to which the OI is central and shared, or enduring. Specifically, if one is interested in the conditions of why OI changes and to what extent contextual parameters can influence the relationships, the perceptual approach of considering levels of perceived strength or endurance is sufficient. Moreover, as the exact gestalt of the OI is not subject to investigation, a discussion about comparable dimensions of identity as well as about the method of aggregation is not necessary (see previous sections).

For example, Corley & Gioia (2004) explained specific characteristics of OI but their focus was on how an OI of a spin-off started with clarity, became ambiguous and stabilized again. They investigated the mechanisms involved in changes of identity (thus, its endurance) and its effects on the extent to which the identity is shared and central. Similarly to Corley & Gioia (2004), this study focuses on strength of OI and its change.

## **2.2 Formation of organizational identity in emerging organizations**

*"There are few moments in the life of an organization as pivotal as those front-end moments when organizational identity is being formed"* (Gioia et al., 2010, p. 42)

Compared to the previously described (re-)construction of identity due to external or internal challengers, the formation of OI from the foundation of an organization has some commonalities and some specific characteristics. Outlining the missing or deviating theoretical frameworks in the following chapters, a model of OI formation is subsequently developed.

Identity formation follows similar mechanisms as the general process of identity reconstruction, which was outlined in the previous chapter. In both cases, the organization receives feedback, which is either in congruence with or in contrast to the perceived OI. The organizational members can react by either renegotiating the interpretations about what is central and distinctive – and eventually questioning the core assumptions – or by defending their identity through efforts, which target at changing the external perceptions (see Figure 1).

The (re-)construction can be guided through sensegiving activities and an introduction of new claims by the leaders or it is subject to a renegotiation of the shared understandings about what the organization is and will be. Therefore, OI formation is neither a passive growth path nor a straight development, which would emphasize a stepwise process which can be more easily influenced and managed. Rather, this study understands OI formation as an evolution with different stakeholders, important context parameters, and input variables influencing the formation.

During the foundation of a new organization, the social actor perspective helps to explain organizational activities. Within the first months and sometimes years of an emerging organization only the founders work in the company and determine the development of the organization, its culture and identity (Schein, 1995; Scott & Lane, 2000). Other members are in most cases temporary, which limits their influence on core features of the organization. The founders define their organizational vision and are the first ones describing what is unique and central about their organization when defending their ideas in front of investors and other external parties.

Once growing in size, founders of emerging organizations emphasize flat hierarchies and flexible work distribution (Bahrami, 1996). Thus, employees are empowered to challenge the identity and directly negotiate their understandings with founders or top management. This shared interpretive power supports the view that an OI is socially constructed by all members of the new venture even if the founders provide the basis with their initial definition of identity claims. The founders have a shared understanding about what the company is. Only if companies grow larger, founders recognize the need to make identity claims explicit in order to guide the identity construction.

Founders and other members of the organization are working together in a newly established setting. The lack of success stories, shared understandings or reference points lead to an initially very unstable and ambiguous OI and members draw from previous work experiences outside the new organization (Gioia et al., 2010). The identity claims of the leaders are interpreted differently by different members as they cannot refer to previous similar occasions, in which they worked together, or to situations, in which the claim was accepted before. Therefore, all members need to rely on the previous founding experience of the founders in setting the right claims at the right time. In addition, there is only little history in emerging organizations (Fisher et al., 2015), on which narratives for identity construction can build (Gioia et al., 2010). Therefore, OI is guided mainly by the expectation of what the

organization envisions for the future. Moreover, in many cases emerging organizations are operating in emerging industries or fields (Patvardhan, Gioia, & Hamilton, 2015). They require external financial and human resources in order to survive and grow, as well as a growing customer base and legitimization of other stakeholders. Therefore, the strong dependence on the environment requires the organization to be more open for external feedback and to adapt the OI to other stakeholders' opinions.

The stated claims of emerging organizations first require some internal and external legitimization before they can become validated and build a central core (Gioia et al., 2010). In turn, external legitimization requires an OI for others to know what they legitimize (Fisher et al., 2015). Thus, legitimization and OI are interrelated (Clegg, Rhodes, & Kornberger, 2007; He & Baruch, 2010; Wry, Lounsbury, & Glynn, 2011). Each feedback sends new signals to the organization about the current status of legitimization and influences the OI. Therefore, the enduring characteristics of OI emerge only over time in an iterative process of external and internal legitimization, slowly converging to a common understanding of central core claims.

On the other hand, the absence of past experiences supports change processes and dynamics in identity formation. Having little or no proven paths, there is little inertia and resistance to change (Bahrami, 1996). This is both the liability and advantage of newness (Holcomb, Coombs, Sirmon, & Sexton, 2009; Singh, Tucker, & House, 1986; Stinchcombe, 1965). To overcome the liabilities and to support the process of OI formation and legitimization, leaders are actively looking for legitimizing feedback. Moreover, even negative feedback might be welcome as challenger for the current business model. The influence of both, corroborative and adverse feedback, are highlighted in the following sections.

### **2.2.1 Frameworks of organizational identity formation**

Even though there have been some studies about (re-)construction of identity in established organizations, there are only few papers about the formation of OI in emerging organizations (Navis & Glynn, 2011). Only Gioia et al., (2010) and Kroezen and Heugens (2012) develop a comprehensive framework about identity construction. Gioia et al. (2010) examine the processes involved in forming an OI in a new college using a grounded theory model. Kroezen and Heugens (2012) investigate the OI formation of 59 breweries. Most studies mentioned earlier focus on change or events in which the OI suddenly becomes subject to renegotiation (Corley & Gioia, 2004; Dutton & Dukerich, 1991; Gioia & Thomas, 1996,

1996; Ravasi & Schultz, 2006; Schultz & Hernes, 2013). Other researchers investigated some components of identity formation but not the process as a whole (Ashforth, Rogers, & Corley, 2011; Czarniawska & Wolff, 1998; Navis & Glynn, 2011; Scott & Lane, 2000). Others again examined the formation of an industry (Navis & Glynn, 2010; Wry, Lounsbury, & Glynn, 2011) and its interplay with evolving organizations within this industry (Clegg, Rhodes, & Kornberger, 2007; Patvardhan, Gioia, & Hamilton, 2015).

### ***2.2.1.1 Components of identity formation***

Some scholars have highlighted different aspects of OI formation, which are important components for an overarching framework. They are helpful in understanding the role of founders, the organization, and external parties and serve as a basis to develop a model of OI formation and legitimization.

Ashforth et al. (2011) elaborate the reciprocal link of identities across levels in an grounded theory approach by building on Drori's, Honig's, and Sheaffer's (2009) examination of a graphic design start-up. They state that individual level identities are connected with groups which are related to organizations. Individual identities form through interactions shared understandings, which in turn influence the individual identities. The shared understandings further develop to a generic collective identity, which influences not only shared understandings but also individual identities and is less affected by turnover of individual members of the organization. The identities are described to be relatively isomorphic across levels because they draw from a limited source of references (Ashforth et al., 2011). As organizations develop, isomorphism is impeded because organizations tend to develop multiple identities at lower levels which differ by specific individual identity cues and because of an identity's dynamic nature. By following a founder-centric view, they describe the construction of OI mainly as an expansion of founder's intrasubjective identity to other members of the organization and finally creating the identity of the entity itself. Yet, as Gioia mention, "*organizational identity is not only an internal concept but a concept constructed via internal/external interaction*" (Gioia in Pratt et al., 2000, p. 146; see also e.g., Scott & Lane, 2000). Thus, the focus on the founder and the internal processes of identity construction should shift to also include interactions with external and other internal stakeholders.

Scott and Lane (2000) develop a model based on theoretical considerations. They focus on OI construction in the context of top management and stakeholder interplay. Through negotiations about the desired (top management) and reflected image (stakeholders) of the

organization, the identity is constructed. Further, implemented processes, activities of members and events support the construction of an OI. It is a "*complex, dynamic, and iterative*" (Scott & Lane, 2000, p. 55) development at the interface of internal and external stakeholders. The processes, activities and events are interpreted as relevant for the OI and checked for congruence with the actual identity. If the perceptions are aligned, OI is strengthened. However, if perceptions are misaligned, managers tend to defend their beliefs. The researchers acknowledge that in some cases identity reconstruction takes place but do not investigate this process. Scott and Lane (2000) focus on the role of actively influencing the organizational image or organizational impression management as a means to identify central beliefs and values, which are at the core of the OI as well as its role for external communication. Thus, the OI is constructed by the type of feedback received (negative and positive of both internal and external stakeholders). It is interpreted in light of the organization's vision, stakeholder environment, and credibility, then checked for congruence with the existing OI and leads finally to either a defense of the existing identity or to some level of reconstruction. Even though Scott and Lane (2000) incorporate external feedback and legitimization in their model, they focus mainly on the sensegiving power of top management and do not consider sensemaking needs of employees. However, in emerging organizations with little history and few established behaviors it might be unlikely that shared and central understanding of claims exist.

Czarniawska and Wolff (1998) investigate the development of two universities in Europe, one of them succeeded and one failed. They describe through interviews and archival data how the initial identity of both universities was different from others in the same field of higher education. One used feedback in order to adapt claims and find an optimally distinctive place (see also e.g., Leonardelli, Pickett, & Brewer, 2010), which led to legitimization and ultimately to an established position in the field. The other university however, tried to maintain a distinctive identity, did not adjust the identity based on feedback, and hence was not able to gain legitimacy. The missing adaption of the OI to negative feedback and changing external factors (in this case the ruling party) initiated the decline of the university. Czarniawska and Wolff (1998) shed light to the interrelation of identity, image, and legitimization, which influences survival or failure. Negative external feedback is either incorporated by a change of claims and thus by a shifting OI or leads to a defense of the current identity (see also Ashforth & Mael, 1996). Yet, while they highlighted the effects of negative external feedback on two universities and the possible reactions of the organizations,

it remains unclear if the effects are generalizable. Both universities act in a very specific environment and their fates seem to be also influenced by political circumstances.

All studies emphasize the role of leadership in setting claims. These claims are subject to external legitimization in an iterative process, which is similar to the one for identity reconstruction. If feedback is positive, the OI is strengthened, if the feedback is negative, either an acceptance of the feedback and negotiations of shared understandings through sensemaking activities or a defense of OI and additional sensegiving activities take place. Yet, the effects of feedback are described only in very specific cases. Thus, a more general approach seems appropriate.

### ***2.2.1.2 Evolving industries and collective identity formation***

Evolving industries do not have past identities which one can refer to – similar to emerging organizations. Challenges regarding distinctiveness and shared understandings in the identity formation process are likely similar on an industry level to those in emerging organizations. The studies highlight the sensemaking activities of industry members during the negotiation about commonalities and unique features in order to reach a common sense of who they are.

Navis and Glynn (2010) examine the emergence of the satellite radio market in the US using qualitative and quantitative research methods with data from the initial sixteen years of the industry evolution. Data sources were media and press releases from and about the firms as well as descriptions about decisions and founding and growth conditions. They found that developing organizations in new markets is a complex situation. New ventures need legitimacy, in order to increase the support of important resource providers like VCs or customers, which leads to a higher likelihood of survival of new ventures (Navis & Glynn, 2011). However, as they operate in a new market, the market needs to gain legitimacy first. It is created by an emphasis of internal members on commonalities of their organizations. Their claims (as part of a sensegiving process) focus on shared aspects until external audiences acknowledge their legitimate existence. Once market legitimacy is established, members change their communication and highlight distinctive features of their organizations (Navis & Glynn, 2010). In doing so, OI includes components, which are shared across members in the industry and aspects, which are unique for each company. The organization acts as a social actor in forming the market's identity. Sensemaking activities are mainly conducted by external stakeholders like analysts, customers, or media. Their feedback expresses the extent of legitimacy, which the market has reached (Navis & Glynn, 2010). However, while Navis

and Glynn (2010) emphasize the interactions of organizations with others, they neglect organizational processes which influence the identity of the organizations itself.

In contrast to a strong sensegiving perspective of industry members, Wry et al. (2011) focus more on the process of forming a collective identity through storytelling and collective understandings of these stories. They base their theoretical findings on a variety of examples from previous research. Wry et al. (2011) deemphasize the importance of single leaders which define claims but highlight the role of collectives in forming a shared understanding about what is central. They investigate how collectives gain legitimacy beyond legitimacy through growth. *"Specifically, we posit that legitimacy is more likely to be achieved when members articulate a clear defining collective identity story that identifies the group's orienting purpose and core practices"* (Wry et al., 2011, p. 449). Collectives thus develop claims, strengthen a shared understanding of these claims, and use shared stories with same vocabulary and rhetoric to enable a common interpretation of claims by internal and external stakeholders. Negative and positive feedback supports the strength and extent to which stories are shared. The authors argue that negative feedback helps concentrating on core assumptions and thus ultimately has a positive effect on identity of collectives. Growth, on the other hand, might not have always a positive effect as it brings in new members which might have different views on what is central. Accordingly, Wry et al. (2011) describe the case of *"techno cuisine chefs"* who experience identity ambiguity due to new chefs *"diverging from the group's core purpose of enhancing flavors and textures by simply trying to shock the dinner"* (p. 458). Thus, membership expansion and growth can lead to intragroup misalignments, which inhibits the creation of shared stories (Wry et al., 2011). By focusing mainly on single person organizations, they examined how the collective formed an identity and finally struggled due to an uncontrolled membership expansion. In this outlined case example, the collective has similarities to an organization. However, while Wry et al. (2011) deemphasize the role of a single leader in their research, one could argue that the experienced misalignment of cuisine chefs, which was caused by an uncontrolled expansion, would not have happened if there was a social actor who guided the collective during growth. An alternative conclusion might have highlighted the need of an experienced leader in identity formation processes instead of collectives experiencing phases of misalignment during growth.

Clegg et al. (2007) take on a procedural view in their investigation of OIs formation in the emerging field of business coaching. They surveyed 53 firms in the field of business coaching followed by a qualitative study of 11 representative firms, which were interviewed. Clegg et



al. (2007) propose that OI is in constant flux because organizations constantly try to receive confirmation and thus legitimization. New organizations try to create enduring and distinctive identities. However, a comparison with others or with a collective identity requires that the industry itself has a stable identity. Thus, emerging industries first need to form a shared understanding about what members have in common to avoid that interpretation about distinctive features changes constantly. In this phase, members of organizations are in an ongoing sensemaking process regarding the industry identity in order to define their own OIs. Clegg et al. (2007) found that members rather focus on what they are not instead of defining what they are. They describe how business coaches find a sense of what they are by distinguishing themselves from consultants in several key aspects. However, in their focus on sensemaking processes to build a common understanding of industry characteristics, they do not include any external stakeholders.

Recently, Patvardhan et al. (2015) combined the different approaches about the formation of collective identities to build a more general model. They examined in a qualitative, grounded theory approach using interviews, archival data, and author observations how information schools iteratively developed a collective identity and their distinct OIs. 46 schools built a consortium in order to develop a new academic field (information schools; "iSchools") and a collective identity. They shared some commonalities like the wish for legitimization and categorization as well as the definition of the core of their own organization. A collective identity should be formed to mitigate the challenges. The formation of the collective identity was highly iterative and dynamic. Once a consensus about claims was reached, members started negotiating about the meaning of the claims. This second step required much more efforts than the initial sensegiving activities and eventually led to an "identity crisis". Claims for which no consensus was reached caused members to change claims or even to change their own identities. The described emergence of the collective identity of information schools can be summarized in three phases. First, commonalities are defined. Second, those commonalities are shared by its members through internal legitimizing feedback. Once a collective identity emerges, the focus of the members shifts to aligning on a distinctive OI (including possible identity crises).

The research about collective identities highlighted several insights, which can be applied to the organizational context. New industries like emerging organizations have no history or past successes as reference points for their identity. This requires strong claims about the desired future and an active search for legitimization. The claims focus on common characteristics,

which help distinguish the collective from other collectives and are subject to internal negotiation. If no consensus is reached, claims or understandings need to change, which weakens the OI initially before it can become stronger again. Internal and external feedback supports the shared understanding. Even if external feedback is negative, it might have a strengthening effect as it clarifies what the collective is not.

### ***2.2.1.3 Comprehensive identity formation frameworks***

There are only two studies which investigate the formation of OI. Kroezen and Heugens (2012) examine the formation of OI from a stakeholder perspective, highlighting the influence of different parties on OI while Gioia et al. (2010) build a comprehensive model about the formation of OI.

Kroezen and Heugens (2012) investigate ex post how 59 microbreweries developed their identities through interviews and analysis of archival data. They found that OI is enacted in three stages. Founders imprint their assumptions and their vision to the organization and selectively promote their claims. This builds an identity reservoir from which the enactment process takes place through audience preferences and peer identities from competitors. The enactment process is conducted through the formulation of a value proposition, which is aligned with consumer expectations and through the anticipation of audience judgments. Moreover, the identity is compared to competitors in the industry and adjusted either by actively differentiating oneself from or assimilating oneself to the others. While their examination is much focused on active identity management by internal members, Kroezen and Heugens (2012) acknowledge the existence of feedback. However, due to the ex post qualitative setup of the study they focus primarily on the sensegiving power of the interviewee and not on the organization as a whole or external stakeholders.

Gioia et al. (2010) describe in a qualitative, grounded theory approach how a new interdisciplinary college is built and slowly gains legitimacy in the university and the field of higher education. The dean initially defines claims of what the college should be like in the future through articulation of a vision. The founding members accept this initial idea about the future identity based on shared values and beliefs. This builds the foundation of OI and is subsequently developed. Based on internal and external feedback, members engage in sensemaking processes to develop a shared understanding about the identity claims. This leads initially to a state of meanings void in which the organization defines itself by developing a common understanding about who it is not. Due to the missing organizational

history and success stories, members contrast the current organization with experiences members made in previous work settings (individual sensemaking) until the new organizations' own symbols, artifacts and stories emerge (organizational sensegiving) before converging on a consensual OI. These four steps are accompanied by recurring processes to support a collective negotiation of values, claims and actions (Gioia et al., 2010). Thus, organizational sensemaking activities by members of the organization follow the sensegiving activities of the leaders. They are triggered by internal and external events or by active involvement of individuals in trying out new interpretations of the identity. Gioia et al. (2010) define these recurring processes as negotiation of identity claims, defining the optimal distinctiveness, performing liminal actions, and assimilating legitimizing feedback. Liminal actions consist of "*trying out behaviors and adopting provisional new ways of doing work*" (p. 27). They are based on expected identity claims, which have not gained legitimacy yet. In their case, the college applies for grants as an interdisciplinary school in hope that the emphasis on the team setup would lead to positive feedback. The success of the application strengthens the shared understanding of the claim to be interdisciplinary. Legitimizing feedback is different from liminal actions as it is not actively searched for. It is received from internal or external parties underscoring the legitimacy of claims. For example, the school's placement and salary figures are higher than that of other colleges of the university which depicts feedback from within the organization. Moreover, members receive positive feedback at conferences, from the industry, and support from various stakeholders at the university. The proposed model of OI formation is shown in Figure 3.

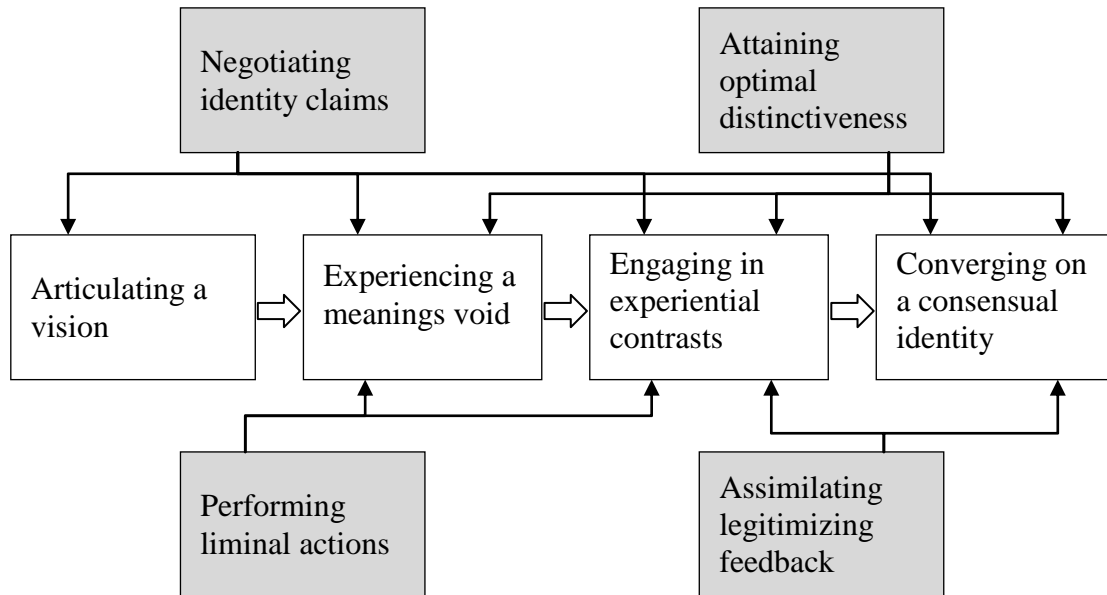


Figure 3: Model of organizational identity formation, as described by Gioia et al. (2010)

In their grounded theory approach on the successful establishment of a university college, Gioia et al. (2010) deduct the model from events during the period of observation. However, as described in other studies, organizations might also receive negative feedback, which affects the process of OI formation. Moreover, other scholars highlighted cases in which attaining optimal distinctiveness is a result of feedback in combination with sensemaking and sensegiving processes. Thus, an extension and reconsideration of components to represent the formation of OI in emerging organizations will be conducted in the following chapters.

### 2.2.2 Specifics of entrepreneurial ventures as emerging organizations

Research about the formation of OI is especially promising if the emergence of new ventures is examined. The early moments in an emerging organization are considered as *"particularly critical for identity formation processes because they are highly uncertain and emotionally charged"* (Lounsbury & Glynn, 2001, p. 550). As outlined in the introduction and in following sections, the need for fast resource acquisition and legitimization as well as the organizational dynamics promise significant feedback events and visible reactions from the organizations.

In the following, new venture creation and entrepreneurial teams are described and specific characteristics of the entrepreneurial context, in which this study is conducted, are

highlighted. Moreover, the advantages of this setting for investigating OI formation and legitimization are outlined.

### ***2.2.2.1 New venture creation***

According to Schein (1995), there are essential steps in the formation of a new venture, which are prototypical and simplified in that the exact process might differ for each organization. Although prototypical, several of these aspects are used to determine the research context in this study. Initially, one person develops an innovative business idea, which is novel and marketable. He or she then creates a founding team, which decides to move on with the development of the idea. They then start working together in a coordinated way and begin operations by e.g., raising funds or formal incorporation. As the organization develops, more members join the start-up and the organization evolves.

This understanding has two implications. First, a new venture can consist of one or more founding members and employees who join the organization at a later stage. The role of founders and employees is described in the subsequent chapter. Second, founders are working together before the organization is officially incorporated. The venture's history is starting without any formal or public organizational entity when members begin translating ideas and opportunities into actions (Davidsson & Gordon, 2012). During the initial collaboration, first claims are developed and initial feedback is received. Thus, OI formation does not start from one specific point. The inception needs to be considered as an ambiguous phase mirroring the development steps of the formation of a new venture, which lasts for a specific time period.

Entrepreneurial conditions are characterized by high levels of ambiguity, uncertainty, or novelty (Aldrich & Fiol, 1994; Lounsbury & Glynn, 2001; Shepherd, Patzelt, & Haynie, 2010). In these conditions, organizations need to communicate clearly what they are doing and who they are (Navis & Glynn, 2011). As long as the market is largely unknown and not yet legitimized, new ventures refer to existing markets by communication in metaphors to support the explanation of their new service to established organizations, investors and customers (Martens, Jennings, & Jennings, 2007; Navis & Glynn, 2010). Once the market is legitimized, organizations shift their focus to the explanation of their product or service referring to the market category or prominent competitors and highlight the uniqueness of their organization (Navis & Glynn, 2010). In both cases, the new venture constantly needs to explain the core of their organization to legitimate either the market and/or the organization

(Lounsbury & Glynn, 2001). Hence, the OI is visible and prominent in the organization (Navis & Glynn, 2011).

In addition, entrepreneurial ventures are resource constrained and lack legitimization by important stakeholders (Drori, Honig, & Sheaffer, 2009; Navis & Glynn, 2010). They face a "liability of newness" (Delmar & Shane, 2006; Holcomb, Coombs, Sirmon, & Sexton, 2009) and are "*strongly influenced by environmental change, competitive threats, or shifting consumer preferences*" (Holcomb et al., 2009, p. 348) while they are actively looking to pursue opportunities and are willing to take the associated risks (Mitchell, Smith, Seawright, & Morse, 2000). The achievement of legitimacy and overcoming the liability of newness are considered to be critical for the success and survival of a new venture (Aldrich & Fiol, 1994) as it supports the acquisition of human and financial resources (Fisher et al., 2015). Therefore, ventures seek a lot of feedback in a relatively short amount of time to advance from identity claims and narratives of what the organization will do to an organizational history legitimated by what the organization has done (Lounsbury & Glynn, 2001; Navis & Glynn, 2010). In performing this legitimization, different audiences have to be addressed and satisfied as the venture grows, which further supports the need for a strong but continuous organizational identity (Fisher et al., 2015). This supposes that feedback events happen frequently and that they are significant enough to influence the OI.

#### ***2.2.2.2 Founders and employees: The organizational setup in new ventures***

Top managers and founders are most involved in constructing and communicating the identity of an organization (Fauchart & Gruber, 2011; Schein, 1995; Scott & Lane, 2000). They define initial claims based on their own values and vision and shape the OI from the foundation through sensegiving activities (Hill & Levenhagen, 1995; Kroezen & Heugens, 2012). Moreover, they define the initial organizational structure and determine the organizational culture (Shepherd et al., 2010). Thus, they set the frame for sensemaking activities in the organization (Schein, 1995).

In a start-up context, the founders are not only the top managers of the young organization but also owners of the company thus representing two of the most influential types of stakeholders (Scott & Lane, 2000), which eliminates possible sources of interferences between managers and owners. Lastly, founders influence employee commitment through their passion (Breugst, Domurath, Patzelt, & Klaukien, 2012) or employees' willingness to act

entrepreneurially through their confidence and satisfaction (Brundin, Patzelt, & Shepherd, 2008).

Founder teams differ in size, background and experience, and different factors have been found to correlate with venture performance (e.g., Beckman, Burton, & O'Reilly, 2007; Eisenhardt & Schoonhoven, 1990; Lamont, 1972; Toft-Kehler, Wennberg, & Kim, 2014; Zhang, 2011). While early entrepreneurship research has focused on single founders, more recent studies have acknowledged that most start-ups are founded by teams (Beckman, 2006; Ensley, Carland, & Carland, 2000) and started investigating relationships that link the team's background and experience in founding ventures to venture outcomes<sup>2</sup>. However, even though these relationships have been examined, detailed analyses about how founders influence their organization and thus lead the start-up to success or failure have rarely been conducted (Klotz, Hmieleski, Bradley, & Busenitz, 2014).

Employees typically play a less active role in identity formation (Scott & Lane, 2000). They participate in the sensemaking and identity negotiation processes. However, new ventures are characterized by flexible structures and little hierarchy (Pinchot & Pinchot, 1996). Early employees are involved in almost all tasks and shape the organization through their actions from the beginning (Chen, 2013). Moreover, employee motivation in new ventures differ from motives in established firms (Sauer mann, 2012). Early employees experience the first significant events together with founders and might even become members of the management in later stages of the company life cycle. Thus, employees cannot be ignored in the process of OI legitimization because they are significantly involved in internal actions.

On the other hand, start-ups typically have fewer employees than established companies, which reduces the possibility of competing or multiple identities within the same organization. New ventures have a high degree of communication and need to share of work between the dynamic roles, which leads to a more consistent and isomorphic understanding among the members about who the organization is (Ashforth et al., 2011).

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<sup>2</sup> Research differs between novice founders and serial founders among other types of founders (e.g., parallel founders, portfolio founders); (e.g., Alsos and Kolvereid, 1998; Westhead and Wright, 1998; Wright, Robbie, and Ennew, 1997)

## 2.3 Determinants of organizational identity

Previous research has theorized on determinants to OI and the process of identity legitimization on three levels: the management or leaders (e.g., Scott & Lane, 2000), the organization (e.g., Gioia & Thomas, 1996), and the organizational environment (e.g., Ravasi & Schultz, 2006). Managers act through guiding the initial claims of the organization and through influencing the identity renegotiation process of sensemaking and sensegiving. Yet, previous research mainly examined single case studies which led to descriptions of OI in a specific setting and how organizations act in this specific environment but not to a systematic analysis about how varying settings affect the OI and its formation directly. Influencing factors on the three levels are explored in the next sections. The outlined variables are referred to in later sections as context variables or organizational parameters, which determine how feedback is interpreted and how it affects OI. Context is defined following Griffin (2007, p. 860) as *"the set of circumstances in which phenomena (e.g., events, processes or entities) are situated"* and can *"explain some salient aspect of the phenomena"*.

### 2.3.1 The role of the founding team's start-up experience

*"[...] it is at this level [top management levels; the author] that organization-wide issues such as identity can be shaped or modified"* (Pratt et al., 2000, p. 141).

All types of experience are considered as part of the broader topic of human capital of an organization. Human capital research emphasizes the importance of knowledge and skills in organizational activities (Schultz, 1961) and has been applied to entrepreneurship research by most commonly investigating the effects of prior work or industry experience, educational background and entrepreneurial or start-up experience (Marvel, Davis, & Sproul, 2014). Human capital is important in various dimensions. It supports discovering entrepreneurial opportunities (Alvarez & Barney, 2007), assessing them (Stuart & Abetti, 1990), and to exploit these opportunities (Bruns, Holland, Shepherd, & Wiklund, 2008). Moreover, human capital helps to acquire resources and to create new opportunities for existing ventures (Corbett, Neck, & DeTienne, 2007). Overall, it is an important factor for entrepreneurial success (Bosma, van Praag, Thurik, & Wit, 2004; Haber & Reichel, 2007; Unger, Rauch, Frese, & Rosenbusch, 2011). Human capital can be split into two categories in two different dimensions (Unger et al., 2011). First, human capital can be task related, e.g., start-up experience or industry experience, or non-task related, e.g., education (Marvel et al., 2014).



Second, either human capital investments or human capital outcomes can be investigated. While experience is considered as investment in human capital, knowledge and skills are considered as outcomes of human capital (Unger et al., 2011). About 80% of past research analyzed investment constructs in contrast to outcome constructs (Marvel et al., 2014). In this dissertation, the effects of experience are examined because task related human capital is assumed to be more important for entrepreneurship (Marvel, Davis, & Sproul, 2014; Unger, Rauch, Frese, & Rosenbusch, 2011) and because it is more commonly used than outcome constructs like knowledge.

A founding team's experience can be considered for each member as having been in the same context before and having been exposed to learning opportunities in these comparable contexts in the past (Ucbasaran, Westhead, Wright, & Flores, 2010); either simply in the context of prior work – founding team work experience –, in the same industry – founding team industry experience –, or in the situation of founding and owning one or more companies – founding team start-up experience. The founding team work experience is commonly defined as the number of years the team worked before (Gimeno, Folta, Cooper, & Woo, 1997). Founding team industry experience is defined as the amount of time the team worked in the start-up's industry before (Delmar & Shane, 2006). A founding team start-up experience can be defined as the aggregated past creation of new ventures of the founders (Delmar & Shane, 2006). Research about serial entrepreneurs finds that founders learn from previous experiences (Alsos & Kolvereid, 1998; Cope, 2005; Lamont, 1972; Ucbasaran, Westhead, Wright, & Flores, 2010). Accordingly, previous research found that a founding team's start-up experience positively influences opportunity recognition, the exploitation (Farmer, Yao, & Kung-Mcintyre, 2011) of opportunities, and the legitimacy of a new venture (Navis & Glynn, 2011). Further, it supports future start-up activities and its' pace (Davidsson & Honig, 2003), as well as the survival rate and the performance of new ventures (e.g., Bosma, van Praag, Thurik, & Wit, 2004; Delmar & Shane, 2006; Gimeno, Folta, Cooper, & Woo, 1997; Kotha & George, 2012; Shepherd, Douglas, & Shanley, 2000; Stuart & Abetti, 1990). Possible explanations for the positive effects of experience are based on population ecology theory and an evolutionary economics theory (Dencker, Gruber, & Shah, 2008). From a population ecology theory, organizations tend to be inert and are not easily changed in later stages of the life cycle. Experienced founders make better initial decisions than inexperienced founders such that the organization remain at a more advantageous state (Dencker et al., 2008). The evolutionary economics theory suggests that only those companies survive, which adapt best to changes. Experienced founders might be better in deducting the

implications from changes and react accordingly (Dencker et al., 2008). This perspective is further discussed in chapter 2.5.1.

Thus, the experience influences the management team and how it operates. Because the founding team's start-up experience is task related in that it supports the application of knowledge to situations of venture formation and growth as well as the reception of internal and external feedback, it is selected as the main construct of this research. However, prior work experience is kept as a control variable.

The role of the founders in emerging organizations as well as the management in (re-) construction processes of OI is unquestioned. The leaders articulate values and goals, and define the strategies for the organization and departments. Thus, leaders frame the distinctive components in an organization (Scott & Lane, 2000). In the process of OI formation, other members as well as leaders constantly refer back to what has been explicated by leaders to guide them in their decisions (Gioia et al., 2010). Moreover, organizational leaders can act or act not according to their principles. Due to their visibility and status inside and outside the organization, they have a prototypical function and represent the whole organization, impressing the OI on others (e.g., Dutton & Dukerich, 1991; Scott & Lane, 2000). Corley and Gioia (2004) cite one senior vice president who emphasized the importance of "*walk the talk*" in order to show organizational members how the OI should be interpreted and that these actions should be integral component of the members' behaviors. In summary, organizational leaders influence the sensegiving and sensemaking activities in the OI formation.

However, organizational leaders shape their organizations not randomly. They act in congruence with their own identities (e.g., Powell & Baker, 2014) to maintain continuity in their self-concepts over time (Steele, 1988) and to increase their individual satisfaction (O'Reilly, Chatman, & Caldwell, 1991). Therefore, their actions and their definitions of identity claims are influenced by past experiences (e.g., Gioia, Price, Hamilton, & Thomas, 2010; Zheng, Qu, & Yang, 2009). In emerging organizations, founders have a wide managerial and definitional power due to their roles in resource acquisition, employee recruitment, and definition of organizational structures, as well as initial identity and culture formation (Kroezen & Heugens, 2012; Schein, 1995). Accordingly, Fauchart and Gruber (2011) find that the OI is strongly linked with the identity of the founders. In new organizations, the experience of the founders about leading a company depends on their previous experiences, which can vary significantly from nascent entrepreneurs to serial

entrepreneurs. Thus, differences in the effect of founding team start-up experience on OI strength should be visible.

Through their experience, founders are a legitimizing factor by themselves for external stakeholders. Start-ups with experienced founders are regarded as pursuing the better business opportunities (Gruber, MacMillan, & Thompson, 2008; Lamont, 1972; Patzelt & Shepherd, 2011), receive higher valuations (Wright et al., 1997) and better access to venture capital (Zhang, 2011). Some venture capital firms even state in their investment policies that they focus on experienced founders who are better able to grow the venture and pursue the company's vision (Miller & Wesley II, 2010). Therefore, it seems that experienced founding teams are better in giving sense to what they are doing and impressing these claims on others and thus supporting sensemaking processes which should increase the perceived strength of OI. This is supported by findings that through their experiences from previous founding processes, experienced founding teams are better able to more clearly set and communicate their vision and claims, which are regarded as valid and which are less questioned during the first phases of organizational formation (Miller & Wesley II, 2010). The increased reliability and stability of claims support the formation of a strong OI (e.g., Kroezen & Heugens, 2012). Hence, it is assumed that

***Hypothesis 1:** The higher the founding team's start-up experience, the stronger a new venture's OI.*

### **2.3.2 The role of the organizational vision**

Similarly to founders' experiences, organizational vision is another important factor in organizational leadership literature (e.g., Awamleh & Gardner, 1999; Russell & Gregory Stone, 2002) and entrepreneurship (Bird, 1988). However, organizational vision affects all members of the organization directly in the leaders' efforts to align employees on it (Bird, 1988). It is defined as an ideal state in the future that reflects shared values the organization should aspire (Baum, Locke, & Kirkpatrick, 1998). It is determined by its content, its attributes and how it is communicated to the organization (Baum et al., 1998).

The content of the vision portrays what exactly an organization is aspiring. For example, Larwood, Falbe, Kriger, and Miesing (1995) investigated the vision content formulated by executives in 26 content categories like "action-oriented" or "responsive to competition" and formed seven factors like "strategic planning", "ability and willingness to share" or items

relating to charismatic and visionary leadership. However, they did not examine the relations of vision content with organizational outcomes. Barringer, Jones, and Neubaum (2005) investigated this relationship by examining how growth orientation of a vision affects the performance of new ventures. They found that fast growing ventures stated their growth orientation explicitly in their vision significantly more often than normal and slow growing ventures.

Vision attributes are characterizations of the vision in the organization without considering the content of it. In their research, Locke and Kirkpatrick (1999) described seven vision attributes, which are related to organizational effectiveness, from previous theoretical studies: Brevity, abstractness, future orientation, stability, clarity, challenge, and desirability or ability to inspire (see also Baum et al., 1998). A vision should be brief, so that leaders can communicate them easily. It should be abstract in order to refer to a general idea, long term oriented to a desired future state, and it should be stable with only minor adaptations from time to time. Moreover, the vision should be clearly stated, so that it enhances the understanding for everyone and it should be challenging enough to be motivating and providing confidence to the members about the organization's qualities. Finally it should be desirable for the members, so that they are committed to the goals and the vision is shared and collectively accepted. Closely related to clarity and desirability is conceptualization as a collective vision, which is the degree to which the members of an organization hold a common mental model of the strategy of the organization (Ensley, Pearson, & Pearce, 2003). The level of sharing the collective vision describes the degree of unity and commitment to a purpose (Ensley et al., 2003).

The vision communication links the vision of the organizational leaders with the self-concepts of other organizational members (Baum et al., 1998).

In past research, positive effects of vision and vision communication (Baum et al., 1998), vision content (Barringer et al., 2005), and vision attributes (Bird, 1988; Ensley, Pearson, & Pearce, 2003) on firm and new venture performance have been found.

In this dissertation, a strong vision is defined as future oriented, collectively shared, and motivates members of the organization. Thus, vision strength comprises of three vision attributes (future orientation, clarity extended to collectively shared, and challenge) and is linked to vision content and vision communication. These aspects are influencing different stakeholders about their understanding of the values of the company (Bird, 1988) and the

reasoning behind decisions (Amason, 1996). It ultimately strengthens the understanding about the organization (Ensley et al., 2003). The other four vision attributes are not included, because brevity and abstractness are technical attributes without direct relations to organizational values and the members' understandings about the organization. The desirability of vision is implicitly included in the collectively shared and challenge attributes. Similarly to the operationalization of OI, stability is only considered indirectly as a temporal dimension.

The vision or its defining elements – the formulation of the ideal state of the future and the target about what the organization wants to become and achieve – has been described differently and examined under varying aspects in organizational and entrepreneurship research: e.g., stories when referring more to the vision communication aspects, or desired future image when examining vision based on its initial definition. However, in all cases, their importance for the formation and existence of OI has been emphasized (e.g., Ashforth & Mael, 1996; Pratt & Kraatz, 2009).

In their investigation of the legitimization and resource acquisition processes of new ventures, Lounsbury and Glynn (2001) define vision as entrepreneurial stories or – with a more active aspect – storytelling, which is a key mechanism, through which an organizational vision gets enacted (Barry & Elmes, 1997; Pettigrew, 1979). It emphasizes what the organization sees as central, distinctive and enduring. Entrepreneurial stories address – among others – questions about who the organization is, and what they want to do. Entrepreneurial stories aim to create confidence and plausibility that the start-up will succeed. In two ways, they *"shape and legitimate the identity of entrepreneurial enterprises: (1) by emphasizing the distinctiveness of the new venture through a focus on identifying its unique characteristics, and (2) by stressing the normative appropriateness of the new venture by identifying its symbolic congruence with similar organizational forms and ideologies"* (Lounsbury & Glynn, 2001, p. 551). The stories are used to fill a meanings void and make the new organization comprehensible to address the lack of legitimacy. They are specifically helpful in constructing a new identity (Lounsbury & Glynn, 2001). Accordingly, Hatch and Schultz (1997) note that vision and leadership efforts to communicate the underlying values is an integral part for internal and external impression making.

Similarly, Gioia and Thomas (1996) describe a desired future image which can be found in the organizational vision (Balmer & Greyser, 2002; Ravasi & Phillips, 2011). It serves as a pull for aligning the identity (Gioia et al., 2000). *"It is in this articulation of a vision for*

*change that past, present, and future come together. Against the backdrop of the organization's current and historical identity, top managers begin to mold new images of how they would like the organization to be perceived by external (and internal) stakeholders"* (Gioia & Thomas, 1996, pp. 394–395).

Further, several scholars emphasize the importance of vision and related constructs directly in identity change or formation (e.g., Miller & Wesley II, 2010). Gioia et al. (2010) set the articulated vision as origin of the identity formation. They find that the articulated vision "*served as a basis for the nascent organization's initial identity negotiations and claims*" (Gioia et al., 2010, p. 30) and that it sets the boundaries of OI. It is further advanced with meaning in the initial sensemaking processes to strengthen the understanding of who the organization is and who it wants to become. However, it is not the vision itself which is directly affecting the organization but the communication of it. Founders could as well have their own vision as implicit goals for the future, which are not shared with other members. Therefore, Baum and Locke (2004) highlight the communication of vision as being positive for venture performance. Gioia et al. (2010) describe an articulated vision and storytelling as directly addressing the sharing of the organizational goals with others.

Thus, different conceptualizations about aspects of organizational vision strength highlight its supporting role for the definition and legitimization of an organization and its identity. Hence it is assumed that,

***Hypothesis 2: The stronger the organizational vision, the stronger a new venture's OI.***

### **2.3.3 The role of environmental hostility**

The entrepreneurial business environment is a source of resources and information (Lumpkin & Dess, 2001). The environment in which an organization is operating determines the richness or scarcity as well as the uncertainty of the resources and information. When considering the business environment in which entrepreneurial ventures develop, complexity, dynamism or temporal aspects (Breugst & Shepherd, 2015; Lumpkin & Dess, 2001), and resources aspects – e.g., munificence or hostility (Covin & Slevin, 1989; Shepherd, Patzelt, & Baron, 2013) – of the environment can be examined (Dess & Beard, 1984; Lumpkin & Dess, 2001). Moreover, specific industries can be investigated directly.

Dynamism and complexity are determined by the rate of change and the level of unpredictability of the business environment (Duncan, 1972; Lumpkin & Dess, 2001).

Munificence can be defined as the level of abundance of resources for opportunity exploitation (Shepherd et al., 2013). On the contrary, hostile environments are characterized by a lack of munificence, high competition and external pressures, and – consequently – high failure rates (Covin & Slevin, 1989; Green, Covin, & Slevin, 2008; Lumpkin & Dess, 2001; Zahra & Covin, 1995). Both conceptualizations, munificence and hostility, are closely related. In this dissertation, the hostility of the entrepreneurial business environment is subject for direct examination while the dynamic aspects are assessed indirectly similarly to temporal aspects of OI and organizational vision. This decision is supported by findings of DeTienne, Shepherd, and Castro (2008). They found that environmental munificence is the most important factor for decision making of entrepreneurs when deciding to persist with their venture. Thus, it seems that munificence or hostility influence if the OI and the social identity of an entrepreneur diverge. In more hostile environments, members have fewer alternatives for occupation and might therefore stick with their organization even if the OI does not fit to the social identity anymore.

It has been found that environmental hostility influences firms' strategies and behaviors (Covin & Slevin, 1989; Lumpkin & Dess, 2001; Tsai, MacMillan, & Low, 1991), organizational structures (Covin & Slevin, 1989), value congruence of organizations and founders (Shepherd et al., 2013), organizational performance (Chandler & Hanks, 1994; Covin & Slevin, 1989; Tsai, MacMillan, & Low, 1991), or corporate entrepreneurship (Zahra & Covin, 1995). There are two perspectives on how the environment relates to the organization: impression making and interaction (Suddaby, Bruton, & Si, 2015). In the impression making perspective, the environment imprints their characteristics on the organization. Following a perspective of interaction of entrepreneurial ventures and their environment, the new ventures can act and react to requirements of the environment (Suddaby et al., 2015). Thus, the environment not only affects how organizations are built in accordance to their surroundings but also how new ventures define themselves in comparison to others and how they actively form the characteristics of OI to become distinctive in their industry or field. As described in chapter 2.2.1.2 organizations develop their identity comparing themselves to other organizations. They want to be distinctive in some aspects as well as similar in others. Hence, firms seek optimal distinctiveness within the context of industry membership. Clegg et al. (2007) examined business coaches searching for an industry identity, which in turn also influenced their own OI. Patvardhan et al. (2015) investigated schools, which defined a common identity only to refine their own with regards to the field's identity.

Whereas the specific effects of the organizational environment on the specific characteristics of the OI as an entity are inconclusive (Gioia et al., 2010), its influence on the overall OI from a process perspective has been researched (Rao, Davis, & Ward, 2000). While the industry membership will define the context in which an OI is developed, deriving the OI from an industry is like concluding from the gender to the identity of a woman, which would be "*plain silly*" (Gioia & Patvardhan, 2012, p. 54). Thus, specific characteristics of an OI are not directly linked to specific characteristics of an industry. Moreover, new ventures tend to grow in niches and across established industry clusters for which categorizations are ambiguous (Wiklund, Patzelt, & Shepherd, 2009). When it is not the content of OI that is subject to investigation but rather how OI is perceived, changed and renegotiated, not the industry itself but subjectively perceived characteristics of the industry influence the actions in organizations, the interpretation of feedback, and ultimately the feedback's effect on OI strength. For example, one cannot say that because an organization operates in the business coach industry, its identity should consist of claims like "being the best partner for sales growth", while the identity of consulting organizations should consist of claims like "having the best strategic approach to expansion". It could be implied, however, that the business coaching industry involves more interactions with clients and therefore the identities of organizations emphasize customer orientation. Thus, environmental and industry characteristics like customer structure, munificence, or competitiveness can contribute to the formation and perception of OI and are better proxies to explain influences on the OI than industry clusters. Their exact influence on OI formation, however, remains unclear.

Albert and Whetten (1985) theorized that external pressures lead to a higher likelihood of reflection on the OI and thus a better understanding of shared meaning. Moreover, young firms starting operations in an established field might even develop a "*set of affirmative identity referents without a pronounced negative phase*" (Gioia et al., 2010, p. 39). That is, instead of going through a phase in which they first define themselves by what they are not (Meanings void, Gioia et al., 2010, see chapter 2.2.1.3), they can refer to successful competitors and better align on who they want to become.

Yet, in contrast to Gioia et al.'s (2010) conclusion one could argue that while referring to successful competitors, organizations are more likely to understand why others are successful but in their efforts to build an optimal distinctive identity (Whetten, 2006), they go through prolonged phases of meanings void. In competitive environments, it might be easier for organizations to identify who they want to be like or not, but at the same time it is more

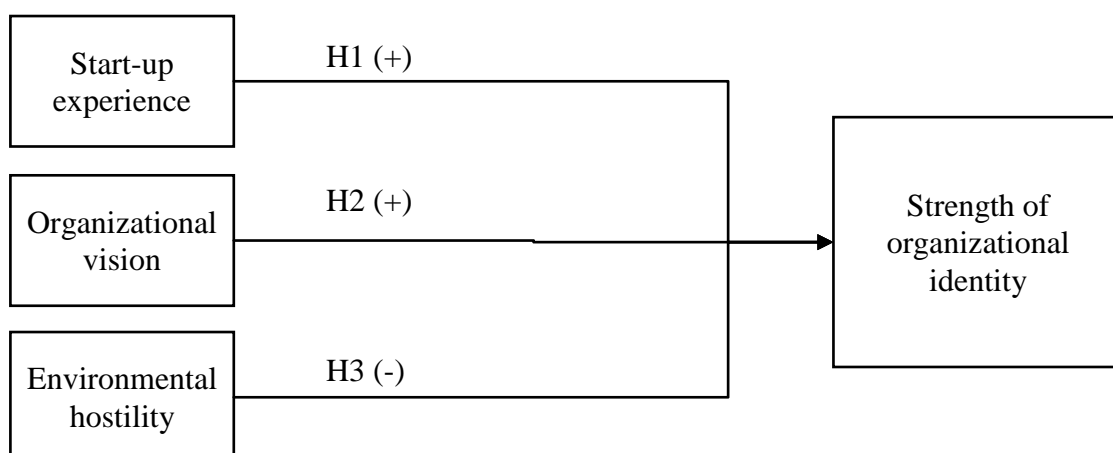


difficult to decide on their distinctive characteristics. Wry et al. (2011) observed that in industries with few competitors, initially new organizations are better able to compare their development to that of others and legitimate their business through the existence of other successful ventures in contrast to organizations working in fields in which no or very few others are operating. The competitiveness of an environment is central, because OI can be compared to others, which helps in the process of legitimizing who the organization is (Wry et al., 2011). However, once competition increased, new entrants had more difficulties with the definition of an identity which fit into the field. In their case, new cuisine chefs began defining themselves through "overemphasized and sensationalized" aspects in their attempts of being distinctive and unique (Adria, Blumenthal, Keller, & McGee, 2006, p. 1; see also Wry et al., 2011). Yet, this was not considered as something defining the OI of the new chefs but rather a trial to become more attention of customers.

Therefore, while some competition or external pressures might support the formation of OI, strong competition might lead to negative effects. In these hostile environments, the legitimization of new ventures is more difficult because start-ups are not only compared to similar organizations but to more advanced and legitimized ones (Fisher et al., 2015). In summary, high environmental hostility is assumed to inhibit a better reflection and understanding of OI. It leads to slower alignment of members on what is central and distinctive of an organization. Hence, it is assumed that

***Hypothesis 3: The higher the environmental hostility, the weaker a new venture's OI.***

The summary of the effects of all three determinants is summarized in Figure 4.



**Figure 4: Model of direct OI determinants**

## 2.4 A model of identity legitimization in emerging organizations

Established models of OI formation include only selected, varying components of the relationships described in the previous sections. Their focus on sensemaking (Clegg, Rhodes, & Kornberger, 2007; Wry, Lounsbury, & Glynn, 2011) or sensegiving (Ashforth, Rogers, & Corley, 2011; Czarniawska & Wolff, 1998; Navis & Glynn, 2010; Scott & Lane, 2000) activities depends on the selected research perspective. Even Gioia et al. (2010) who combine both perspectives neglect some important aspects of identity formation, namely the effects of negative feedback.

The lack of a comprehensive framework might be due to the single case approach of these studies. Most studies refer to OI as an entity, as *something* that does not exist or exists with a specific content and observable or at least recordable characteristics. They focus on explaining the emergence of OI as this entity. However, the formulation of the initial claims in emerging organizations – or in the model of Gioia et al. (2010), the articulated vision as sum of the initial claims the company aims at – is by definition already creating an OI. It is central to the organization, shared among all initial members – the founders who formulated the claims – and helps to distinguish the organization from others. As described earlier, the enduring characteristic is substituted by a more dynamic and continuous concept of OI.

Trying to define an initial point of observation in which this entity does not exist and then comes into existence is difficult (Gioia & Patvardhan, 2012). A process perspective acknowledges some initial identity characteristics to establish a weak OI but incorporates a fourth implicit but very important component in OI formation besides the central, distinctive, and continuous (enduring) features: The internal and external acknowledgement or legitimization by stakeholders (Kroezen & Heugens, 2012). Once, stakeholders agree to a certain extent to the OI, it is recognized as such. Before this, OI is in a weak preliminary state of constant alignment of claims and renegotiation of shared understandings. The acknowledgement fosters the perceived strength of OI in times of growth and supports finding the optimally distinctive identity as well as a legitimized business which is essential for resource acquisition. In addition, the important stakeholders are constantly changing as the venture grows, which leads to different qualities of feedback and different levels of legitimization (Fisher et al., 2015).

Therefore, it seems more adequate to refer to the "formation and legitimization of OI" instead of only "formation" as well as to "legitimate OI" when examining the emergence of OI

because it is an ongoing process for emerging ventures. The process of OI legitimization is different from OI reconstruction because an established OI, which lacks current acknowledgement, can still draw on an acknowledged history with past success stories and can readily defend its identity (Gioia et al., 2010). In emerging organizations, the liabilities and advantages of newness lead to stronger effects on the shared understandings and a more active search for feedback to get stronger through successes – especially as legitimization requirements and expectations change as the venture grows (Fisher et al., 2015). Therefore, a lack of history and past identity should support the weight of internal and external feedback in order to improve.

OI legitimization begins with the articulation of a preliminary OI and ends with an acknowledged OI. However, this final status might never be reached because organizations constantly receive challenging feedback. After articulating the initial, preliminary, and uncontested OI, the process of legitimization is conducted either by active search for feedback, which Gioia et al. (2010) called "liminal actions" or by receiving (unsolicited) feedback. The two concepts are similar as liminal actions ultimately lead to feedback, which either supports or abandons the action. The feedback can either come from external or internal members. Moreover, it either confirms or weakens the preliminary OI. The described general model is illustrated in Figure 5.

The model is different from Gioia et al. (2010) in that it interprets the articulated vision as creating a preliminary OI. The two components "*experiencing a meanings void*" and "*engaging in experiential contrasts*" are subsumed in "*converging on an OI*" as they are conditioned to either "*an ill-defined identity*" (p. 18) or members coming from very similar organizations (p. 14). The legitimate OI is added as aspirational target, which might be temporarily reached before feedback leads again to a reconstruction of the OI. The recurrent theme of "negotiating identity claims" affects the whole process similarly to Gioia et al.'s (2010) model. However, it has a more central role in that it affects the interpretation of every received feedback. In the original model both themes were separated. Moreover, identity renegotiation processes affect also the final state. If the organization decides that the identity is still valid even if it received negative feedback, it will start defending its claims and image. Attaining optimal distinctiveness is interpreted differently. Following Albert's and Whetten's (1985) definition of OI, distinctiveness is considered as core component of identity and an outcome of the legitimizing process. It is one aspect of a legitimate OI and implicit in all

claims, feedback and renegotiation considerations. As outlined before, "liminal actions" are combined with feedback.

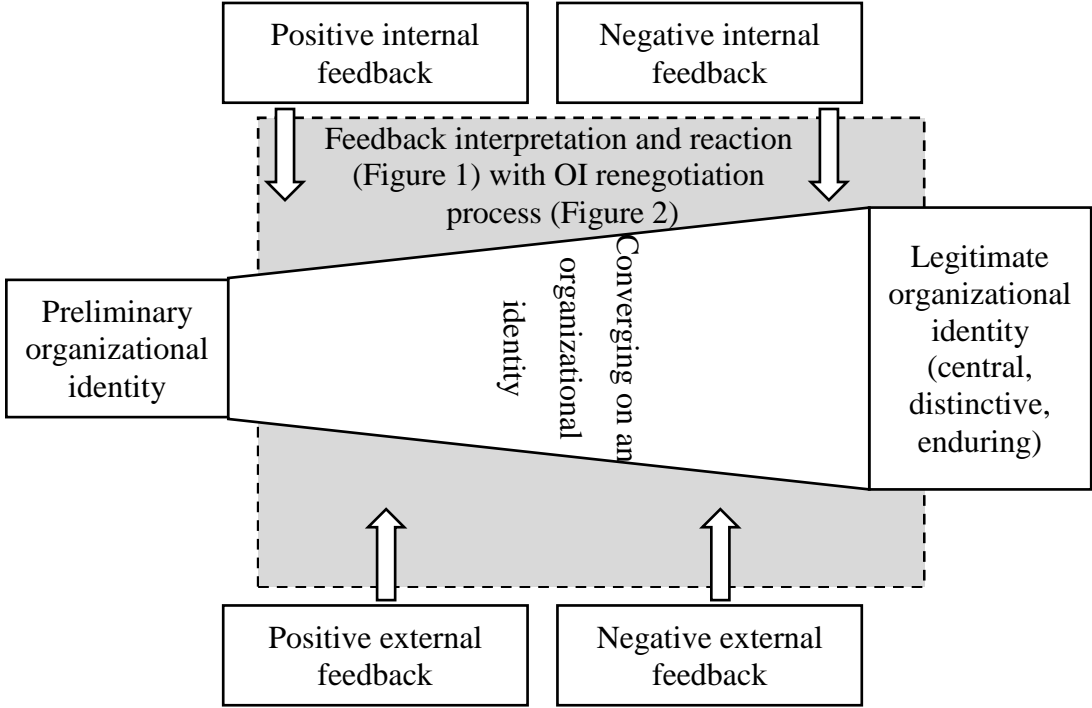


Figure 5: Process of organizational identity formation and legitimization

The depicted process view about the formation and legitimization of OI reflects how OI evolves. If OI strength is picked as characteristic of interest instead of the whole OI, snapshots of this process can be taken and analyzed. At the moment of the snapshot it shows the status of OI which is converging to the legitimate OI. In this conceptualization, the level of OI strength is an indicator for the current position in the process. Received feedback can either support the organization on their path to a legitimized OI or it can pull it back. This relationship is outlined in Figure 6 which builds on the previously depicted concept of OI formation and legitimization.

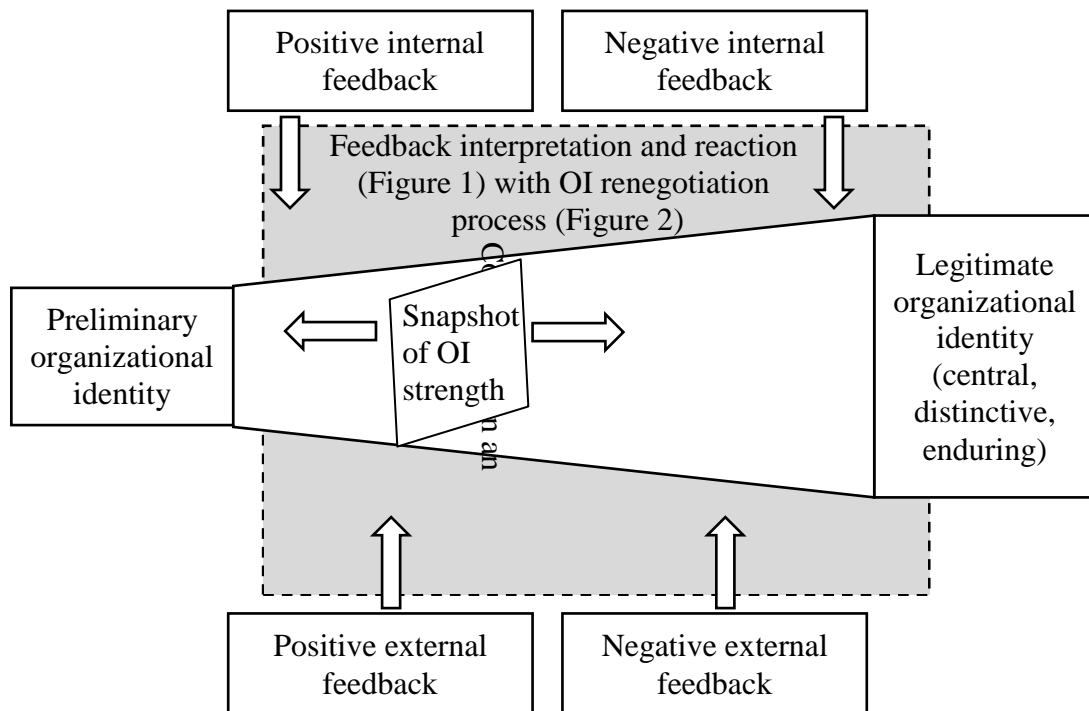


Figure 6: Snapshot concept during OI formation and legitimization

In each instance or snapshot, a specific and measurable level of OI strength exists, which is an outcome of previous feedback events and the aforementioned determinants of OI. This is reflected in Figure 7. By considering and analyzing more than one snapshot, this concept acknowledges the dynamic relationships of a changing OI independent of the specific nature of involved renegotiation processes.

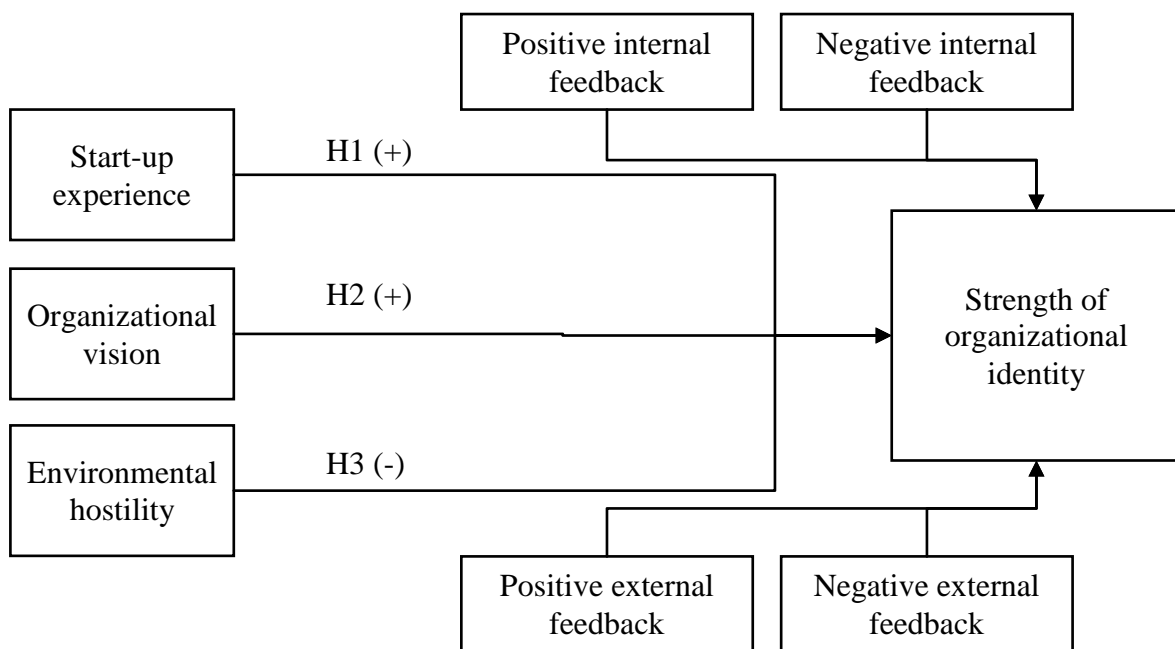


Figure 7: Extended model of direct OI determinants

The different types of feedback and its effects on OI strength considering the different sensemaking and sensegiving activities are described in the following sections before combining them to a model of OI legitimization.

#### **2.4.1 Sources of feedback: Internal vs. external**

Events or feedback that affects organizations might come from any stakeholder. It originates from interactions between internal members (Ashforth, Rogers, & Corley, 2011; Nag, Corley, & Gioia, 2007), from interactions between insiders and outsiders (Gioia et al., 2000), organizational changes (He & Baruch, 2010), or directly or indirectly from external sources (Gioia et al., 2010). Indirect external feedback includes internal performance indicators based on external stakeholder commitments like sales or in the college example of Gioia et al. (2010) placement and salary figures of students. The influence of stakeholder's feedback on the organization is determined by the perceived legitimacy of the claims of the stakeholders (Scott in Pratt et al., 2000). While internal feedback is immediate and little subject to legitimacy interpretation, the level of acceptance of external feedback depends, among others, on the stakeholder. Thus, the feedback can be split into two groups, which should have different effects on identity legitimization: Immediate (or internal) feedback and feedback, which is subject to interpretation (external).

Immediate (internal) feedback is received by members of the organization as a result of their own actions or organizational characteristics. As they experience it directly from internal sources, there is little room for interpretation about who gave this feedback and if it was meant the way it was received. Yet, why this feedback is received is dependent on organizational parameters, which might lead to an internal discussion about the reasons for this feedback. For example, an unsuccessful internal product development will be perceived as a failure. However, it might start a discussion about why the development failed, if the right people were working on this project and if the management structure was appropriate. It still can lead to a renegotiation of the shared understanding about the identity of an organization or an alignment of claims. Regarding Gioia's example of placement numbers as output of an internal benchmark system<sup>3</sup>, the college members know where the numbers come from and what they imply. Thus, these numbers were "*major legitimizing signifiers*" (Gioia et al., 2010, p. 29). In line with these examinations, Kroezen and Heugens (2012) observed that internal changes had a higher impact on the OI than external ones. In their example of

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<sup>3</sup> Even though placement numbers indirectly reflect external acceptance and thus external feedback, they are considered as internal as the direct source of the feedback is an internal benchmark system.

microbreweries, feedback from internal parties was directly linked to changing identity claims.

External feedback, however, is subject to interpretation (Scott in Pratt et al., 2000). Even though the source of the feedback is known and the intention of the feedback might be obvious, how the source came to this conclusion is often not transparent. It leaves interpretive room in the comparison of the received feedback with the OI as well as gives options to change either the identity or the external image through impression management (Lounsbury & Glynn, 2001). Thus, negative external feedback is different than negative internal feedback in that the organization can defend its identity as the opponent would not be the organization itself but another party. If external parties were to develop a product supported by the own product and failed, members could also consider the failure to be caused by the external party even if the external party could blame the own organization. Thus, by interpreting the external feedback, the organizations might find another explanation, which does not affect or even defends their own identity. In the positive example of placement numbers, members of the organization could question the correctness of the numbers if they came from an external source like a newspaper ranking. Hence, although external feedback is positive (negative) it might not necessarily lead to strengthening (renegotiation) of the current identity (Scott & Lane, 2000).

In summary, the difference of the source of feedback is that OI is affected by internal *attributes*, which one refers back to the self and by *interpretations* of received external feedback (Gioia et al., 2010). Thus, regarding the constitutive question "Who are we as an organization", internal feedback is rather the answer "currently we are" while external feedback would lead to the response "Are we really?" or as Hatch and Schultz (1997) put it "*Who we are is reflected in what we are doing and how others interpret who we are and what we are doing*" (p. 361).

#### **2.4.2 Positive (legitimizing) feedback as source of identity validation**

New ventures seek legitimization through positive feedback to acquire resources and increase their likelihood of success (Navis & Glynn, 2011) and to strengthen their OI (Suddaby & Greenwood, 2005). In line with this, Gioia et al. (2010, p. 32) observed that

*"[...] legitimizing feedback came to prominence, as the organization tended to look for confirming cues from internal and external stakeholders that it was presenting itself and*

*acting in a legitimate fashion. Such cues strengthened both the members' shared sense of who they were, as well as the organization's formal identity claims, enabling them to converge on a consensual identity, wherein the organization and its members arrived at agreement on the core attributes of the organizational identity".*

Therefore, as described in the previous chapter, the source of legitimizing feedback can be either internal or external.

Internal feedback comes from members of the organization who "*reaffirm positive aspects of the organization in the interest of their own needs for self-consistency and self-esteem*" (Scott & Lane, 2000, p. 48). Moreover, internal feedback can come from the organization as a whole. Positive organizational development, successful growth, or outstanding performance all confirm positive aspects of the organization and support thereby the process of OI legitimization. For example, several respondents in the sample of this study mentioned the launch of their first product as a positive event. This event shows that the organization is capable of developing and delivering products to the market. Members are proud of their achievement independent of how customers respond to their offer. The members can now refer to specific aspects of their product or to the product as a whole when explaining who they are internally or externally. A second example mentioned by respondents of this study is the growth of the company. The addition of new members is a significant investment for new ventures, which are typically resource constraint and which operate under uncertainty. It highlights the positive development in the past but also emphasizes that founders believe in a positive future. It strengthens the social identity of the members through being part of a successful venture. Because OI is collectively shared by all members of an organization, positive internal feedback affirms each person's perception of the identity, thus the perceived OI strength of each individual, and hence the overall OI strength. This leads to hypothesis 4.

***Hypothesis 4: Positive internal feedback has a positive effect on a new venture's OI strength.***

Feedback from external stakeholders is essential in the ongoing processes of identity legitimization as they serve as receptors and challengers of identity claims (Ashforth, Rogers, & Corley, 2011; Grimes, 2010). They respond whether their expectations are in congruence with the image of the organization or not (Scott & Lane, 2000). For example, new orders, positive reactions at exhibitions, competitors' recognition, shareholders' investments, or positive media coverage validate identity claims and strengthen the sense of legitimacy of organizational members (Drori, Honig, & Sheaffer, 2009; Gioia, Price, Hamilton, & Thomas,



2010; Navis & Glynn, 2010). In this study, positive media and a growing customer base were often mentioned by participants. It supported them in their own perceptions about their organization through external validation. If the revenues are growing faster than anticipated, the organization is reinforced in their beliefs and actions. This feedback affirms both sensegiving and sensemaking activities due to a more substantiated understanding of the construed external image which supports the construction and legitimization of OI. Hence, it increases the perceived strength of OI (Kjaergaard, Morsing, & Ravasi, 2011), which leads to hypothesis 5:

***Hypothesis 5:** Positive external feedback has a positive effect on a new venture's OI strength.*

Thus, both internal and external positive feedback strengthens the perceived OI.

### **2.4.3 Negative feedback as identity threat**

Effects of negative feedback are discussed twofold in research. As outlined in previous sections, most agree that negative feedback challenges the shared understanding about who a company is and the collective self-perceptions. These events are commonly referred to as identity threats (Ravasi & Schultz, 2006). The adverse events inhibit the achievement of organizational goals due to internal or external causes (Carolis, Yang, Deeds, & Nelling, 2009). They can trigger negotiations and interpretations as illustrated in Figure 2 and can lead to two outcomes: Defense of identity and reconstruction of identity as depicted in Figure 1 and outlined in section 2.1.2.

When negative feedback threatens key assumptions of the OI, members of the organization try to re-establish a congruent construed external image by reconstructing OI through sense-making activities (Corley & Gioia, 2004; Dutton & Dukerich, 1991; Gioia & Thomas, 1996; Ravasi & Schultz, 2006) or by taking measures to change the external perception (Ashforth & Mael, 1996; Elsbach & Kramer, 1996; Gioia, Schultz, & Corley, 2000; Morsing, 1999; Ravasi & Schultz, 2006; Schultz & Hernes, 2013). Depending on the chosen action, the effect on OI is different.

In the case of identity reconstruction, the organization undergoes phases of ambiguity and loses clarity and strength of the identity temporarily (Ravasi & Schultz, 2006). For example, Corley and Gioia (2004) describe a corporate spin-off that was constantly receiving negative feedback from media, stock market, and customers. Due to regulatory restrictions, which prohibited efforts to change the construed external image, the identity ambiguity grew and

laid the foundation for changes in the OI. Corley (2004) state that *"internal perceptions were more easily swayed by external feedback, which often was not positive and tended to have a strong effect on internal identity-discrepancy perceptions, [...]"* (Corley & Gioia, 2004, p. 195). In the case of Bang & Olufsen (Ravasi & Schultz, 2006), changing environmental conditions like increasing competition and misalignment of external and internal perceptions identified in consumer surveys were recognized as identity threats. They lead to a reflection of established practices and identity and a partial reinterpretation. The resulting identity ambiguity caused managers to revise identity claims and give sense and communicate the new claims through dialogues, workshops or exhibitions, slowly establishing a revised identity understanding.

Similarly to positive feedback, identity threats can originate from internal or external sources. Examples of negative internal feedback include financial distress and loss of strategic direction (Schultz & Hernes, 2013), discrepant growth stories (Wry et al., 2011), project failure (Shepherd & Cardon, 2009; Urbig, Burger, Patzelt, & Schweizer, 2013) or discrepancies about the interpretation of claims (Corley & Gioia, 2004). It leads to renegotiation processes, which question the shared understanding and weakens the OI. Negative internal feedback addresses the interpretation of core claims directly. Accordingly, Voss, Cable, and Voss (2006) describe potential different effects of negative internal feedback. They examine identity discrepancies as one form of negative internal feedback. It either supports organizational performance because members constantly challenge established assumptions and are thus better able to adapt to environmental changes or it weakens the OI because members are not aligned in their actions anymore. Their results, however, substantiate the negative perspective. They found that the stronger the discrepancy, the more negatively affected is the performance of theaters. One managing director explains *"[...] I think these kinds of things [identity disagreements] build the walls even stronger [...]"* (Voss et al., 2006, p. 741). Similarly, Shepherd and Cardon (2009) investigated reaction of individuals to project failure including failure of new products, services, processes, or entering new markets. These failures can affect attitudes and behaviors, commitment to the organization, and learning from this experience negatively (Shepherd & Cardon, 2009). Hence, it seems that negative internal feedback can alter the prevailing understanding about the organization and thus negatively affect the OI strength.

In line with the observations from other researchers, participants in this study mentioned negative effects of negative internal events. One common negative internal event was the

dismissal of one or more employees. In a small team, this typically created uncertainty and questioned either the current status of the organization or the decision of the founders. Moreover, the dismissed employees created a negative atmosphere which further led other employees to rethink the values of the company. Other negative internal events were mentioned. Quality issues or malfunctioning processes in sales or project management triggered insecurity and increased doubts about the quality of the founders or the feasibility of the start-up project. In such a situation and having only little past experiences about successes and failures, organizational members might relate the negative internal events with organizational failures instead of misfortune or individual mistakes.

Hence, the stronger the negative internal feedback, the more negatively affected is the OI. This leads to hypothesis 6.

***Hypothesis 6:*** *Negative internal feedback has a negative effect on a new venture's OI strength.*

Negative external feedback is often described as coming from media, stock market, or customers (Dutton & Dukerich, 1991; Gioia & Thomas, 1996; Kjaergaard, Morsing, & Ravasi, 2011), investors (Navis & Glynn, 2011), or changes of customer behavior (Ravasi & Schultz, 2006).

Similarly to positive external feedback, negative external events are first interpreted in light of the legitimacy of the source and the criticality of the content. If the organization decides that their identity is still legitimate and external claims are not valid, the identity threat leads to counteractions, which might even increase the clarity and strength of the OI.

For example, Elsbach and Kramer (1996) observed how top business schools in the US suddenly found themselves to be far lower in a new ranking from Business Week than they expected and communicated to be. Therefore, this ranking posed a threat to many established business schools and its members. However, instead of rethinking their identity and changing it accordingly, they started to interpret the ranking and found solutions to defend their identity while justifying the poor ranking. Elsbach and Kramer (1996) argue that members use cognitive tactics to preserve their social identity. They either use externally oriented impression management (e.g., Tedeschi & Reiss, 1981) to respond to individual organizational threats or internally oriented self-affirmations (Elsbach & Kramer, 1996) and reinterpretation of feedback to selectively highlight positive aspects (self-categorization

theory, see e.g., Tajfel & Turner, 1979) and selectively question the legitimacy of the source of feedback.

Ravasi and Schultz (2006) describe how the amount of discrepancy between external feedback and OI is responsible for the reaction of the organization. In situations where the inconsistency is marginal, the organization tends to start efforts to correct the external image and defends its identity. However, if image and identity are seriously misaligned, the members of the organization start questioning their understandings about the identity. Yet, defending identity in the case of adverse feedback requires legitimacy, which emerging organizations lack in most cases in the process of OI legitimization. Hence, new ventures start negotiations about their OI.

Accordingly, Holland and Shepherd (2013) found that the decision for persistence of entrepreneurs is influenced by high levels of adversity, which is defined as having a discrepancy between the performance of the venture and the aspiration point for the venture. This can be caused by strong negative feedback which leads entrepreneurial ventures close to the survival point. If high adversity exists, entrepreneurs are more likely to question their actions and evaluate alternatives by the desired outcomes, thus they become more detached from the organization. They put their emphasis and decisions on the desirability of the outcomes, which is independent from the actual state of the organization, and less on the probabilities which would take the organization's strengths and weaknesses into account.

The examined detachment from the organization as well as the observed questioning of the prevailing OI in case of adversity or negative feedback lead to hypothesis 7.

***Hypothesis 7:** Negative external feedback has a negative effect on a new venture's OI strength.*

#### **2.4.4 Combined framework**

All four types of feedback described above seem to have an impact on OI strength. The perceived OI strength increases through positive feedback and decreases through negative feedback in the OI legitimization process. In summary, these effects are based on feedback interpretation (e.g., Elsbach & Kramer, 1996; Gioia, Schultz, & Corley, 2000), identity (re-) negotiation process (e.g., Ravasi & Schultz, 2006) and identity legitimization (e.g., Gioia et al., 2010).

The hypotheses are summarized in Figure 8.

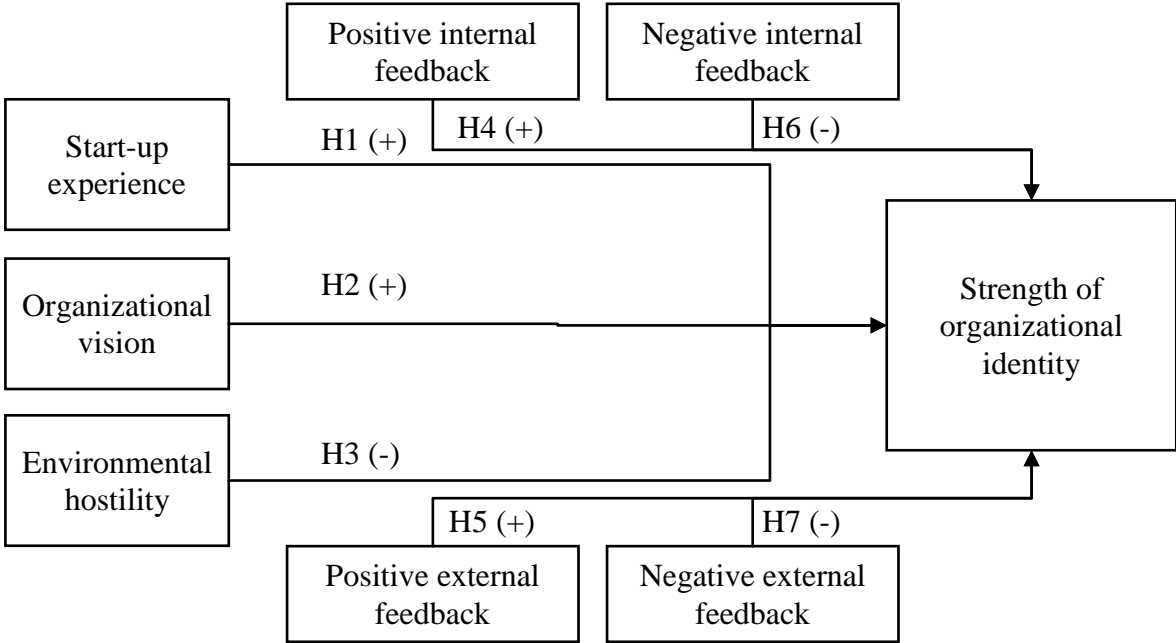


Figure 8: Direct effects of feedback on perceived strength of organizational identity

Internal and external feedback has been described to function through different mechanisms. Internal feedback is assumed to be interpreted immediately while external feedback is interpreted through a construed external image. This step of interpretation is already recognized in the OI reconstruction and the outlined process of feedback interpretation and reaction in Figure 1 through the depicted identity/image comparison. However, there is no differentiation of positive and negative feedback. As outlined in the previous sections, positive and negative feedback can lead to different reactions from organizations which are not fully recognized in Figure 1. In summary, while positive feedback supports OI if the source of feedback is found to be legitimate, organizations can react to negative feedback by either defending or renegotiating the OI. This is reflected in an adjusted model of Figure 1 which differentiates between positive and negative feedback. This full model of feedback interpretation and reaction in organizations is depicted in Figure 9. Moreover, the paths hypothesized in this study are highlighted.

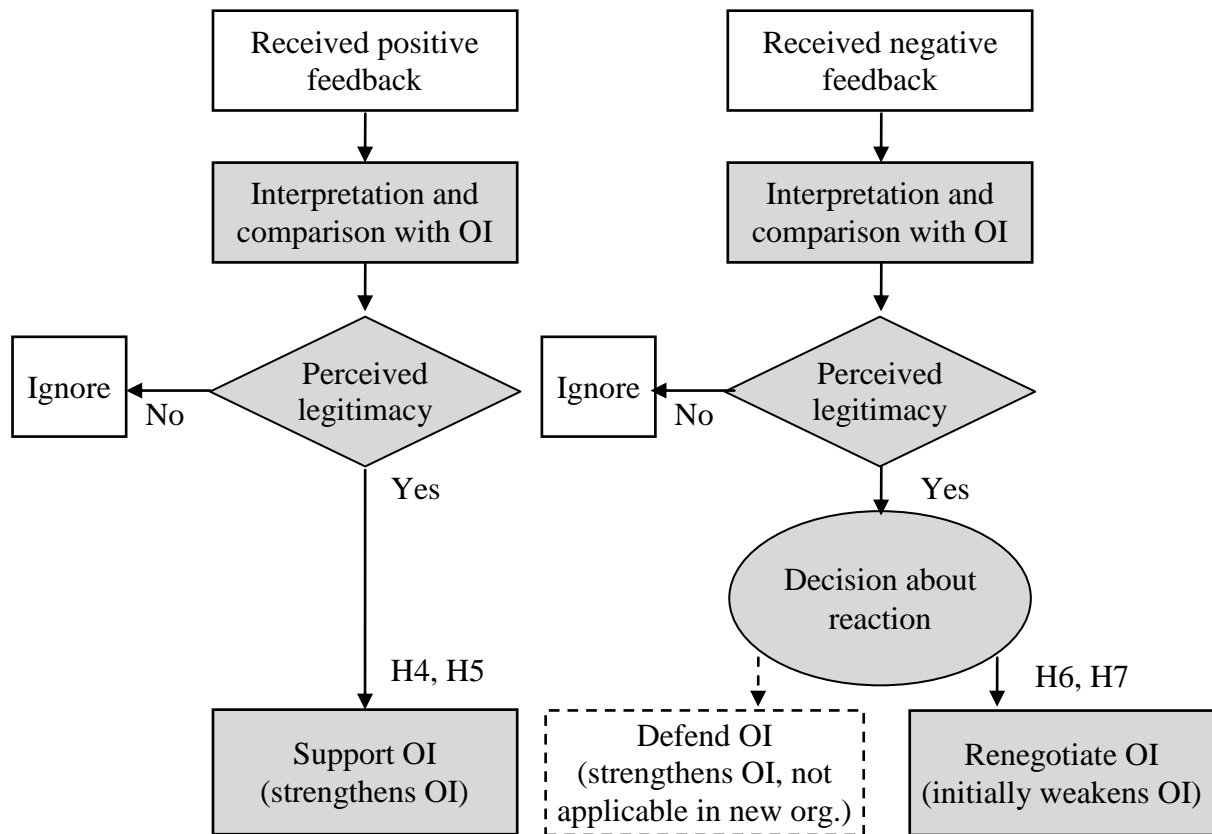


Figure 9: Adjusted model of feedback interpretation and reaction in organizations

## 2.5 Interactions of organizational parameters with feedback events

Figure 9 outlines the feedback interpretation with different steps at which cognitive processes (interpretation and comparison, decision, and the final steps of support, and renegotiation of the OI; shaded areas) take place. However, cognitive processes are sensitive to the context in which they take place (Tourangeau & Rasinski, 1988; Turner, Oakes, Haslam, & McGarty, 1994). Therefore, the effects of feedback should vary depending on the current organizations' parameters in which the organization is operating: the founding team's start-up experience, the organizational vision, and environmental hostility. This assumption is supported by findings in research.

Positive feedback is theorized to strengthen the OI (e.g., Gioia et al., 2010). However, this effect is only described in situations in which organizations seek for legitimization. In other cases, positive feedback is not mentioned at all or does not serve as a factor explaining the legitimization of OI.

On the other hand, negative external feedback is hypothesized to have a weakening effect on OI in emerging organizations. However, some scholars emphasize another function of it. Wry et al. (2011) highlight that negative feedback helps to define limits of organizational claims. In line with this comment, Clegg et al. (2007) describe how the preliminary identity is defined through "who we are not", which is supported by negative feedback. In addition, in case of identity threats, the OI is more visible (Dutton et al., 1994), which serves as a trigger to concentrate on the core assumptions of OI. Thus, it seems that in some contexts negative feedback has even a positive effect on the formation of OI.

Therefore, it seems reasonable to assume that the effects of both types of feedback vary under specific contextual conditions and organizational parameters which influence also the formation of OI. The interactions of feedback with the context variables of OI are presented in the next sections and refer to the shaded steps outlined in Figure 9 and depicted separately for all four feedback events in Table 1. As highlighted earlier, internal feedback is less subject to interpretation and legitimization of the source of feedback. Moreover, it is assumed that organizations cannot defend their OI against negative internal feedback but only against external stakeholders. However, as outlined in section 2.4.3, the decision about the reaction and the defense of OI are considered to be not applicable in emerging organizations which seek legitimization.

Step for feedback interpretation and reaction	Types of feedback			
	Positive internal	Negative internal	Positive external	Negative external
Interpretation of feedback, comparison with OI	×	×	✓	✓
Legitimization of source of feedback	×	×	✓	✓
Support of OI	✓	×	✓	×
Defense of OI	×	×	×	✓
Renegotiation of OI	×	✓	×	✓

**Table 1: Applicability of cognitive processes in the feedback interpretation and reaction process for all feedback events**

### 2.5.1 The influence of founding team's start-up experience

The founding team's start-up experience has been found to influence organizations in several ways which are transferable to OI formation and interaction effects with feedback.

In addition to their direct effect on OI, founding teams also influence the process of OI legitimization. Through their past start-up activities, founding teams have experienced positive and negative feedback before and know how to react appropriately (e.g., Cope, 2005). Founders continue to apply practices which are related to positive outcomes and stop working with processes that did not work (Minniti & Bygrave, 2001). That way, they learn from past decisions how to improve their reactions in the future in case of both, negative and positive events (Shepherd et al., 2000). They profit from a reservoir of experiences which founders can apply to new situations (Cope, 2005). Following general entrepreneurial learning literature which emphasizes the aforementioned positive effects of experience on positive events (Shepherd, Douglas, & Shanley, 2000; Wiklund & Shepherd, 2005) leaders are assumed to tie new OI claims to what has existed before or what they experienced before in an effort to substantiate their sensegiving power. They give reliable guidance to members of the organizations through story telling from past successes and lessons learned.

One founder explained how his experienced co-founder used a positive business development to motivate also employees who performed weaker so that they better incorporated the values and identity of the company. This experience and the reflection about the co-founder's handling of positive feedback might have helped him to learn how to utilize positive feedback to strengthen the OI even further.

Another observation in this study is that some founders decide to celebrate with the team when a new important customer is won. Others, having experienced other possible reactions before, decided to use this situation to also reflect on why this customer has been won and how to use this success to better understand the company's strengths and weaknesses and to become even more successful in the future. Similarly, founders differ in their opinion about how transparent they should be to the employees about new investors. Some do only tell about the fact that there is a new investor, others are more open and explain reasons, the vision of the investor or even the sum of the investment. Having experienced comparable situations before might help founders to determine the best way of communicating the positive fact that a new investor was successfully found.

Hence, it is assumed that they can capitalize on positive feedback superior to inexperienced founders and interpret it in a way to better support sensemaking activities.

***Hypothesis 8a:*** *The higher the founding team's start-up experience, the stronger the positive effect of positive internal feedback on a new venture's OI strength.*



***Hypothesis 8b:*** *The higher the founding team's start-up experience, the stronger the positive effect of positive external feedback on a new venture's OI strength.*

In case of negative feedback, experienced teams can profit from their experience, too. The higher the start-up experience of founders, the more they learned from their previous ventures (Lamont, 1972) and the more they might be able to capitalize on negative feedback in several ways.

One key task of top managers is to interpret ambiguous information like feedback events to facilitate sensemaking (Thomas, Clark, & Gioia, 1993). Powell and Baker (2014) found that founder-run companies in the textile industry reacted differently to adverse changes in the environment. While some organizations embraced the change, others interpreted the feedback from the organizational environment as threat and reacted accordingly. They concluded that *"founders who defined the situation as an opportunity simultaneously embraced the adversity, those who defined it as a challenge sought to counter the adversity, and those who defined the situation as a threat attempted to accommodate the adversity"* (Powell & Baker, 2014, p. 1426). Based on their individual identities, some managers of the small companies started defending their identity (thus, strengthening the OI), others started the process of changing their business and renegotiating their OI by either embracing the change (thus, strengthening the OI) or by accepting the adversity, which lead them to surrender (thus, weakening the organizational identity) (Powell & Baker, 2014). Thus, founders interpret feedback differently depending on their personality or past experiences. However, Powell and Baker (2014) did not investigate the exact antecedents for the different types of reactions but described only the different reactions of organizations to changes in the industry.

Yet, others examined how experienced organizational leaders react on identity threats as they are core members of the organization and knowledgeable about the organization's past (Ravasi & Schultz, 2006). Dencker et al. (2008) propose that experienced founders are better in supporting the adaption processes during the life cycle of an organization (Dencker et al., 2008) following an evolutionary economics perspective which posits that the most adaptable survive. The catalyzing capabilities of experienced founders are especially required in the renegotiation processes of OI once negative feedback is received. Supporting the organization to more quickly adapt in the renegotiation processes should positively influence how negative feedback is incorporated in the organization.

In addition to their ability to make sense of adverse external and internal perceptions of the identity, experienced managers or founders are privileged in that they have access to better internal and external communication channels, better stories and experiences from the past, and better knowledge. They are thus able to promote revised identity claims (Ravasi & Schultz, 2006). Their actions and communicated claims guide other organizational members and give sense to them. Corley and Gioia (2004, p. 200) describe a sensegiving imperative of founders if the identity is challenged by events and feedback to help find "*identity clarity*". Due to this immediate role in overcoming an identity ambiguity, they positively influence the OI renegotiation process.

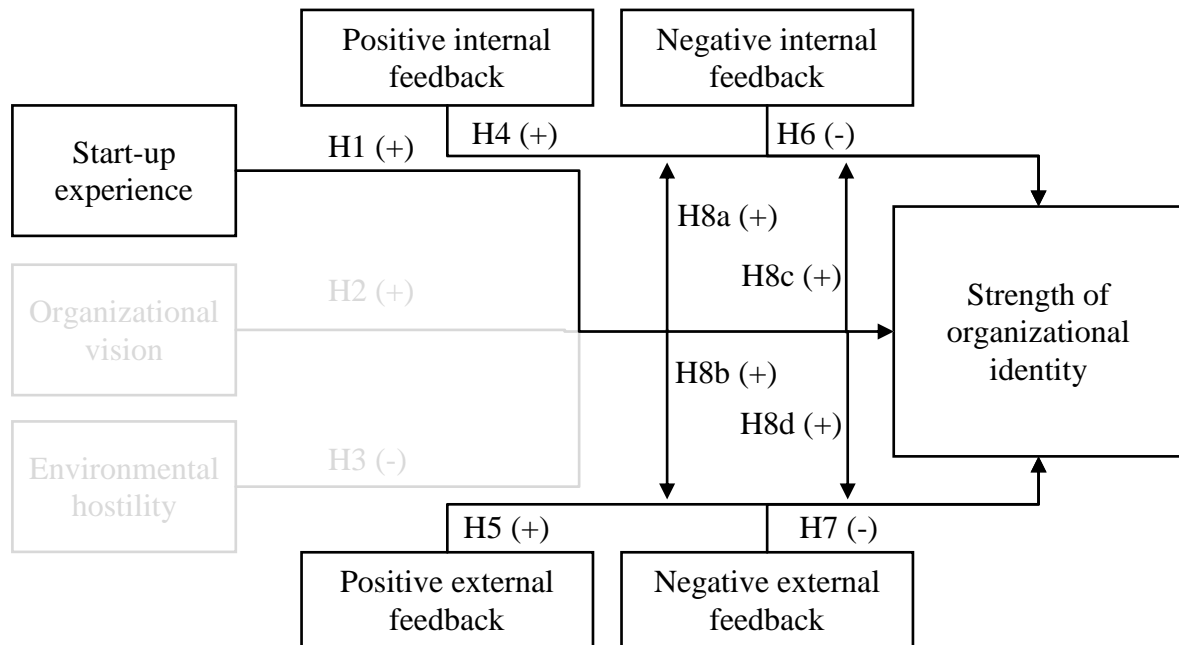
One participating founder highlighted his experience with dismissing employees. As outlined before, this can negatively affect the OI when other members of the company start questioning the organization's or the leader's decision in this process or if this event leads to more negative events like negative public comments from the former employee. The founder had previously founded several companies. One firm went bankrupt and he had to dismiss all employees. Having gone through this process, he knew how to communicate the announcement that one member of his new venture will leave the company to the whole organization. Moreover, he arranged the process in a way also the affected employee was satisfied.

In line with this, Toft-Kehler et al. (2014, p. 457) state that highly experienced founders are able to utilize past similar experiences, to infer from past reactions how to handle this situation better and how to "*place particular events into their proper contexts*". Cope and Watts (2000) describe these experiences through learning from critical incidents from internal and external sources. The events, while being a substantial or even an existential threat, lead to fundamental learning of the entrepreneurs on a higher level such that they were able to apply learnings to future critical situations. This is especially the case, if founders learn from negative events or failures (Ucbasaran et al., 2010). Through these effects experienced founders are better able to give sense in case of internal or external negative feedback, which leads to a less ambiguous identity and an even better understanding about who the organization really is. Their influence on feedback interpretation and renegotiation is independent of the source of feedback and is thus valid for internal and external negative feedback. Therefore, following relations are hypothesized.

***Hypothesis 8c:*** *The higher the founding team's start-up experience, the weaker the negative effect of negative internal feedback on a new venture's OI strength.*

**Hypothesis 8d:** *The higher the founding team's start-up experience, the weaker the negative effect of negative external feedback on a new venture's OI strength.*

The hypotheses are added to the model of OI strength in Figure 10.



**Figure 10: The interactions of founding team's experience with feedback events on OI strength**

In summary, a founding team's start-up experience has different effects under varying conditions of feedback. Put differently, experience moderates how feedback affects the OI strength through their influence on interpretation and renegotiation processes as highlighted in Table 2. Shaded cells are highlighting the cognitive processes mentioned in section 2.4.4, which might be influenced by organizational parameters. As discussed in this section, it is hypothesized that experienced founders are able to see a higher potential in external feedback than inexperienced founders or founding teams. Moreover, they are able to capitalize better on positive feedback and to support the renegotiation processes if negative feedback questions the core understandings of the members of the organization. Due to their start-up experience and status within the organization, they are building a counterweight to the legitimacy of the source of negative external feedback.

Step for feedback interpretation and reaction	Types of feedback			
	Positive internal	Negative internal	Positive external	Negative external
Interpretation of feedback, comparison with OI			E(+)	E(+)
Legitimization of source of feedback				E(+)
Support of OI	E(+)		E(+)	
Decision about reaction				
Defense of OI				
Renegotiation of OI		E(+)		E(+)

**Table 2: Influence of a founding team's start-up experience on the organization's feedback interpretation and reaction, E = Experience**

### 2.5.2 The influence of organizational vision

As previously outlined, OI is constantly subject to (re-)interpretation for all members of the organization. They compare incoming feedback with the OI and try to make sense of inconsistencies. In this cognitive process they find support in the company's history, the current core assumptions, established values, practices and artifacts and – even more importantly for emerging organizations – the desired future image or vision (Gioia & Thomas, 1996; Ravasi & Schultz, 2006). Focusing on the interpretative power of organizational vision, Hill and Levenhagen (1995) concluded that a strong vision encompasses the ability to *"offer explanations of current and future equivocal events as non-equivocal interpretations"* (Gartner, Bird, & Starr, 1992, p. 17). It helps to interpret feedback and to give guidance on how to react to this feedback in the identity negotiation processes as *"catalyst for changing identity"* (Gioia & Thomas, 1996, p. 394; see also Hatch & Schultz, 1997). On the other hand, it is in situations which are characterized by a less strong vision and uncertainty, in which positive feedback helps most (e.g., Morsing, 1999; Ravasi & Phillips, 2011). Therefore, it seems that the effect of vision on feedback in the OI legitimization process is complex and depends on the type of feedback received.

Ravasi and Phillips (2011) describe how the newly formed new vision of Bang & Olufsen was used as a sensegiving instrument to product decisions. In its initial months, the organizational members realized that it was a risk following this newly articulated vision. There were discussions about producing less expensive products and how following the New Vision might affect the identity of the company. Once these products hit the market and were highly successful, this positive external feedback strengthened their understanding about their

company's identity and the vision became widely accepted and was used as reasoning for other strategic decisions. Moreover, as more members reported positive effects of the new vision and the organization itself generated positive news, the identity became solidified. Thus, Ravasi and Phillips (2011) highlight how an organization with a new vision which is yet to be legitimized, significantly gains from positive internal and external feedback.

This is in line with findings from Morsing (1999), who described how a Danish company called Oticon conducted a major identity change process from a hierarchical organization to a "spaghetti organization" and incorporated a new vision. Positive press and media coverage supported the process, which was started by the CEO, and strengthened the OI perceived by members of the organization.

On the other hand if internal or external positive feedback is received in organizations with a clear sense of what it wants to become, it is regarded as in accordance with the vision and in congruence with the OI. The effect of feedback is minimal.

This situation was examined by Gioia et al. (2010) who observed the formation of the new interdisciplinary school "College of Interdisciplinary Technology Studies" (CITS). The dean had a clear vision about what CITS should be regarded as in the future. He selected staff accordingly and tried to install an OI which fit to the interdisciplinary direction. Slowly, the vision changed from being "*abstract*" to "*incorporated*" into their daily work (Gioia et al., 2010, p. 14). Initially, members tried out new behaviors and actions to see if the stated but not yet incorporated vision is legitimate. They applied for a research grant and were positively surprised by the huge success and the positive feedback. This played an important role in strengthening the initial claims of CITS, in accepting the vision and in building a strong OI. Having developed better understandings about the Dean's vision and their interdisciplinary identity, members participated at conferences and received legitimizing and positive feedback about CITS. This further strengthened the emerging OI but not at the same scale as the initial feedback once the vision was still abstract.

Therefore, it is assumed that the strengthening effect of positive feedback is decreased in cases with a clear organizational vision. In contrast, if the vision is ambiguous and vague an increased strengthening effect is hypothesized. If this is the case, positive feedback reassures the members that they are heading in the right direction; it supports identity claims and strengthens the perceived OI in the OI legitimization process. Hence,

***Hypothesis 9a:*** *The stronger the organization's vision, the weaker the positive effect of positive internal feedback on a new venture's OI strength.*

***Hypothesis 9b:*** *The stronger the organization's vision, the weaker the positive effect of positive external feedback on a new venture's OI strength.*

As outlined before, a strong vision is an expression about what the organization desires to become. If internal stakeholders give negative feedback they indicate that the understanding about what the company currently stands for and about where it is aiming at deviates from what it desires to become. Suddenly, the vision illustrates what is desired but might not reflect the present reality. It highlights the misalignment of vision and identity. Members react to this misalignment through increasing uncertainty or even through resistance to change (Ravasi & Phillips, 2011).

Nag et al. (2007) observe a high-tech company TekMar, which was spun off from the parent company. Its top management recognized the need to change from an engineering- and technology-oriented division to become more market-oriented. They started to employ business development experts and began to develop technology ventures. The initial success of ventures supported the new vision and pushed the organization to continue. However, the changed focus from technology for technology's sake to profitability was not incorporated into the identity of researchers and scientists. After the burst of the technology bubble in 2001, the market for venture financing dried up and TekMar decided to push even more for market orientation and created a Venture Management Group. This division had the power to not only select promising projects but also to define the research fields of the scientists. In this situation, the misalignment between the technology-focused identity and the market-oriented vision became apparent and scientists refused to acknowledge the Venture Management Group. Most researchers did not accept the new procedures for market analysis, project launch decisions, knowledge sharing or reporting, which had been introduced by the Venture Management Group. This conflict weakened the OI by dividing the organization into different sub-groups with different identities and "*local pockets of adaption but no organization-level change*" (Nag et al., 2007, p. 838).

The internal feedback of TekMar's employees cannot be interpreted differently and the OI cannot be defended against internal members or organizational processes, who or which caused this feedback. Moreover, the legitimacy of internal sources is not easily questioned. Therefore, in case of a strong organizational vision and a hypothesized strong OI, negative

internal feedback would highlight misalignment in allegedly aligned organizations and might lead to severe renegotiations and causes ambiguity. In this case, organizational change needs not only address a renegotiation of shared understandings of OI but also a strong vision (Schultz & Hernes, 2013). Thus, it can be assumed that in the case of negative internal feedback the OI in organizations with a strong vision is weakened while other organizations are less affected by negative internal feedback.

***Hypothesis 9c: The stronger the organizational vision, the stronger the negative effect of negative internal feedback on a new venture's OI strength.***

In case of negative external feedback, the organizational vision serves as stabilizing force. Ravasi and Schultz (2006) described Bang & Olufsen's new vision as an identity statement, which laid the foundation for identity reconstruction and helped the company to interpret identity threats. While external identity threats without a common vision have had negative effects on the OI, they have been interpreted in a more positive way once the new vision was established. Building on the case of Bang & Olufsen, vision influences the reactions of the organization in two situations. Having a clear picture about what the organization is aiming at supports the interpretation of feedback and the clarification of the discrepancy (or the congruence) of the feedback with regards to the current OI. Moreover, a strong vision serves as guidance for identity renegotiation and formation processes. In the outlined example, the organizational members now had an answer to the questions, which were posed by the feedback (Ravasi & Schultz, 2006).

Dutton and Dukerich (1991) described a similar but more extreme aspect of a strong vision. In the case of the New York Port Authority (Dutton & Dukerich, 1991) complaints of customers about homeless people increased. The strong vision about "being a business in opposition to a social service" prevented employees to value the complaints and to develop a satisfying solution. Organizational members reacted in line with their vision and defined actions in line with the OI. Members even intensified their work to "remove the problem" initially and defended the OI.

Accordingly, Schultz and Hernes (2013) describe different magnitudes of reactions of LEGO to external threats at two points in time. During the first occasion, LEGO redefined some values based on the existing vision while in the second occasion they fundamentally changed the vision itself. The vision was still considered as strong and valid during the first change. Therefore, members accepted the feedback and realigned the interpretations of claims but did

not touch the claims majorly. They eventually emerged with a stronger understanding of who they were in a near future. During the second phase, members accepted that the vision was no longer valid and questioned their OI. They started renegotiating their OI through "rethinking [the] full range of identity claims" (Schultz & Hernes, 2013, p. 11) and aimed for ending the renegotiation processes in the far future through a 3 years transformation leading to a long phase of ambiguity.

Thus, negative external feedback is interpreted in light of the goals and core assumptions of the vision. If the vision is strong and clear to all members, it puts the feedback into perspective and inhibits a major renegotiation process in case of negative external feedback. Therefore, the effect of negative external feedback is weakened.

**Hypothesis 9d:** *The stronger the organizational vision, the weaker the negative effect of negative external feedback on a new venture's OI strength.*

The hypotheses are added to the model of OI strength in Figure 11. Due to readability reasons, only interactions with organizational vision are shown.

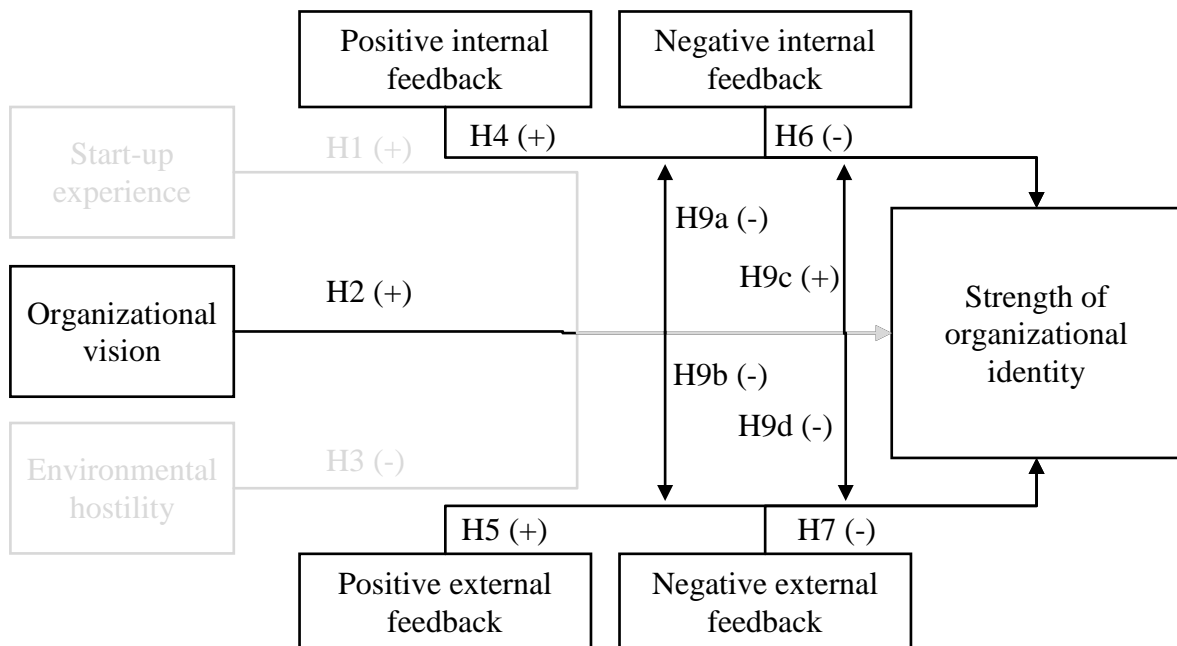


Figure 11: The interactions of organizational vision with feedback events on OI strength



In summary, a clear and strong vision helps to put feedback into perspective with the long-term goals and aspirations of the organization. In cases of external feedback, the vision serves as a frame of reference in which the feedback interpretations and the identity negotiations take place while not affecting the legitimizing power of the source of the feedback. However, because vision itself is hypothesized to strengthen OI directly, the positive effects of feedback are minimized. Negative internal feedback highlights misalignment between a desired future and the now. The clearer the vision, the more ambiguous and weakening is the effect of negative internal feedback for the renegotiation of the OI. The hypothesized effects are summarized in Table 3.

Step for feedback interpretation and reaction	Types of feedback			
	Positive internal	Negative internal	Positive external	Negative external
Interpretation of feedback, comparison with OI			V(-)	V(+)
Legitimization of source of feedback				
Support of OI	V(-)		V(-)	
Decision about reaction				
Defense of OI				
Renegotiation of OI		V(-)		V(+)

**Table 3: Influence of organizational vision on the organization's feedback interpretation and reaction, V = Vision**

### 2.5.3 The influence of environmental hostility

Besides the founding team's start-up experience and organizational vision, environmental hostility is influencing how feedback is perceived and interpreted in an organization. Examinations of the role of organizational environment on the effect of feedback are scarce, yet some studies indicate that there are relationships between industry characteristics and feedback effects. Therefore, hypotheses can only be derived from few single cases. A systematic investigation of these effects has not taken place yet.

Corley and Gioia (2004) examined the case of a corporate spin-off, which was suddenly a single unit in a competitive market, and which – after experiencing ambiguity and change overload – actively searched for positive internal feedback. Once the management realized identity tensions and ambiguity between sensemaking efforts and observed a growing "*sensegiving imperative*", they decided to refine their desired future image, influence external perceptions, and model the behavior representing the new vision internally (Corley & Gioia,

2004, p. 196). *"Employees were not blind to this 'showing by doing' approach, as one middle manager noted in explaining that in this period of leading by example, '... it's about what the leadership team is doing,' so it became clear that employees noticed the modeled behaviors, which helped to clarify the desired future image"* (Corley & Gioia, 2004, p. 198). Once they had received the positive internal feedback of accepting change, it helped to overcome the status of ambiguity and lead to a more strongly perceived OI. To the CEO of the company, the *"buy-in of his employees was a critical component"* for the survival of the company (Corley & Gioia, 2004, p. 198). One representative of the spin-off phrased it *"less based in faith and more based in action and behavior now"* (Corley & Gioia, 2004, p. 189). The emerging positive internal feedback reflected the growing cohesion of members, which was particularly important since the company was not part of the parent anymore and operating in a hostile environment. It seemed that organizational members were actively incorporating positive internal feedback to demonstrate growing cohesion to be able to operate successfully in this environment.

The spin-off situation is similar to that of entrepreneurial ventures because the organization is resource constrained and lacks proof about their ability to be successful in their environment. In an entrepreneurial venture positive internal feedback like an expansion of the business or a successfully finished project is even more important because members have typically not been working together before. In a munificent environment there is sufficient growth potential even if there is no internal success story yet. Positive feedback might serve as confirmation that the environment is indeed benign. In hostile environments every positive internal feedback supports the current path of actions and highlights that the scarce resources are meaningfully used. Positive internal feedback might be recognized as most relevant by organizational members because it directly addresses and minimizes the stress and uncertainty caused by the hostile environment. Thus, it is assumed that positive internal feedback strengthens the belief of organizational members in the organizational capabilities and supports the OI if a hostile environment is prevalent. Hence,

***Hypothesis 10a:*** *The higher the environmental hostility, the stronger the positive effect of positive internal feedback on a new venture's OI strength.*

In contrast to internal feedback, which affects identity immediately as a reflection of members' assumptions as well as organizational internal and external performance, external feedback is subject to interpretation. Depending on the amount of environmental hostility feedback will be interpreted with varying value for the company.

In the case of Deloitte & Touche, internal members compared themselves to competitors in how they conducted work. The positive external feedback about the positive working atmosphere (“second year in a row on *Fortune* magazine’s list of the 100 Best Companies to Work For in America”, “for each of the past four years, we have been selected by *Working Mother* magazine as one of the 100 best companies for working mothers”) was considered as especially valuable in this competitive environment (Suddaby & Greenwood, 2005, p. 57). It seems that organizational members are most open for positive feedback in cases in which the OI is most salient and important: when organizations aim for legitimization in competitive environments (e.g., Elsbach & Kramer, 1996; Navis & Glynn, 2010).

Similarly, one founder of a start-up in a highly competitive environment explained the researchers how his team closely monitored feedback about their organization and competitors. Because every bit of positive feedback was helpful in building a competitive advantage and strengthened the chosen path for the organization, it was actively sought for through media interviews, or an overly friendly participation in forums and social media websites. Hence,

***Hypothesis 10b:*** *The higher the environmental hostility, the stronger the positive effect of positive external feedback on a new venture’s OI strength.*

The effects on negative feedback, however, are more complex. In the example of Drori et al. (2009), who investigated a graphics design start-up, the new venture initially established a new art form and was thus operating in a non-hostile (because non-established and growing) environment. Initially, the founder's values and claims were unquestioned and seen as foundation of success. In parallel to its increasing success, competition increased as well as internal conflicts about the identity of the firm. In contrast to earlier events, negative internal feedback, which was mirroring competing views about the company's direction, led to a weakened OI and the decline of the company. Increased hostility caused members not to follow the founder unquestioned anymore. They started to challenge identity claims and negative internal feedback supported their views.

Thus, it seems that the intensifying competition causes members to question more strongly what organizational leaders are doing and what the company will be like in the future. In hostile environments, organizations need to change more frequently and adapt to the new conditions. In this situation, the indicated misalignment through negative internal feedback is critical because it highlights a conflict of one central characteristic of OI: continuity. In the

case of the graphic design start-up, competing understandings about the future direction of graphic artists and programmers as well as between the multimedia group and the internet group became apparent (Drori et al., 2009). An organization in this situation is required to focus on internal sensemaking to maintain a core identity, and at the same time conduct organizational change due to competitive reasons which might even further detach the organization from its members or one group from another. The upcoming identity renegotiation processes not only impact the view about who the organization was in the past and is in the present but also about how different the organization will be in the future. These discussions might negatively affect the strength of OI until positive feedback and successes legitimate the organizational changes.

Similarly, one founder whose venture operates in a benign environment of healthy food production explained that their internal feedback culture is highly valued and positive for the development of the organization. Everyone is invited to give honest feedback on important issues and decisions are only made by consensus. However, negative internal feedback delays decision processes significantly until a consensus is reached. In his environment this is beneficial because the organization has time to develop and valuable feedback is integrated in strategic decisions. In more hostile environments this would inhibit fast change and adaptations to competition and customers.

Finally, entrepreneurs in munificent (low hostility) environments are more likely to persist with a venture in case of bad overall performance of a new venture (DeTienne et al., 2008). It seems that entrepreneurs interpret the feedback with respect to the environment and rely on better times to come, which is more likely if munificence and growth potential is high. Negative overall performance of the organization might only be a temporary situation which will improve in the future (DeTienne et al., 2008). Thus, entrepreneurs seem to put less weight on negative internal feedback in low hostile environments than highly hostile environments, which affects the OI less and vice versa. Accordingly,

***Hypothesis 10c:*** *The higher the environmental hostility, the stronger the negative effect of negative internal feedback on a new venture's OI strength.*

Negative external feedback, however, does not indicate internal misalignment and therefore might affect the OI differently depending on the level of environmental hostility.

In the aforementioned case of the New York Port Authority (Dutton & Dukerich, 1991) the second phase of their actions dealing with homeless people reveals some effects of

competition (or the lack thereof). The Port Authority was running transportation-related facilities with little or no competition. Therefore, changes to their OI were not common and initial reactions to identity threats consisted of defending the OI. As the negative feedback continued and increased in strength, the organization was required to take actions and address the issues. It led to internal discussions about the Port Authority's treatment with the homeless people and negatively affected the OI. An identity conflict arose between those members who proposed an aggressive approach and those supporting a more humane solution. Ultimately, the OI of the Port Authority became subject to renegotiation.

Differently, Ravasi and Schultz (2006) observed that negative external feedback about the construed external image helped members of Bang & Olufsen to interpret changes in the industry and identity misalignment when competition increased. Even though the feedback was negative and the change was considered as threat, members acknowledged the need for change and it supported the reconstruction of a new identity in reaction to environmental changes. Thus, the phase of identity ambiguity was held at a minimum while the revised identity was clearer because it was supported by the initial feedback received from external parties in a more competitive environment. Competition and negative external feedback both triggered change processes and seemed to support each other to help the organization change. Similarly, in the case of the aforementioned corporate spin-off, external feedback forced managers and employees to renegotiate their assumptions about the identity to a much higher extent than when it was part of the parent company. It led to a more aligned and clear understanding about who the spin-off was (Corley & Gioia, 2004) without using the parent company as a reference point. Independent of the type of feedback (positive and negative), it helped the organizations to identify the current position in a hostile environment and supported the renegotiation of the OI by serving as reference points.

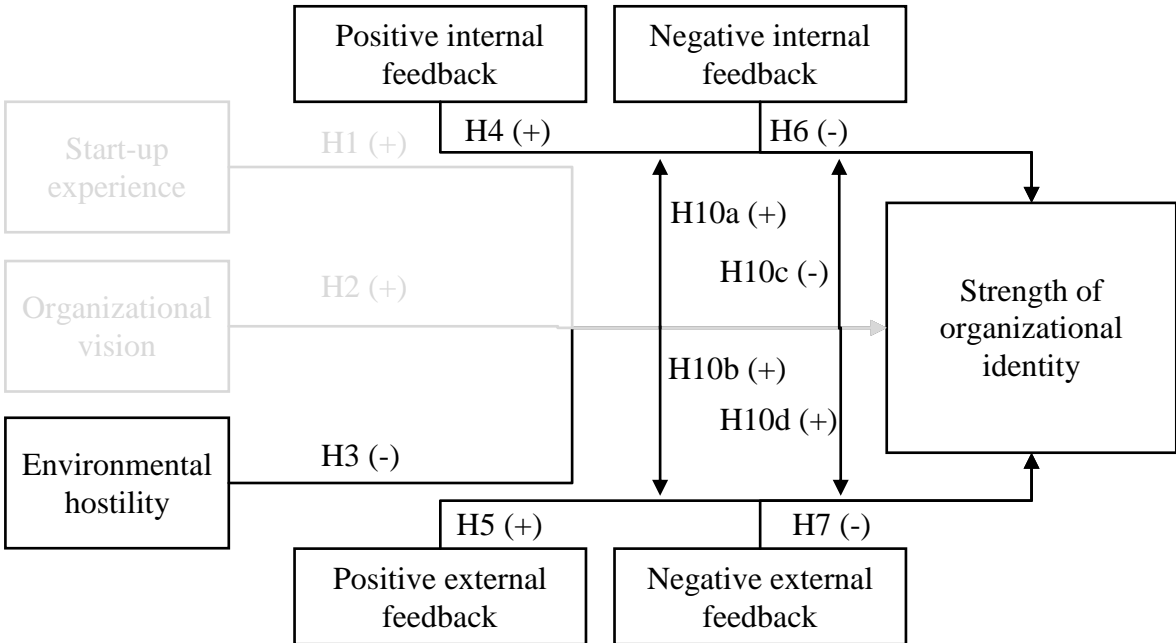
Similarly, founders of new ventures in this study explained that when operating in highly competitive environments feedback is closely tracked and managed by the employees. A founder of an online store for pets mentioned that if one specific negative feedback occurs more than once the organization needs to react to it to improve. They do systematic testing with users and continuously adjust their services in order to have a competitive advantage. Another founder of a transportation company highlighted the problematic feedback of railway customers about their bus services. Being very much aware about the complex public opinion about this topic at that time of opening the transportation monopoly, they actively engaged with critical customers to remain in the best possible light compared to other new entrants.

Moreover, the founder accepted that the company needed to be most customer-centric in order to be successful and that he was not representative. Therefore, he considered the customer feedback as extremely helpful to develop a service that fit best to the customers' expectations.

Thus, it seems that negative external feedback has a more positive (and thus a less negative) effect if environmental hostility is high. It seems that organizations in highly hostile environments are prepared to react on adverse events and use feedback to either solidify or realign their OI. Hence,

**Hypothesis 10d:** *The higher the environmental hostility, the weaker the negative effect of negative external feedback on a new venture's OI strength.*

The hypotheses are added to the model of OI strength in Figure 12. Due to reasons of readability, only the effects of environmental hostility are shown in addition to the main effects.



**Figure 12: The interactions of environmental hostility with feedback events on identity legitimization**

In summary, environmental hostility is hypothesized to support positive feedback. If competition is high, positive feedback is assumed to be valued even more highly than elsewhere and supports the OI. Negative external feedback on the other hand helps to

understand the current competitive position and to react accordingly because it is interpreted as more insightful in hostile environments and the renegotiation processes are accelerated by external pressures. In cases of negative internal feedback, however, negative effects are increased if hostility is high. Renegotiation processes in highly competitive environments with some internal misalignment are weakening the OI because members need not only address external competition but also internal issues. The effects of hostility are highlighted in Table 4.

Step for feedback interpretation and reaction	Types of feedback			
	Positive internal	Negative internal	Positive external	Negative external
Interpretation of feedback, comparison with OI			H(+)	H(+)
Legitimization of source of feedback				
Support of OI	H(+)		H(+)	
Decision about reaction				
Defense of OI				
Renegotiation of OI		H(-)		H(+)

**Table 4: Influence of environmental hostility on the organization's feedback interpretation and reaction, H = Hostility**

As mentioned in the introduction, emerging organizations require answers to the posed questions about their business models, their customers and ultimately about themselves. Having depicted the importance of organizational parameters on OI, the effects of internal and external feedback on OI in the process of OI legitimization, and the moderating effects of the organizational parameters in this process, the full model of this study is outlined. It aims to propose responses to how new ventures form and legitimate their OI – or put differently: how they advance from asking questions to giving answers.

In the next chapter, the data collection, the sample and the applied statistical methodology, which are used to validate the posed hypotheses, are described. As will be outlined, this dissertation is part of the larger Startup-EKG study.

### 3 Methodology

Purpose and main focus of the research study Startup-EKG<sup>4</sup> was accompanying new ventures over more than one year to investigate organizational development – more specifically the formation of organizational culture and OI. The longitudinal setting does not only allow drawing more solid assumptions about causality but also supports the investigation of reasons for change: It is essential for examining change processes demanded in current research (e.g., Gioia & Patvardhan, 2012).

Before focusing on the applied statistics method, the entire Startup-EKG study will be outlined, followed by a description of the sample and survey.

#### 3.1 The Startup-EKG study

Both, OI and organizational culture (OC) influence organizations through their effects on strategic decision making (e.g., Ashforth, Rogers, & Corley, 2011; Schein, 2010), overall performance (Sørensen, 2002), or affective commitment of organizational members (Foreman & Whetten, 2002). Accordingly, research and economy have recognized the importance of OI and culture. While the effects of culture and identity in mature firms are in focus (e.g., Foreman & Whetten, 2002; Sørensen, 2002; Voss, Cable, & Voss, 2006), the actual formation of culture and identity remains ambiguous. Only few studies have investigated the formation of the two phenomena (e.g., Gioia, Price, Hamilton, & Thomas, 2010; Schein, 2010).

This scarcity might be due to several reasons. First, there is no publicly available data on such intimate information, which results in the necessity to gather new data. Second, both OI and OC are constructs which change slowly. That is, when change is to be investigated, it seems to be necessary to have an observation period much longer than in most studies<sup>5</sup> using a similar approach. Third, in order to investigate causal relations and moderating effects, a large number of evolving organizations is needed to ensure statistical power.

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<sup>4</sup> EKG is short for "Erfolgsfaktor UnternehmensKultur in Gründungen" (Success factor organizational culture in new ventures).

<sup>5</sup> The examples in later sections using similar methods have 2 – 4 weeks periods for data collection (Liu, Mitchell, Lee, Holtom, and Hinkin (2012); Chen, Ployhart, Thomas Helena C., Anderson Neil, and Bliese (2011); Chen (2005); Bledow, Rosing, and Frese (2013); Bono, Glomb, Shen, Kim, and Koch (2013); Ilies, Johnson, Judge, and Keeney (2011)). They analyze phenomena like stress levels, satisfaction, team performance, affect or turnover intention.



To address these difficulties, the Startup-EKG study aimed to observe start-up companies in their initial stages using a longitudinal survey design. Many start-up companies focus on rapid growth and adapt their organizational structures and targets frequently to market requirements (Aldrich & Fiol, 1994; Short, McKelvie, Ketchen, & Chandler, 2009). Thus, OI and OC should develop in a fast pace compared to established organizations, which is essential because investigating the hypotheses requires changes. However, start-up companies pose some challenges in the research design. They typically work in highly competitive and innovative environments, have to cope with high uncertainty, and are in a constant fight for survival and success (e.g., Aldrich & Fiol, 1994). This binds founders' and employees' capacities and makes them unwilling to invest significant amounts of time in responding to surveys. Moreover, as start-ups are in constant change, many new organizational members join and leave even during short periods of time. The study was designed to overcome these challenges and criticism regarding research about new ventures, that is, primary data, longitudinal data, and statistical power. Following the outlined approach has several advantages. New organizations change frequently and rapidly compared to established ones with significant decisions made in the first years of existence (Bamford, Dean, & Douglas, 2004; Short, McKelvie, Ketchen, & Chandler, 2009). Moreover, start-up ventures are still establishing their organization and position in markets and are strongly influenced by external factors, making their development volatile (e.g., Czarniawska & Wolff, 1998; Delmar & Shane, 2003). Hence, a combination of cross-sectional and longitudinal analysis is most suitable and demanded by research (Chandler & Lyon, 2001; Davidsson & Gordon, 2012; Davidsson, Low, & Wright, 2001; Holcomb, Coombs, Sirmon, & Sexton, 2009; Ireland, Webb, & Coombs, 2005).

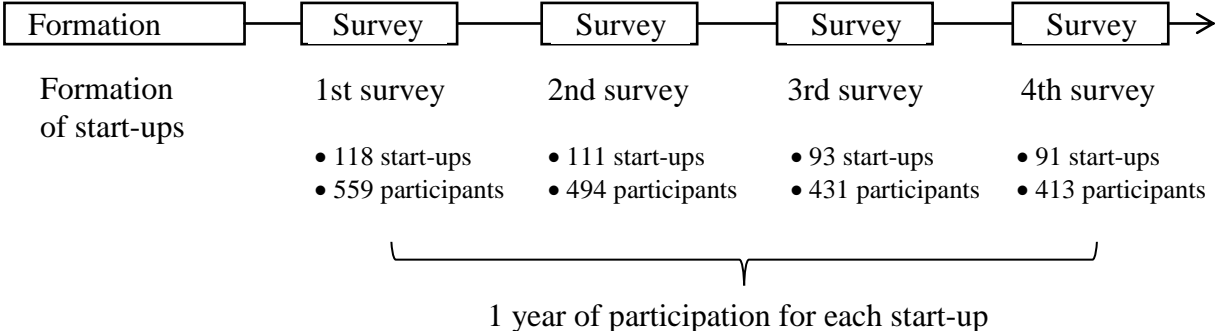
The following sections outline the research design including duration and number of participating organizations and the project schedule before describing the research team and how it addressed the described challenges.

### **3.1.1 Research design – Longitudinal survey study**

The Startup-EKG research design included a longitudinal survey in which each participating company was asked to answer questionnaires every 4 months over a period of one year. This resulted in a total duration of one year for each participant and 1.3 years for the whole study because not all start-ups were asked at the same time. The core questions did not change during the study to analyze a change in answers, the amount of change and the reason why. In

addition, the initial survey end included questions about the background of the participants, which were stable during the study e.g., year of birth and gender.

Figure 13 illustrates the longitudinal aspect of the research design and summarizes participation numbers. They are further explained in the following sections.



**Figure 13: Research design of Startup-EKG study**

The research design is also subject to consideration with regards to the targeted statistical power (1-β). While α refers to the type I error of wrongly rejecting H<sub>0</sub>, the statistical power 1-β describes the probability of mistakenly assuming that there is no effect and thus the type II error of the false assumption that H<sub>0</sub> cannot be rejected. An acceptable value of α is a value smaller than 0.05 while a high statistical power is denoted by β < .2 (Cohen, 1992). A rough estimation of the necessary sample size and thus the research design in order to ensure statistical power can be calculated as a function of significance level, effect size and standard errors (Snijders & Bosker, 1999). In a first step, the maximum standard error for a targeted statistical power has to be determined by following equation (3-1). z refers to the z-scores of a normal distribution.

$$\frac{\text{effect size}}{\text{standard error}} \sim (z_{1-\alpha} + z_{1-\beta}) = (z_{1-\alpha} - z_{\beta}) \tag{3-1}$$

With the mentioned values α = 0.05 and 1-β = 0.8 and an assumed effect size of 0.4, the standard error should be smaller than 0.16.

$$\text{standard error} \leq \frac{0.4}{1.64 + 0.84} = 0.16 \tag{3-2}$$

The number of observations directly influences the size of the standard errors. In simple regressions the proposed sample size is a function of the standard deviation and the standard error (Snijders & Bosker, 1999).

$$sample\ size = \left( \frac{standard\ deviation}{standard\ error} \right)^2 \quad (3-3)$$

The standard deviation can be calculated conservatively through dividing the possible scale items by the number of all answers (Bartlett, Kotrlik, & Higgins, 2001). Using a 7-point Likert scale and 6 standard deviations (3 to each side of the mean, resulting in 98% of all answers) would lead to a standard deviation of 1.17.

As this study contains multiple levels, namely within-firm and between-firm (see section 3.4.1 below), the result needs to be adjusted in order to reflect the different levels of analysis. Snijders and Bosker (1999) propose to calculate a design effect based on the intraclass correlation<sup>6</sup> of the studied variable and multiply the sample size with this number.

$$design\ effect = 1 + (n - 1) * ICC \quad (3-4)$$

With an assumed standard deviation of 1.17 on a 7-point Likert scale, 3 clusters of data (4 survey rounds, data from two rounds are combined to one data cluster) and an estimated ICC of 0.25<sup>7</sup>, the design effect is 1.5, which leads to a necessary sample size of

$$necessary\ sample\ size = design\ effect * sample\ size = 2 * \frac{1.17^2}{0.16^2} = 80 \quad (3-5)$$

Thus, with a sample of 80 organizations participating in three clusters, the required statistical power would be reached. To reflect the uncertainties in the estimations of standard deviation, ICC, and effect size as well as a likely panel mortality, the targeted number of participating organizations is 100, which is also a preferred higher level sample size in multilevel studies (Hox, 2010).

The actual respective numbers of this study, which are explained in later sections, are 0.61 for ICC, on average 2.6 observations per organization and, most importantly, 0.71 for standard deviation. This leads to a necessary number of 39<sup>8</sup> firms.

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<sup>6</sup> Intraclass correlation is defined as the proportion of variance between firms with regards to the total variance. It is further detailed in 3.4.1.1 Unconditional means model (Null model)

<sup>7</sup> Hedges and Hedberg (2007) propose an ICC value assumption between 0.15 and 0.25 for randomized trials in education studies. As new ventures might differ more than scholars, the highest recommendation is assumed to be more conservative.

Yet, even though calculation models exist to calculate the minimum sample size in a multilevel setting, there is no agreement on the correct amount of observations on each level (Holcomb et al., 2009). While some suggest a sample size above 10 for both level 1 and level 2 (e.g., Snijders & Bosker, 1993), more recent research concludes that smaller numbers of observations per firm are sufficient for the investigation of cross-level interactions when the number of firms is high (Maas & Hox, 2005; Scherbaum & Ferrerter, 2009). Accordingly, Mathieu, Aguinis, Culpepper, and Chen (2012) review 79 multilevel models in the *Journal of Applied Psychology* (2000-2010) with a median L2 sample size of 51 and a median L1 sample size of 5.

In this study the relatively small number of three observations per firm (L1) is compensated by a large number of 98 firms (L2). Moreover, statistical power is more than sufficient to test the research model (see above). Still, if statistical power should be an issue, it would lead to type II error and thus an underestimation of effects due to large standard errors (Hofmann, Griffin, & Gavin, 2000). This would make the conclusions of this study more conservative.

### **3.1.2 Project schedule**

The Startup-EKG study started in January 2013 with the definition of the study and survey design. After a short initial acquisition phase, further acquisition of participating companies continued in parallel to the start of the first survey round. The survey started in July 2013 and the fourth and last round of data acquisition finished in October 2014. Each round consisted of a short preparation phase and the online survey. During the three-week preparation phase, the key members of the participating start-ups were contacted to gather feedback as well as an updated list of participants with information on participants who left the organization and those who joined recently. At the end of the study, each participating company received detailed feedback about the development of their company compared to their benchmark group. An example is attached in appendix 8.5. The full study schedule is illustrated in Figure 14.

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<sup>8</sup> Design effect =  $1+(2.6-1)*0.61 = 1.976$ ; sample size is  $(0.71/0.16)^2=19.69$ ; number of firms is  $1.98*19.69 = 38.91$

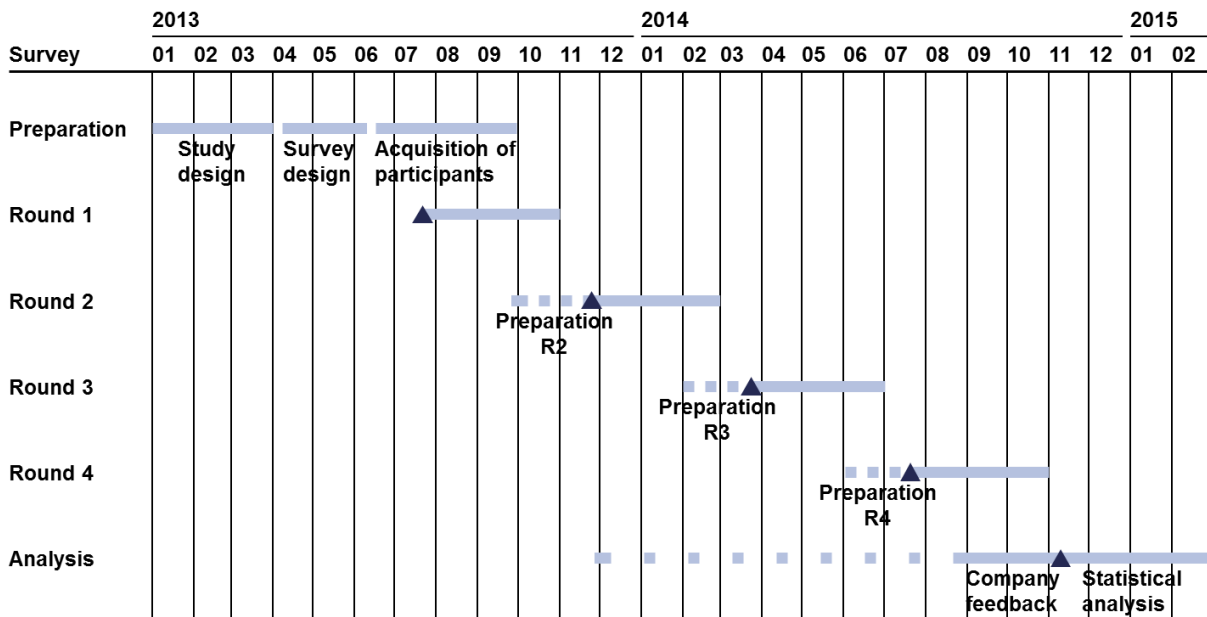


Figure 14: Schedule of Startup-EKG Study

### 3.1.3 Research team

The Startup-EKG study was conducted at the Entrepreneurship Research Institute of TU Munich and supervised by Prof. Dr. Dr. Holger Patzelt together with Prof. Dr. Anne Domurath from Wilfrid Laurier University, Waterloo, Canada. It was prepared and managed by the doctoral students Dipl. Ing. Andreas Liebl and Dipl. Kfm. Stefan Drüssler as part of their dissertations. In total, 17 students supported the research team in this study directly. They finished 9 bachelor theses, 4 master theses and successfully completed 2 project studies in teams of 2 students. Moreover, 21 students worked together with the participating start-up companies in project studies or as part of their master thesis.

## 3.2 Sampling

The following sections highlight the approach to acquire participants and explain commonalities and differences of the teams. All sample statistics are based on the final list of 98 participating start-ups and their respective 1830 individual responses which are entered into the statistical analysis.

### **3.2.1 Acquisition of relevant start-ups**

The focus of the Startup-EKG study was the participation of young and innovative ventures operating in dynamic environments in Germany. As discussed in section 2.2.2, strict criteria for the age of the start-ups are difficult to justify because there is typically no clear transformation from an activity of the founders to a professional occupation. The duration of informal operation before the official foundation is usually not available and thus not counted as part of the organizations age. The focus of this study was on emerging ventures up to five years old (foundation in 2008). However, one venture was "re-founded" after bankruptcy while the initial founding was in 2006. Another one started in 2007 but greater operations began only in 2008.

Potential participants were identified through various sources. At first, incubation, technology and entrepreneurship centers, which are built to attract and support new ventures, as well as business angels in Munich and Berlin were collected (Appendix 8.2). All start-ups on the respective homepages built the initial long list. Munich and Berlin were selected because they are considered as the entrepreneurial "hot spots" in Germany (Bundesverband Deutsche Startups e.V., Ripsas, & Tröger, 2014). In addition, the ventures in the start-up databases of two leading German online entrepreneurship portals, which focus on innovative and young start-ups, were added (DS Media GmbH, 2013; Vertical Media GmbH, 2013). This way, also start-ups outside the incubation centers were regarded. The business angels were contacted and asked if any of their Germany based start-ups might be interested in joining this study. In total, 1296 start-ups were identified.

The incubation centers were visited in person to check the correctness of the list of ventures. Both, centers and online portals, had a lot of start-ups that did not exist anymore or new start-ups that were not yet on the list. For example, when visiting the incubation centers there were always between 10% and 20% of start-ups which were neither on the homepage of the center nor in the online databases but were located in these centers (or vice versa) and had to be added or removed from the list. In addition, start-ups, which did not exist anymore, and which were founded prior than 2008 were deleted from the initial list.

This resulted in a final list of 565 start-ups, which were either visited if they were accessible in incubation centers or called by phone and which received the info package about the study. If they could not be reached by phone or no phone number was available, an email was sent to the company explaining the Startup-EKG study. The info package can be found in appendix 8.3. Out of these 565 companies 128 start-ups agreed to participate which represents a

response rate of 22.8%. However, 9 start-ups that agreed to participate did not answer in any round, 8 only participated in the initial round, and 14 start-ups were excluded due to a lack of founder participation or very low overall participation during the first 2 rounds of the survey. Thus, 98 start-ups remained as participants of the study representing a response rate of 15.4% in terms of firms contacted. These ventures represent the full sample available for statistical analysis.

### 3.2.2 Sample description on company level

Out of the 98 companies that are used in the statistical analysis 71 are located in Munich and 26 in Berlin. One start-up is based in Frankfurt; a recommendation by a business angel from Berlin. In the statistical analysis, it is controlled for city to account for potential differences. Simple t-tests result in no significant differences for firm age ( $p > .1$ ). However, Munich based start-ups are on average larger than Berlin based start-ups ( $p < .05$ ).

54 start-up companies are working in the IT industry. As displayed in Figure 15, 22 firms focus on software development, 10 operate web portals, 8 have e-commerce platforms, another 8 develop mobile applications and 6 focus on advanced analytics. The other start-ups either work in high-tech (12), consulting (8), energy (6), or in other industries (5 in media, retail, and finance and 3 in pharma or medical industry).

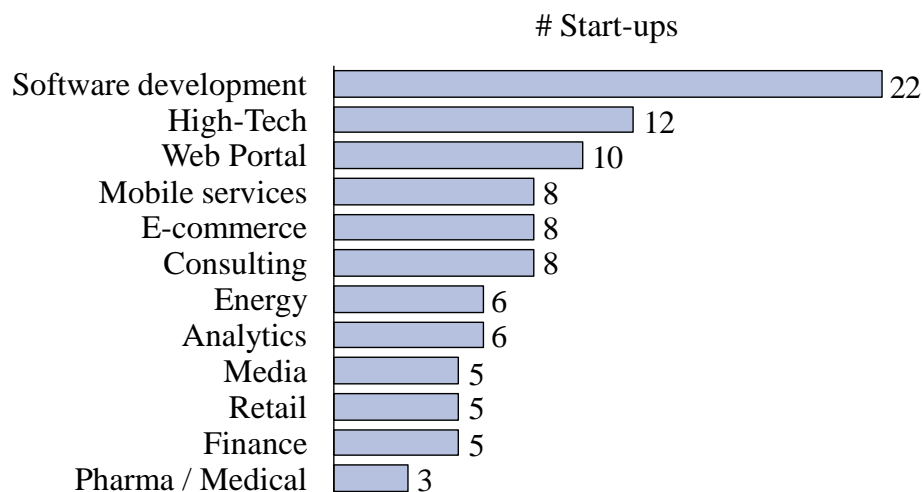
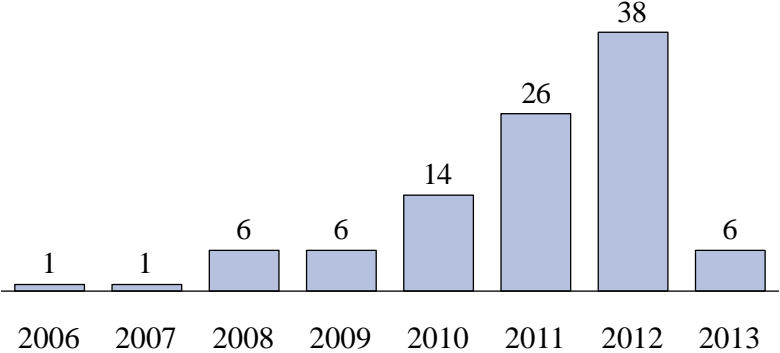


Figure 15: Distribution of industries

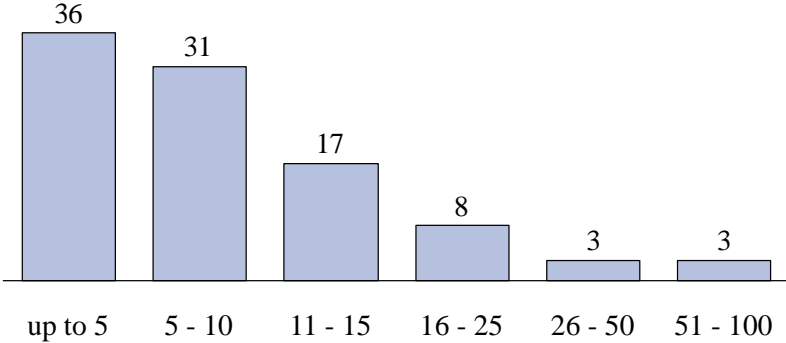
At the beginning of the study, the average age of the start-ups is 2.1 years (standard deviation 1.4 years) with 6 start-ups founded in the year of the first 3 rounds of the study (2013), 38 start-ups founded in the year before the study (2012), 26 start-ups founded in 2011, 14

ventures from 2010, and 6 companies from 2009 and 2008. As explained earlier, 2 start-ups are officially founded before 2008. The distribution of start-ups in age groups can be seen in Figure 16.



**Figure 16: Distribution of start-ups in age groups in the initial survey round**

The average start-up has 11.0 members at the beginning of the study (standard deviation: 13.3) and grows on average over the observation year by 3.3 employees. Most (36) start-ups start with 1-5 members in the organization. 31 start-ups have between 5 and 10 members in the initial round of the survey. The remaining 31 start-ups split up into 17 which have between 10 and 15 members, 8 which have up to 25, 3 with up to 50 and 3 which have between 51 and 100 members in the initial round. The distribution of the initial number of employees is displayed in Figure 17.



**Figure 17: Distribution of initial company size**

While the absolute growth might seem small, relative numbers are impressive. The individual growth rate of a participating start-up is on average 35% with large variation. While the worst



performing start-up loses 80% of its members, the best grows by 300%. This confirms that start-up companies can experience significant organizational changes during one year, which also suggests that substantial changes in OI or OC should take place.

The average founding team size is 2.4 members (standard deviation: 1.0) which is in congruence with other studies, e.g., 2.5 in Breugst, Patzelt, and Rathgeber (2015), 2.3 in Bundesverband Deutsche Startups e.V. et al. (2014), or 2.3 in Ucbasaran, Lockett, Wright, and Westhead (2003). Only 15 start-ups are founded by single entrepreneurs, whereas 83 ventures have 2 or more founders. An overview about each start-up can be found in the appendix 8.1.

**3.2.3 Sample description on individual level**

In total 1830 responses of 696 individuals in 98 start-ups have been collected. Seventy one percent of all participants are male and 29% are female. When splitting the participants in founders and employees, almost all founders (94% of 197) are male while 42% of all 499 employees are female. This skewed gender distribution of founders is in line with the general start-up ecosystems in high income countries (Allen, Elam, Langowitz, & Dean, 2008; Kelley, Singer, & Herrington, 2012).

Age statistics show very similar results for founders and employees. All participants are comparatively young. On average, founders are 32.0 years old (standard deviation: 6.9 years). Employees are younger with an average of 29.5 years (standard deviation: 6.9 years). Founder age ranges between 21 years and 69 years, and employee age between 18 and 65 years as summarized in Figure 18.

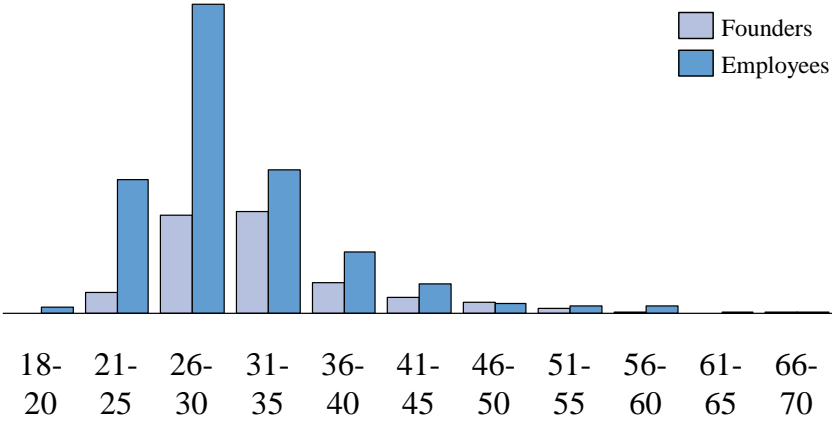
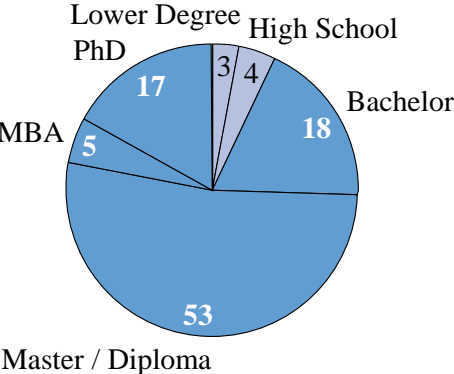


Figure 18: Age distribution of participants

Both groups are well educated with 93% of all founders and 71% of all employees having completed higher education. Seventeen percent of all founders hold a doctoral degree, 5% an MBA, 53% a Master's Degree or Diploma and 18% a Bachelor's degree as their highest education. Four percent completed high school and 3% responded to have a lower degree or apprenticeship as their highest education. On the other hand, only 2% of employees have a doctoral degree. Two percent own a MBA, 40% a Master's degree or Diploma, and 27% a Bachelor's degree. Sixteen percent finished high school, 10% have a lower degree or an apprenticeship, and 3% hold other degrees. The data of 1 founder and of 8 employees were not valid. The educational background is depicted in Figure 19.

### Founders

n = 196



### Employees

n = 491

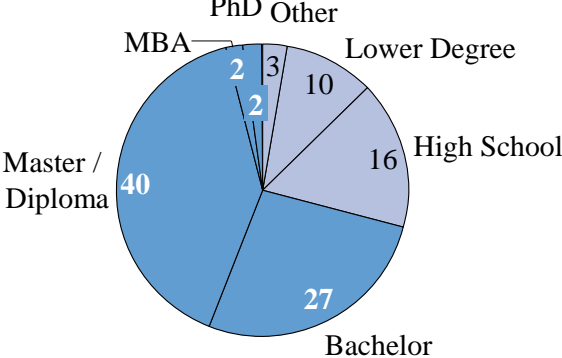


Figure 19: Educational background of participants

### 3.3 Survey design

As explained in chapter 3.1.1, the target was to attract and retain 100 start-ups to participate in a study lasting for more than a year to investigate organizational changes, their effect size and reasons. Due to significant changes in the early stages of a company's life cycle and the effort to attract members of these organizations to participate during the whole study (or as long as they are members of the respective organization), acquisition strategies, survey design, and survey elements received special attention.

This chapter explains the survey development and procedure before focusing on the survey elements and validity criteria. The chapter is based on all start-ups that participated in the

Startup-EKG study. For the statistical analysis (chapter 3.4 below), start-ups that did not participate in at least two consecutive rounds are removed from the sample.

### **3.3.1 Survey procedure and administration**

The survey was conducted in four waves. As described in the sample description, founders of 565 new ventures were contacted personally, by phone, or by mail. The founders were asked if they were interested in participating in the Startup-EKG study and if they would be willing to provide a list of their employees to also participate in the study. In total, 128 or 23% of the start-ups agreed to take part in this study and sent lists of the members of their organizations. Before each round started, the founders of all participating companies were asked to update the list of company members. This procedure had several advantages. First, due to the fast growth of some start-up companies it was ensured that all members of the organizations received the survey. Second, correct retention rates could be calculated by acknowledging a high turnover rate of temporary or student workers. Finally, contact to the founders was retained such that they could promote the survey internally.

#### ***3.3.1.1 Survey administration***

Once the list of participants was created or updated, founders and employees received a personalized email invitation to participate in the survey. The invitation was sent ~3.5 months after completion of the previous round for each participant to account for a median time of survey completion of 8 days and thus giving a time span of 4 months between rounds. New participants received their invitation at the beginning of each round. After 2-3 weeks a first reminder was sent to all participants who did not answer. This was followed by further reminders until two days before the end of the round. At the end of each round a personal email expressing the team's appreciation of their participation was sent to all participants. Those who did not answer the survey additionally received a final opportunity to participate. Exemplary emails can be found in appendix 8.4. This process is illustrated in Figure 20. In parallel, the founders of companies with low rates of participation were called and asked to promote the study internally to increase overall participation. These calls typically helped to receive another 5% of completed surveys.

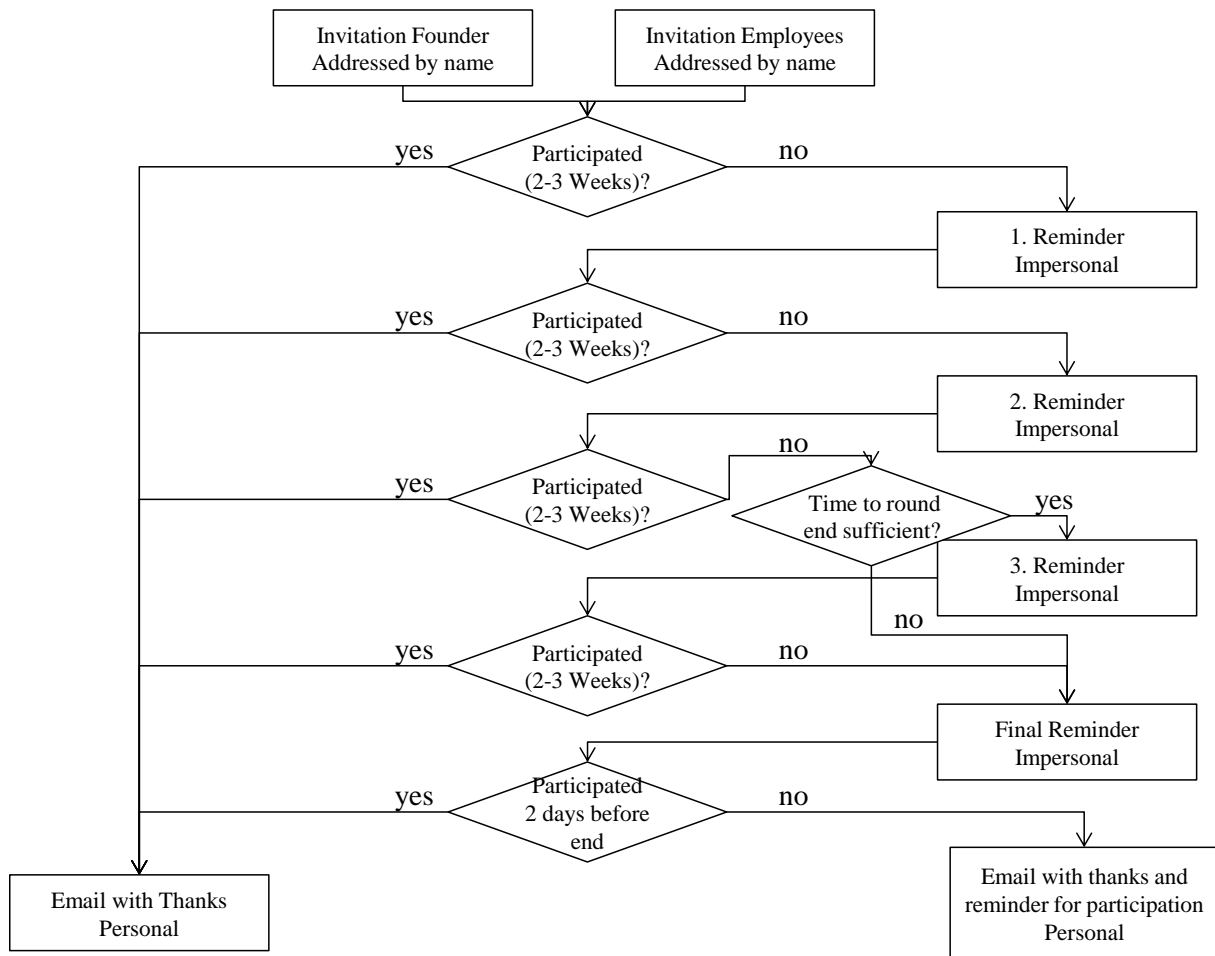


Figure 20: Process of participant communication during the survey

### 3.3.1.2 Participation statistics

In total, 1026 individuals of 128 firms have been invited to join the Startup-EKG study. Starting from an initial list of 763 members of start-ups (round 1), 263 joined the companies at later stages of the study (rounds 2-4). Overall, thanks to the personal support of at least one founder, the study had an overall response rate of 72%<sup>9</sup> (or a corresponding non-response rate of 28%) in terms of individuals contacted, which is high compared to other studies. For example, Baruch (1999) reviewed 175 empirical studies using surveys and concluded that the average response rate was 56% (standard deviation of 20%) in managerial and behavioral sciences. Questionnaires involving top management had response rates of 36% (standard deviation of 13%). In another review about the response rates from small and entrepreneurial

<sup>9</sup> Non-response rate is calculated as participants who answered at least once divided by all invited people

firm, Bartholomew and Smith (2006) found an average response rate of 27% in 154 studies. They explained comparatively low response rates in entrepreneurial and small firms with less slack of resources and a "CEO effect" (Bartholomew & Smith, 2006, p. 85).

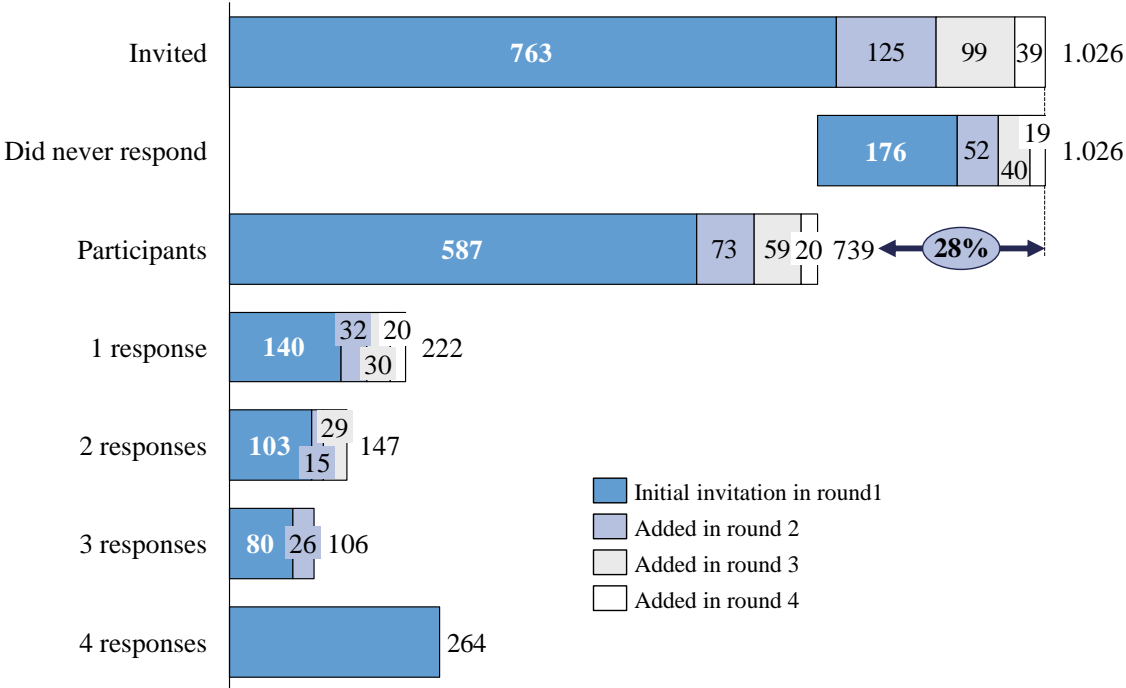


Figure 21: Response rates of participants

Of the 739 participants, 339 responded in each round<sup>10</sup>, 125 did not answer in one round, 135 did not respond in two rounds and 140 participated just in the initial round as illustrated in Figure 21. One reason for dropouts is changes in the occupational status. In total, 125 participants left their respective companies during the study. Initially, 118 companies participated in round 1 (out of 128 invited firms). In round 4, 91 start-ups still participated. A detailed summary of participation statistics is given in Figure 22 for individual members and in Figure 23 for participating companies.

<sup>10</sup> 4 times for participants starting in round 1, 3 times for participants added in round 2, 2 times for those added in round 3 and once for those added in the final round.

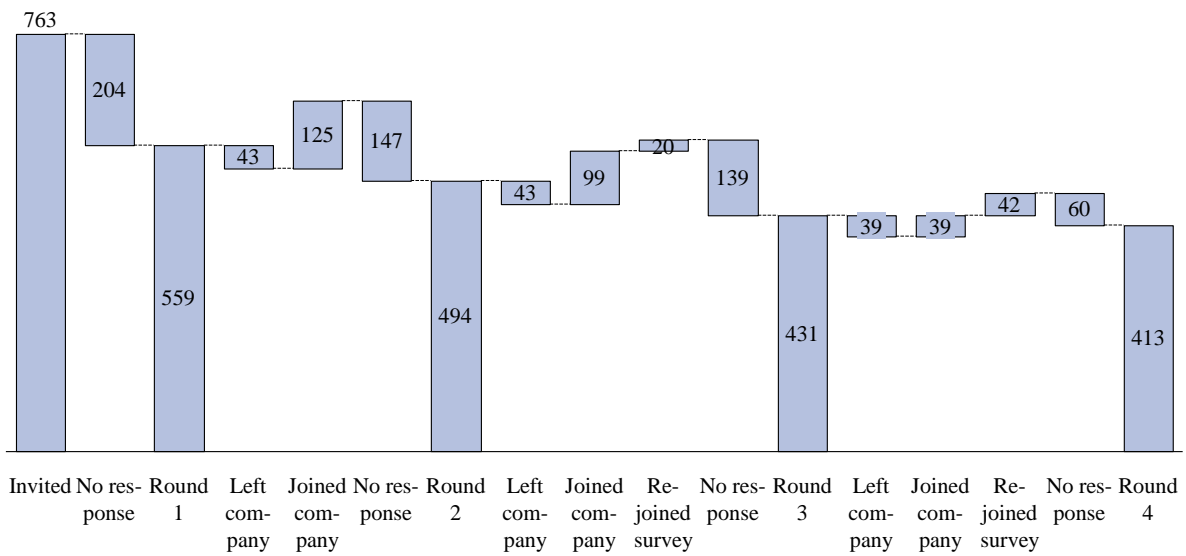


Figure 22: Participation of individuals in the Startup-EKG study

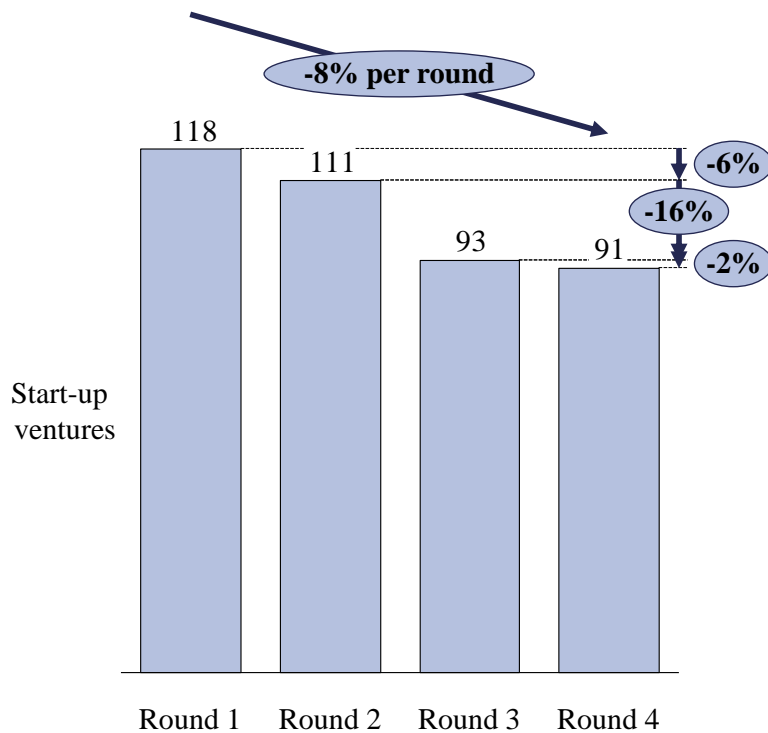


Figure 23: Participation of companies in the Startup-EKG study

Several statistics provide insights into how the panel developed over time. The attrition rate describes how many participants of the first round dropped out during the study and did not

complete the final round. Overall, 311 participants of 559 respondents in round 1 completed the last survey while 248 dropped out. This results in an individual attrition rate of 44%. On the firm level, 75% of firms did continue to participate until the end of the study, resulting in a firm level attrition rate of 25%.

Participants who did answer one round are split into three groups. They are invited to the next round and complete the survey of the following round (retention), they are invited and do not respond despite an invitation (non-response), or they left the company and are thus excluded from the survey (leave).

The retention rate measures how many respondents of one round participate in the next irrespective of reasons for turnover during the rounds (e.g., due to new hires or employees leaving firms). Hence, it provides the unadjusted retention of respondents. The overall retention between two consecutive rounds was 70% to 80%. In the second round, 74% of the first round participants were retained. However, from round 2 to 3 the rate dropped to 70%. The highest retention rate occurred between round 3 and 4 where 80% of all participants were retained.

The non-response rate describes how many participants who answered the survey in one round and were invited in the next round did not answer the survey in the following round. While the retention rate provides information on how many participants did answer over time, the non-response rate shows how many did not respond despite an invitation. Thus, it acknowledges that some participants left the company while keeping the new participants excluded. The non-response rate was 18% between rounds 1 and 2, 21% between round 2 and 3, and 11% between round 3 and 4.

The amount of participants leaving their organization is 8% between round 1 and 2, and 9% between round 2 and 3 as well as between round 3 and 4. Thus, while the leave rate stays constant over all rounds, the non-response rate explains most of the variation in retention.

Consolidated dropout rates show the proportion of respondents who dropped out between two rounds of data acquisition or – in other words – the dropout rate considers the retained and the newly added participants. It simply shows the differences in participation numbers without splitting the difference into its components (dropped out, left organization, joined organization). The dropout between round 1 and 2 and between round 2 and 3 were substantially higher than after round 3 which is mainly due to the low nonresponse rate for the

last round. Tests for nonresponse bias which do not indicate any bias are described in section 3.3.3.4.

Retention, leave, nonresponse and drop-out rates are summarized in Table 5.

<i>Rates</i>	<i>Calculation</i> <sup>11</sup>	<i>Round</i> <i>1/2</i>	<i>Round</i> <i>2/3</i>	<i>Round</i> <i>3/4</i>
Retention	$\frac{\text{Part. (t - 1 \& t)}}{\text{Part. (t - 1)}}$	74%	70%	80%
Leave	$\frac{\text{Not invited (t)}}{\text{Part. (t - 1)}}$	8%	9%	9%
Non-response	$1 - \frac{\text{Part. (t - 1 \& t) + Not invited(t)}}{\text{Part. (t - 1)}}$	18%	21%	11%
Drop-out (consolidated)	$1 - \frac{\text{Part. (t)}}{\text{Part. (t - 1)}}$	12%	13%	4%

**Table 5: Participation rates for the survey**

### 3.3.2 Variables

The survey was designed to investigate changes in organizational characteristics critical to the theoretical model. The first section of the survey was sent to all participants in each round and contained measures of OC, OI strength, job satisfaction, feedback events, as well as job characteristics that were assumed to change over time.

The second part consisted of firm variables (e.g., performance, number of employees, age) and environmental characteristics (e.g., hostility). In every round, these items were only sent to founders who were in a position to appropriately answer the questions.

The last part included measures of constant characteristics, which participants were asked to fill out only once. For example, these measures include information on education, age, previous work experience, and gender. The specific items and measurement scales which

<sup>11</sup> Part. = Participants



have been used in this study are described in the following sections. Moreover, reliability tests and the process of variable construction are presented.

### **3.3.2.1 OI strength**

As described earlier, OI is defined as having several characteristics: distinctiveness, centrality and continuity. While the distinctiveness of OI is an important dimension for comparing and describing an OI in detail (e.g., Gioia & Thomas, 1996), the theoretical model of this study is more focused on centrality and the change of OI.

The perceived strength of OI was measured by asking members of the organization different aspects about how strong and unique they perceive the OI as irrespective of the distinctive characteristics of the OI using an adapted version of Milliken's 6 item scale (Cole & Bruch, 2006; Gioia & Thomas, 1996; Milliken, 1990). Thereby, as previously noted, not OI "*as such*" (Ravasi & Canato, 2013, p. 189) but the perceptions of members of the organizations were subject of investigation. Milliken (1990) developed the scale to assess the role of identity in interpretation and response to environmental changes of colleges. Further, Gioia and Thomas (1996) used this scale to investigate if OI strength mediates the relationship of information processing and strategic issue interpretation in a college study. The six items included questions like "*To what extent do your institution's administrators have a sense of pride in the institution's goals and missions?*" or "*To what extent do the top management team members of your institution have a strong sense of the institution's history?*" The original items were adjusted so that "administrators" was replaced by "employees" and "college" or "institution" were substituted by "companies" or "organizations". The participants expressed their agreement to the statements on a 7 point Likert type scale ranging from 1 = "Not at all" to 7 = "Very high".

A confirmatory factor analysis supports the scale items and the construct resulting in an Eigenvalue of 2.03 followed by .08 for a second factor. Yet, one reverse coded item ("*To what extent do the top management team members not have a well-defined set of goals or objectives for the company?*") is dropped due to a very low factor loading. The Cronbach's alpha is .76, which is of the same magnitude as in previous research (.79, Milliken, 1990; .82, Gioia & Thomas, 1996; .77, Cole & Bruch, 2006). Since the items are phrased to measure identity as an organizational characteristic, all individual answers are aggregated to a firm level OI strength variable. The median interrater reliability  $r_{wg(j)}$  indicates how consistent

individuals are in their answers to the same question<sup>12</sup> and can be used as a test for aggregation decisions (James, Demaree, & Wolf, 1984). The interrater reliability for this study per round and firm is  $r_{wg}(j) = 0.91$ , which is similar to the values reported in other studies (e.g., 0.90; Gioia & Thomas, 1996). Moreover, the median interrater reliability  $r_{wg}(i)$  represents the reliability of answers of different individuals per firm and round. The  $r_{wg}(i)$  of the OI measure is .86 in this study, which is in line with other multilevel studies using aggregated data (e.g., Judge & Bono, 2000; Wang, Liao, Zhan, & Shi, 2011). The items used in the analysis are summarized in Table 6.

<i>Item</i>	<i>To what extent ...</i>
1	.. do the top management team members of your company have a strong sense of the company's history?
2	...do the employees have a sense of pride in the company's goals and missions?
3	...do employees feel that your company has carved out a significant place in the market?
4	...does your company have employees who are knowledgeable about the company's history and traditions?
5	...does your company have employees who identify strongly with the company?

**Table 6: Summary of items for OI strength used in this dissertation**

### ***3.3.2.2 Founding team's start-up experience***

All entrepreneurs were asked to provide the number of previously founded start-ups in the survey. The start-up experience of founders who did not participate in the survey was gathered in two ways. As founders' start-up experience is an important asset of the company, this information is available in most cases on the homepage of the company. Moreover, each founder shares his/her experiences on professional networks like LinkedIn or the German pendant Xing. Using all of these data sources, the start-up experience of all team members

<sup>12</sup> Typically,  $r_{wg}(j)$  measures the within group variance, thus the interrater agreement of items in one scale. In this case,  $j$  refers to the number of rounds and  $r_{wg}(j)$  assesses the interrater agreement of the answers in all rounds of one item.

was aggregated to receive a firm level variable. The foundation of the current start-up was excluded from the measure. A founding team's start-up experience was used in the original metric (number of all ventures previously founded by all team members) as 0 is a meaningful number and can be interpreted.

### 3.3.2.3 Organizational vision

Organizational vision was assessed with the shortened version of Denison's Organizational Culture Survey (DOCS; Fey & Denison, 2003). The DOCS survey was designed to describe characteristics of organizational culture, which impact different performance parameters and was used and validated in over 48 countries (Denison Consulting, 2012) in over 1000 companies (Denison Consulting, 2015). It consists of 36 questions on 12 characteristics of Organizational Culture. One characteristic is company vision measured as the perception by the members of the organization. The items included *"We have a shared vision of what this organization will be like in the future"*, *"Leaders of this organization have a long-term orientation"*, and *"Our vision creates excitement and motivation for our employees"*. A 7 point Likert type scale was used to rate the respondents agreement with the statements from 1="Strongly Disagree" to 7="Strongly agree". The alpha of .84 is in line with previous research (.79, Denison, Janovics, Young, & Cho, 2006, 5 item scale). Further, following Denison et al. (2006), the items are aggregated on a firm level. The interrater reliability values of median  $r_{wg}(j) = .88$  and median  $r_{wg}(i) = .78$  support the aggregation. To conduct further analyses, the scale is centered around the mean. The items are summarized in Table 7.

<i>Item</i>	<i>Please indicate how much you agree with the following statements with respect to your company.</i>
1	We have a shared vision of what this organization will be like in the future.
2	Leaders of this organization have a long-term orientation.
3	Our vision creates excitement and motivation for our employees.

**Table 7: Summary of items for organizational vision used in this dissertation**

### 3.3.2.4 Environmental hostility

Environmental hostility was measured with the 6 item scale used by Green et al. (2008). Exemplary questions are *"The failure rate of firms in my industry is high"* or *"Competitive intensity is high in my industry"*. Participants indicated their agreement with these statements on a 7 point Likert scale ranging from 1="strongly disagree" to 7="strongly agree". The internal consistency of the scale was  $\alpha=.68$ , which is similar to Green et al.'s (2008) reported value of .71. In the survey, only founders assessed the company's environment. In case two or more founders participated, their answers are averaged. As for organizational vision, the variable is centered around the mean. The items are summarized in Table 8.

<i>Item</i>	<i>To what extent do you agree or disagree with each statement as it applies to your organization's principal industry?</i>
1	The failure rate of firms in my industry is high.
2	My industry is very risky, such that one bad decision could easily threaten the viability of my business unit.
3	Competitive intensity is high in my industry.
4	Customer loyalty is low in my industry.
5	Severe price wars are characteristic of my industry.
6	Low profit margins are characteristic of my industry.

**Table 8: Summary of items for environmental hostility used in this dissertation**

### 3.3.2.5 Feedback events

Feedback events were gathered by asking each participant if any significant negative or positive event happened to the organization in the past three months (following the previous round of data acquisition to avoid overlaps of events between rounds). They were free to respond anything they thought was an important event. In total, participants described 1463 events. After data collection, the answers were coded independently by two researchers and clustered into groups. The events were either identified as positive or negative internal feedback (e.g., accomplishment of targets, leaving employees, financial problems), external feedback (e.g., positive/negative press, customer feedback, new/lost customers) or other actions of one or more members of the organization or events (e.g., participation in

competitions, organizational changes, move of headquarters, firm events). The overall intercoder agreement for feedback events was 81%. Each discrepancy was discussed until consensus was reached. Overall, 68% of all answers are coded as feedback, while 16% are actions (mainly firm celebrations) and 16% are other events (mainly moves of headquarters). An overview about the clustered events is given in Table 9.

<i>Overview about event types</i>			
<b>Events</b>	<b>Description</b>	<b>Examples</b>	<b>Response</b>
Positive internal feedback	Positive result of business operations, which manifests internally and is not further attributable to one specific action	Target achievement, advances in organizational development	21%
Negative internal feedback	Negative result of business operations, which manifests internally and is not further attributable to one specific action	Important employees leaving, financial distress	11%
Positive external feedback	Positive result of business operations, which is received from outside the company and is not further attributable to one specific action	Positive articles, positive customer feedback	29%
Negative external feedback	Negative result of business operations, which is received from outside the company and is not further attributable to one specific action	Losses of large customers, customer complaints	7%
Positive actions	Confirmation of the OI through trying out one specific action which aims to receive either internal or external confirmation	Successful participation in competitions, Internal firm event	15%
Negative actions	Rejection of the OI after trying out one specific action which aims to receive either internal or external confirmation	Difficulties in cooperations, failed/disappointing search for a new investor	1%
Other	Unswayable developments or actions which have been conducted without the purpose (or unclear target) of getting confirmation	Move of headquarters, supplier bankruptcy	16%

**Table 9: Clustered events into feedback, actions and other events**

In a second step, all events are aggregated to the firm level by building the proportion of all individuals responding with the same event divided by all participating members of each organization in each round. That way, the relevance and salience of an event to the whole organization is assessed. For example, if only one out of 10 participants of an organization or 10% responds that the company received positive external feedback then it can be assumed that this feedback is not central to the organization as a whole. In contrast, if 24 out of 35 participants of a start-up company state that they received negative internal feedback, it likely affects the company substantially. In order to only analyze feedback that substantially affected the entire organizations and thus likely influences the OI, dummy variables for each type of feedback are created. If at least 50% of all participants of an organization responded in the same way, the corresponding variable is coded as 1 (i.e., the feedback is acknowledged to be substantial). By following this approach, feedback events which only a minority of participants mentioned in the survey are excluded from the analysis. The effect of creating dummy variables and thus including only companywide acknowledged feedback compared to the inclusion of individually reported feedback is illustrated in Figure 24. In summary, for 28 out of 259 clusters of data<sup>13</sup> or 11%, positive internal feedback occurred. Negative internal feedback has been received in 4% of all cases. Positive external feedback has been reported by 31% of all observations and negative external feedback by 8%.

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<sup>13</sup> A cluster of data describes a set of data coming from two rounds of the survey (e.g., events and OI from round t, hostility, vision from round t-1). Thus, it is the sum of all firms in three round pairs, which are used as sample in the statistical analysis.

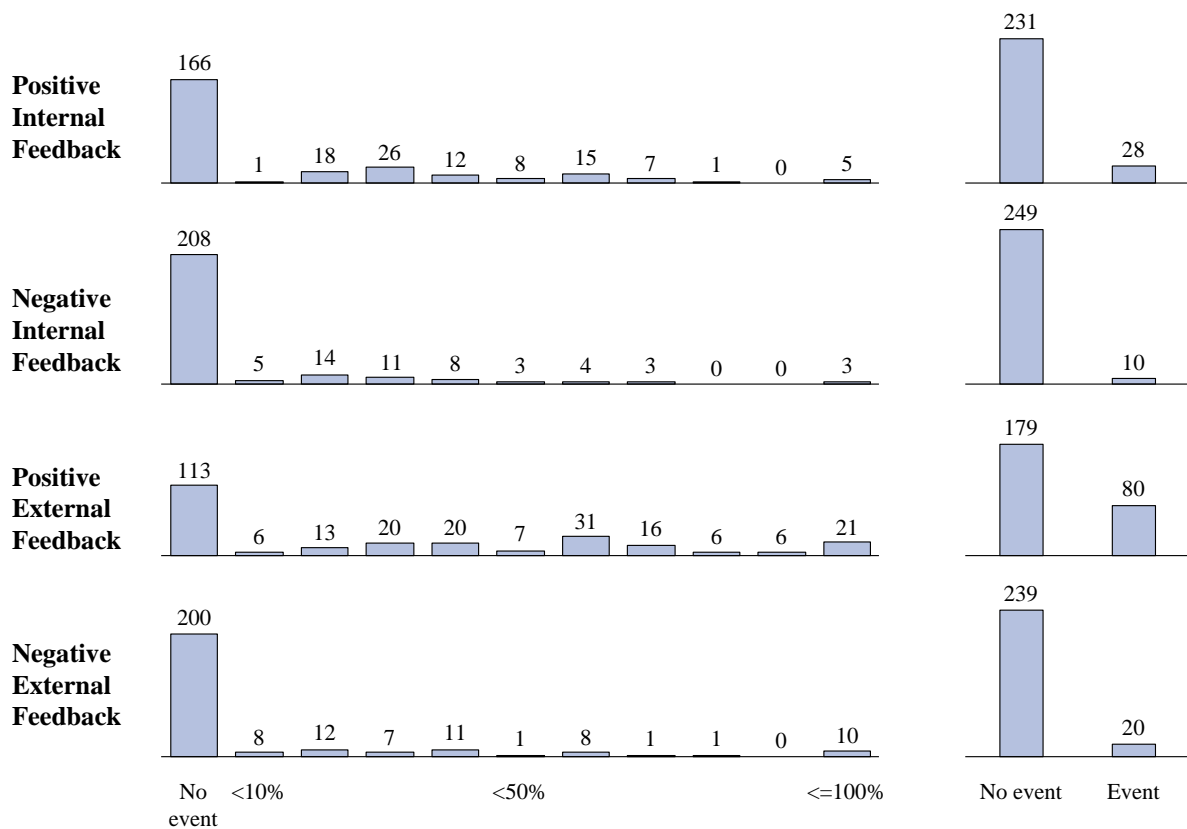


Figure 24: Histograms of the firm level proportions of how many participants mentioned feedback

In total, the aggregation of feedback events resulted in a list of 138 events<sup>14</sup> in 259 observations. In 22 cases more than one feedback event occurred to the same company between the same two rounds. Of the 22 cases, 20 included a pair of feedback events, in one case 3 feedback events occurred (all events but positive internal feedback) and once all four feedback events were received in between two rounds of the survey. Thus, 47 events occurred in 22 observations<sup>15</sup> and the remaining 91 events had happened in isolation. Overall, in 113 (91 single + 22 multiple cases) of 259 observations (44%) feedback has been reported.

All feedback events are included in each model to model interfering effects of multiple feedback events. The distribution of feedback pairs is in line with the frequency distribution of events. Most event combinations include positive external feedback, which has also occurred in most cases. In 9 cases positive external feedback occurred in combination with positive internal feedback, which is the second most frequent event. Positive and negative

<sup>14</sup> As illustrated in Figure 24, 28 positive internal feedback events, 10 negative internal feedback events, 80 positive external feedback events and 20 negative external feedback events.

<sup>15</sup> 22 observations with multiple feedback events. 20x 2 events + 1x 3 events + 1x 4 events = 47

external feedback has been reported in combination in 5 occasions. Positive external and negative internal feedback combined has been reported three times. All other combinations happened only once. They are shown in Table 10.

	<i>Positive internal</i>	<i>Negative internal</i>	<i>Positive external</i>	<i>Negative external</i>
Positive internal	-			
Negative internal	1	-		
Positive external	9	3	-	
Negative external	1	1	5	-

**Table 10: Combination of all pairs of events**

Tests for potential serial correlation of feedback events in two consecutive rounds are performed. As described in more detail in chapter 4.2.6, no significant serial correlations are found.

### 3.3.2.6 *Control variables*

There are 7 control variables incorporated in the model. First, initial OI strength is included because it is reasonable to assume that the current value will be influenced by the initial value at the beginning of this study. The responses to the OI strength measure (as described in section 3.3.2.1) are used as control. Founding team size is included because sensemaking and sensegiving activities both emphasize the importance of leaders (e.g., Gioia, Price, Hamilton, & Thomas, 2010; Scott & Lane, 2000) and team size influences team structures (e.g., Ruef, Aldrich, & Carter, 2003). The start-up location is included as control because studies have shown that geographical location (Drori et al., 2009) influences identity formation. The location is 0 for Munich and 1 for other cities (Berlin and Frankfurt). Start-up team size was measured as the number of team members involved in venture foundation. This measure was gathered upfront by the research team from the contacted founder in order to contact and invite all members of an organization. Previous work experience of the founding team is



included as control variable because studies indicate that prior work experience influence venture development (Delmar & Shane, 2006). Moreover, nationality is included as it was found to influence organizational values, structures, and collaboration and it is likely influencing sensemaking and sensegiving activities (Hofstede, Neuijen, Ohayv, & Sanders, 1990; Schneider, Ehrhart, & Macey, 2013). In the survey, founders were asked to provide the number of years they had worked prior to starting the venture and their nationality. Previous work experience is measured in years and aggregated to the firm level. Information about each founder's nationality is aggregated to founder team internationality and is 0 if all founders are German or 1 in any other case.

Further, firm age is used as a control because identity develops over time (e.g., Gioia et al., 2010) and new organizations advance in the organizational life cycle. The information about the age of the start-up was collected in the initial round and automatically increased by 4 month for further rounds of participation. Finally, the number of members of the organization was collected in each round by asking the founders about the current size of the company. Similar to firm age, the number of members of an organization affects the formation of OI strength (e.g., Wry et al., 2011). If founders disagreed about the number, the rounded average was used in the model. However, the incremental effect of a new member is much more substantial if the initial number of members was low. I.e., if one new employee joins a group of 5 people, this results in a 20% increase in team size. If one joins a small company, which already has 25 members, it would just lead to an increase by 4%. Therefore, the logarithmic value of number of employees was used.

### **3.3.3 Pre-estimation statistics**

Prior to the estimation of the full theoretical model, several analyses are conducted in order to assess if the data set is biased. None of the tests indicates a problem in the data set.

#### **3.3.3.1 Common method variance**

Common method variance (CMV) is defined as variance "*attributable to the measurement method rather than to the constructs the measure represents*" (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003, p. 879). While past research regarded common method variance as a main source of measurement error, which questions the validity of a model, more recent studies emphasize that CMV is an "*urban legend*" and that the method itself does not generate systematic variance and inflate correlations significantly (Spector, 2006, p. 222). There is

neither a general correlation of "*self-report measures*" visible (p. 224), nor does "*social desirability*" (p. 224), "*negative affectivity*" (p. 225), or "*acquiescence*<sup>16</sup>" (p. 226) considerably influence results and inflate correlations. Moreover, "*the concern for CMV seems to be raised almost exclusively when cross-sectional, self-report surveys are used*" (Spector, 2006, p. 222). Still, various measures have been taken in order to avoid common method variance in this data set.

First, the data was collected over four waves and variables of different waves are used for the final estimation. The dependent variable OI strength and the feedback events are measured at point t whereas organizational vision and environmental hostility were gathered at time t-1. Moreover, while the questions about OI strength were phrased to assess the present, the occurrence of feedback was targeted at the period since the last survey. Variables that did not change over the time of data acquisition, like experience of founders, or initial OI strength, were measured in the initial round. Thus, context variables and the dependent variable were measured with temporal separation.

Second, different types of respondents provided measures. While most control variables like firm age or number of employees as well as environmental hostility and a founding team's start-up experience were provided by the founding team, questions about organizational phenomena like OI strength and the organizational vision were provided by all organizational members and aggregated to the firm level. Moreover, to ensure the validity and significance of events, only events that were reported by at least 50% of the respondents were used as the measure. Hence, two moderating variables and independent variables were gathered differently from the dependent variable.

Finally, the questions in the survey were presented in random order including reverse coded items to avoid seminal questions following each other which might lead participants to stop careful reading and conclude from one question to the content of the next. Thus, it minimizes the effect that one question might influence the answer of the next question. Moreover, it has been explicitly stated in the survey that there are no wrong answers and the respondents were assured of the anonymity of their answers to minimize social desirability (Podsakoff et al., 2003).

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<sup>16</sup> "the tendency to agree with items independent of content", Spector (2006, p. 226)

### 3.3.3.2 *Multicollinearity*

Multicollinearity between variables is a problem in data because the effects of variables cannot be separated from each other (Hox, 2010), which confounds the interpretation of results. If, for example, a positive internal event always happens in conjunction with positive external feedback, a distinction of the specific influence of positive internal feedback from external feedback cannot be made. Avoiding multicollinearity is important for both main effect variables and moderators. The Pearson correlation matrix of the relevant variables is shown in Table 11. Although some correlations are significant, the effect sizes are all small and well below a critical level of .70 (Hair, Black, Babin, & Anderson, 2010). In addition, variance inflation factors (VIF) have been calculated to obtain a second indicator of multicollinearity. All VIFs are between 1 and 2, which is well below the threshold of 10 for multivariable analysis (Hair et al., 2010). Moreover, as described in chapter 3.3.2 hostility and vision are mean-centered which further reduces the possibility of multicollinearity (Aiken & West, 1996). Hence, it can be assumed that multicollinearity is unlikely to be a problem in the data. Assumptions about causal inference can be made without biases challenging the results (Hair et al., 2010).

Means, Standard Deviations, Correlations								
Variables	Means	s.d.	1	2	3	4	5	6
Positive Internal FB	0.11							
Negative Internal FB	0.04		0.05					
Positive External FB	0.31		0.04	0.08				
Negative External FB	0.08		-0.01	0.17**	0.03			
Hostility (t-1)	0.00	0.93	-0.07	0.15*	0.01	0.03		
Vision (t-1)	0.00	0.77	0.08	-0.22***	0.09	-0.01	-0.17**	
Founder Team Prev. Founding Exp.	1.12	1.32	0.04	0.08	-0.07	0.07	0.16*	-0.07

**Table 11: Correlation matrix for main effects and moderators, s.d. = standard deviation, \*p < .05, \*\*p < .01, \*\*\*p < .001**

### 3.3.3.3 *Sample selection bias and endogeneity bias*

Sample selection bias refers to non-representative results because variables and patterns of relationships between the variables of a study are only observed because a non-random subsample of the entire population was used. For example, if only new ventures participated who

had plenty of spare time available, the study would only investigate less dynamic and slowly growing organizations. The analysis would thus ignore the high growth start-ups, which are highly successful and which might have special OIs or cultures in their organizations. Missing these ventures would lead to biased results. If this separation is likely to occur, one has to split the sample into two groups and carefully draw conclusions only for each subsample (Millimet, 2001). According to Singer and Willett (2003), selection bias might be a problem in cross-sectional analyses and in studies with two waves of data acquisition, but is not as problematic with 3 or more rounds. In the aforementioned example, different ventures would undergo phases of high growth and slow growth over the course of a longitudinal study and thus the selection of the initial basis is of less importance. In addition, the topic of interest in a longitudinal study lies on change. Therefore, fixed effects and constant characteristics of the participating organizations are less influential.

Endogeneity, on the other hand, occurs if an independent variable is correlated to another unobserved parameter and thus correlated with the error term while the dependent variable is not. Referring to this study, if emerging ventures that have larger founding teams are more likely to engage in actions which create positive feedback, then the exclusion of founding team size would lead to wrong assumptions about the correlation of organization identity and the positive feedback. Endogeneity can have different sources. To avoid that an uncontrolled variable is confounding the results, variables that were previously found to influence OI strength are included as controls. Moreover, initial OI strength and independent variables from the previous survey rounds are included to account for temporal causal relations in the dependent variable (Ilies et al., 2011) and to further reduce potential endogeneity.

Thus, both biases should not create large concerns in this research setting.

#### ***3.3.3.4 Nonresponse bias***

Nonresponse bias refers to significant differences between respondents and non-respondents of a survey (e.g., in terms of characteristics and attitudes) which can influence the generalizability of the results. In this setting, some participants might not answer while others do. In order to investigate whether there is a systematic difference between individuals who participate and individuals who do not, a comparison between early and late respondents is conducted because it can be assumed that participants answering late are similar to potential participants who didn't reply at all (Kanuk & Berenson, 1975; Oppenheim, 1966).

All participants were asked to complete the survey within two weeks. The majority of participants (64%) responded within two weeks, 21% responded after the first reminder. The remaining 15% answered until the end of the round of the survey. The distribution of answering behavior is illustrated in Figure 25. Two dummy variables were built in where respondents who answered earlier than the mean (15.4 days) or the median (8.0 days) were coded as 0 and later participants as 1. In both cases, there were no significant differences between the groups ( $p > .1$ ). Thus, nonresponse bias should not be a substantial concern in this study.

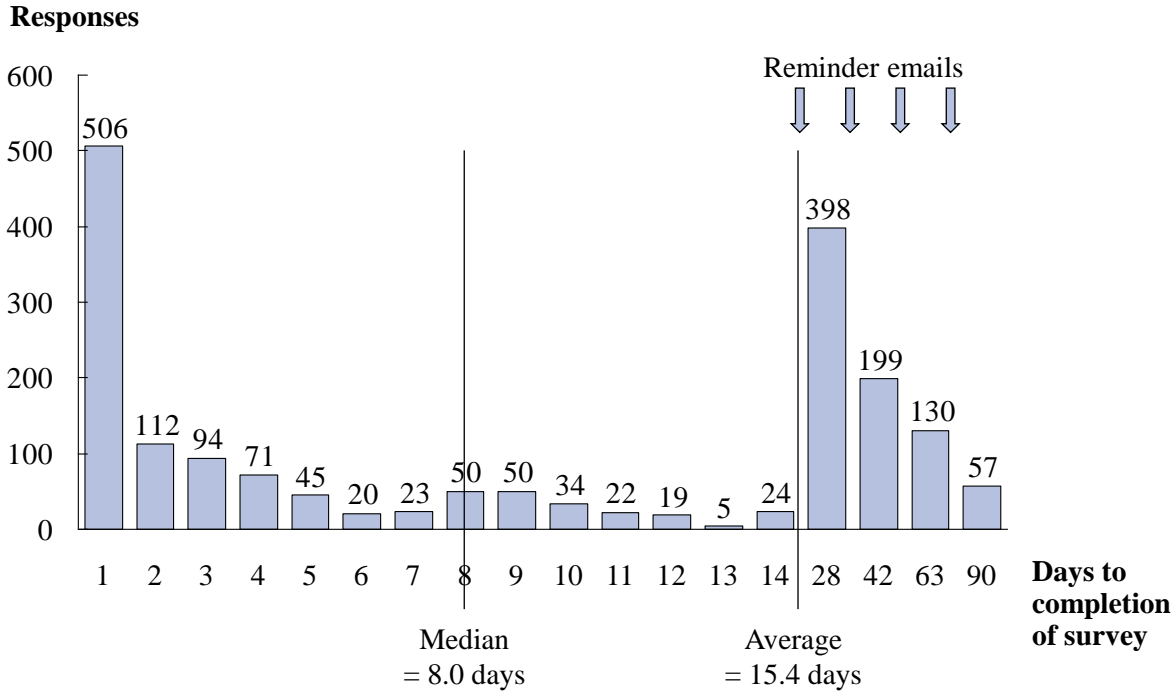


Figure 25: Delay between invitation and completion of the survey

Moreover, due to the longitudinal setting, non-response bias can be tested directly. Therefore, participants of round 1 have been split into four groups. Those participants, who answered in round 1 but did not continue to participate in round 2 because they left their organizations, are defined as group 1. Group 2 consists of participants who did not answer in round 2 but did continue with the participation in later rounds. People who stopped participation completely are clustered in group 3. Group 4 consists of participants who continued with their participation in round 2. Two-tailed t-tests on OI strength show no significant differences for

each of the 6 combinations. The results are shown in Table 12. Appendix 8.8 gives a full overview about the test results.

	<i>Group 1</i>	<i>Group 2</i>	<i>Group 3</i>	<i>Group 4</i>
Group 1: Left company	-			
Group 2: Paused participation	p>.1	-		
Group 3: Stopped participation	p>.1	p>.1	-	
Group 4: Continued participation	p>.1	p>.1	p>.1	-

**Table 12: Test for non-response bias, results of t-tests, two tailed**

**3.3.3.5 Missing data**

Missing data refers to information that is missing in the data set. The most common occurrence in longitudinal settings is that not all participants provide complete answers in each round, which leads to an unbalanced data set. In this study, from the initial 120 start-ups some were acquired by other companies (1 ventures), went bankrupt or stopped operations due to lacking success (5 ventures), or simply due to lacking interest (16 ventures) which reduced the number of participating start-ups to 98. Moreover, there are missing data due to temporary non-participation, stopped participation in the third or fourth round of the survey, or sold business resulting in an overall number of 259 data complete points out of potential 294 data points (3 rounds with 98 participating start-ups). The dropouts were evenly distributed across industries; 4 companies in software development, web portals and mobile services stopped participating, 3 in high-tech industries, two from e-commerce, and 1 from other industries. Figure 26 provides further information. The average participation is 2.6 out of 3 rounds per start-up.

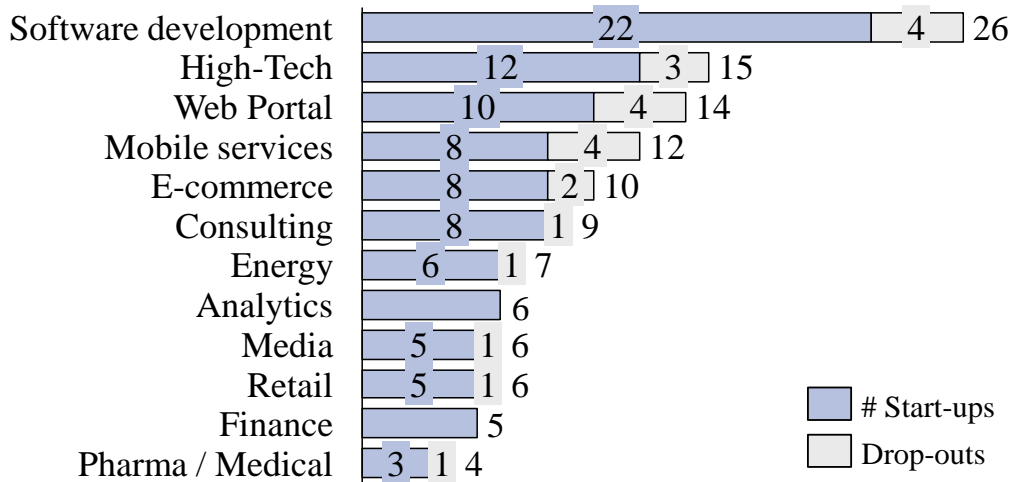


Figure 26: Drop-out rates by industry

However, longitudinal modeling of change does not require balanced data (Singer & Willett, 2003). Moreover, hierarchical linear modeling is more robust against missing data and measurement error than OLS regressions (Raudenbush & Bryk, 2002). Therefore, the unbalanced data set does not bias the interpretation of the results substantially.

### 3.3.3.6 Normal distribution

Finally, continuous variables need to be assessed for normal distribution of data. A graphical distribution of values against the normal distribution shows overall a good fit with deviations for OI strength and organizational vision only beyond the 5 and 95 percentiles as illustrated in Figure 27.

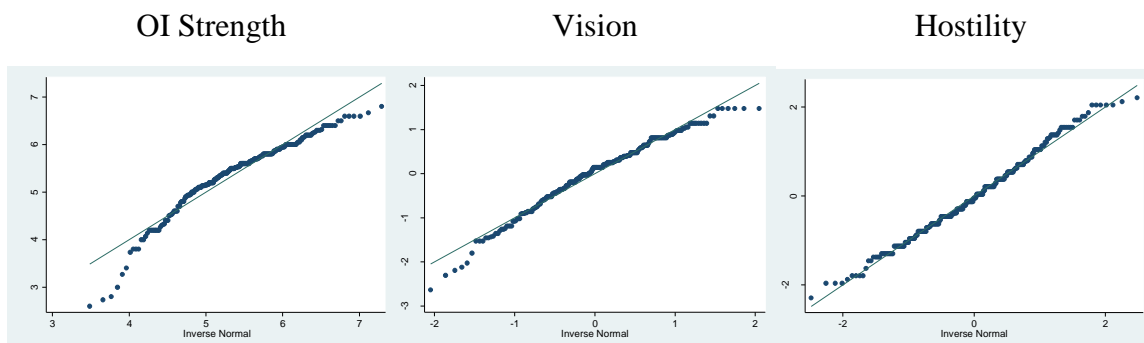


Figure 27: Graphical test for normal distribution of data

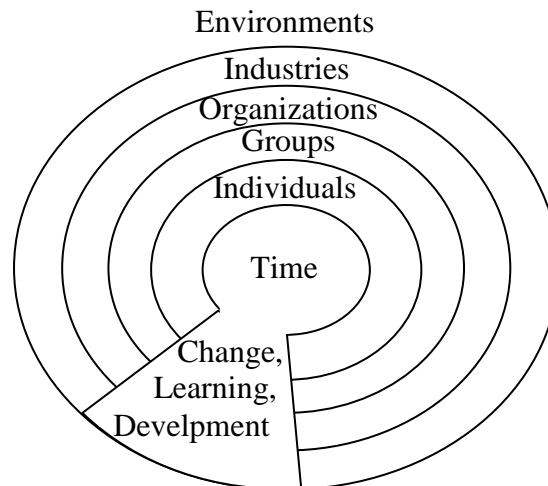
A Shapiro-Wilk test for normal data is highly significant ( $p < .0001$ ), which further supports the normal distribution for OI strength and organizational vision.

### 3.4 Statistical analysis

Research on business and management issues usually involves nested data structures. Nested structures refer to individuals being part of organizational units, organizational units are part of firms, firms are part of industries and countries. As a consequence of the nested structure research units might not be independent from one another. For example, there might be variance in OI strength because some firms are operating in different environments (hence there are differences between firms) but all employees within a firm share the same characteristic of a particular OI (which leads to less variance within firms). Statistical analysis needs to take these interdependencies into account.

Moreover, as many of these relations are dynamic, time adds another level to management science (Misangyi, Elms, Greckhamer, & Lepine, 2006). Building on the example, a company's OI strength is not only dependent on organizational characteristics but might vary within two points in time due to specific professional events, the organizational climate, or other external events. If the researcher does not take time into account and tries to derive causal relations between constant cross-sectional predictors and a dynamic dependent variable, he or she might arrive at wrong conclusions. Time not only is essential "*to understand the micro and macrocontexts*" (Costa et al., 2013, p. 4) and the interpretation of results but is even considered as core component of a phenomenon. Thus, it is required to study processes and events (Johns, 2006). Therefore, it is not surprising that recently published articles include time at the level of analysis (e.g., Bledow et al., 2013; time as lowest level). Figure 28 provides an illustration for interdependencies with time being at the center of the analysis in this example. It affects variables at higher levels due to changes, learning or development of individuals, groups, organizations, industries, or even environments.





**Figure 28: Different levels in management research; extended and adapted from Hitt et al. (2007, p. 1387)**

While researchers recognize the importance and consequences of nested data structures (Aguinis, Gottfredson, & Culpepper, 2013), application of respective analysis techniques remains neglected. While conceptual papers about multilevel phenomena have already accounted for 50% of articles published in the *Academy of Management Review* from August 2006 to July 2007, empirical research in the *Academy of Management Journal* with a multilevel perspective could be found only in 25% of articles (Hitt et al., 2007). To support further application of multilevel studies, several special issues on multilevel analysis call for research (e.g., *Academy of Management Journal*, Hitt et al., 2007; *Journal of Organizational Behavior*: Griffin, 2007).

Multilevel modeling has several important advantages over methods that do not take nested structures into account. First, "*Multilevel modeling allows researchers to understand whether relationships between lower-level variables [...] change as a function of higher-order moderator variables [...]*" (Aguinis et al., 2013, p. 1490). Returning to the earlier example, environmental context as an organizational or even industry variable might be responsible for changes in OI strength as a time-level variable. Second, multilevel models enable researchers to conduct bottom-up analyses (Dansereau, Alutto, & Yammarino, 1984; Dansereau & Yammarino, 2005). That is, they can investigate if phenomena on a higher level like organizational characteristics change due to variations of lower level independent variables like time-specific events or individual behaviors. However, most often, lower level variables are aggregated to the higher level of analysis (e.g., Graca & Margarida Passos, 2012;

Schippers, Den Hartog, Koopman, & van Knippenberg, 2008). In summary, multilevel modeling helps to understand the relationships between levels.

Third, multilevel modeling allows investigating different variance components. In multilevel modeling variance resides at each level involved in the analysis. Referring to the above example, variance will exist between individuals and between firms. Variables can explain variance at their specific level, that is, within-group – or in this case within-firm – variance but also variance across levels called between-group – or between-firm – variance (Rousseau, 1985). A common one-level ordinary least squares analysis would lead to misconceptualization and misinterpretation of the effects because it is not designed to model variance of different levels accordingly (Bliese & Hanges, 2004; Hox, 2010; Snijders & Bosker, 1999).

Due to these advantages, multilevel modeling has found manifold application in business research. For example, multilevel modeling has been used to study individual decision behavior (e.g., Domurath & Patzelt, 2015; Lee, Wong, Foo, & Leung, 2011; Monsen, Patzelt, & Saxton, 2010; Patzelt & Shepherd, 2008; Patzelt, Shepherd, Deeds, & Bradley, 2008), entrepreneurial motivation (e.g., Brundin et al., 2008), team performance (e.g., Bommer, Dierdorff, & Rubin, 2007) or performance assessments (Breugst, Patzelt, Shepherd, & Aguinis, 2012). Moreover, growth modeling including time has been used to explain changes in creativity (Bledow et al., 2013), the effect of the satisfaction trajectory on turnover intention (Chen, Ployhart, Thomas Helena C., Anderson Neil, & Bliese, 2011; Liu, Mitchell, Lee, Holtom, & Hinkin, 2012) or newcomer performance improvement in teams (Chen, 2005).

Models including time as a level of interest are still rare. In a metaanalysis Costa et al. (2013) analyzed 132 multilevel articles published between 2001 and 2011 and concluded that only 2% include time.

While these are important areas for the application of multilevel modeling, its application to longitudinal non-growth settings is particularly important for this study.

### **3.4.1 Hierarchical linear modeling in longitudinal setting without growth modeling**

Information about time can be used in two different ways (Singer & Willett, 2003). A common practice is the development and investigation of growth models, which use time as

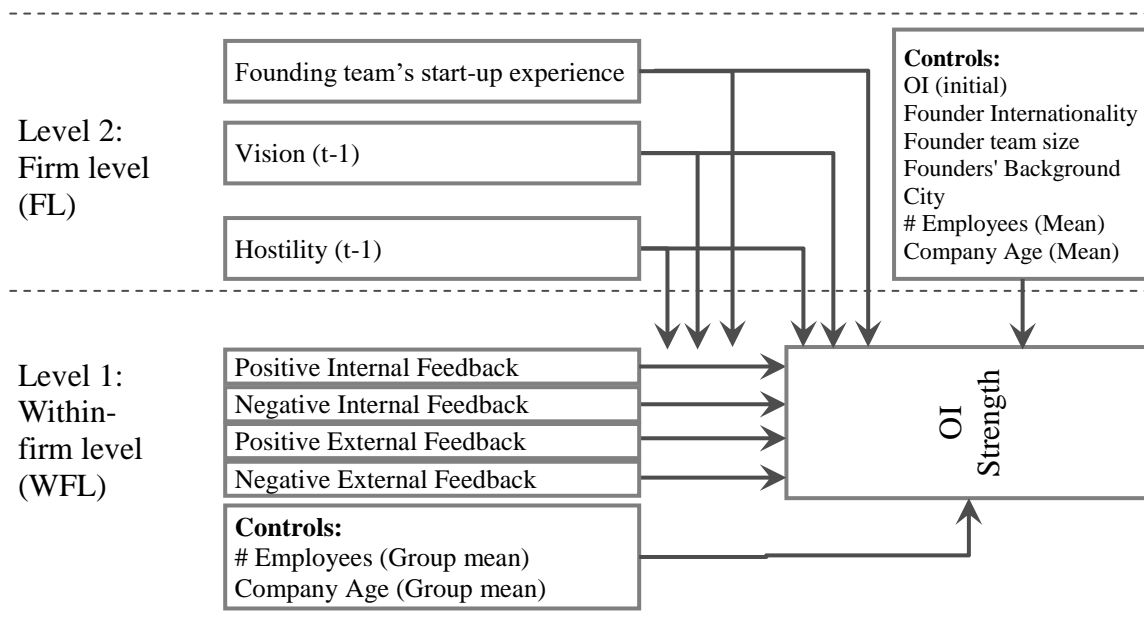
predictor. It would characterize the individual growth of OI strength for each firm over time and would be used to develop an understanding of the formation of the investigated phenomenon. The researcher could incorporate time to either model linear or non-linear (i.e., logarithmic, quadratic, etc.) growth. Because the effects of feedback events and the between-firm change of OI is more of interest than the growth of OI strength simply as a function of time, the model outlined in this dissertation follows an alternative approach for longitudinal data (Singer & Willett, 2003). By using data of the initial and of previous rounds as predictors, one can effectively use the information about time to better analyze causal relations (Ilies et al., 2011).

Specifically, this study involves several levels of data. First, data was gathered in four rounds (level 1) from individuals (level 2) working in different new ventures (level 3). However, due to the fact that the dependent variable *OI strength* is conceptualized as a firm level construct, only two levels are used in the multilevel model and changes in firm OI strength based on feedback are investigated. Venture characteristics and environment are included as independent variables setting the context in which the OI has been developed. As described in the previous chapter, the answers of all individuals for each round are aggregated from the within-individual to a within-firm level by calculating the average firm scores.

OI strength as the dependent variable was collected in each round from each individual and aggregated on a firm level. The four different feedback events happen between each round of the survey. The model assumes that these variables have a direct effect on OI.

The control variables consist of firm properties and the OI strength in the initial round. Most of them affect OI strength with a cross-level direct effect. Only company age and number of employees is split into level 2 variables that represent the average age and number of employees per firm and a varying level 1 variable that incorporates the change of both variables over the rounds of data acquisition. Organizational vision, environmental hostility, and the founding team's start-up experience are assumed to influence the OI strength directly and set the context in which feedback is interpreted and in which feedback is influencing OI. Hence, vision, hostility and experience are represented by cross-level direct effects and cross-level interaction effects with feedback (see also Griffin, 2007).

Figure 29 illustrates that the dependent and feedback variables used in this model are on the within-firm level (Level 1), while organizational variables and most control variables are on firm level (Level 2).



**Figure 29: Hierarchical structure of variables**

Moreover, besides the different levels of analysis, variables further differ in temporal aspects relevant for the research model. All organizational variables, vision, hostility and a founding team's start-up experience, are measured before the feedback event happened. Vision and hostility are modeled at time t-1, which means that despite the four rounds of measuring, only three within-firm observations are used, which is appropriate for a longitudinal between-firm analysis of change according to Singer and Willett (2003). A founding team's start-up experience is measured in the first round of participation. As illustrated in Figure 30, the first cluster of input used as within-firm data set contains OI at round 2, the events between round 1 and 2 and the values for the contextual independent variables at round 1. Thus, the within-firm level consists of round 2 to 4 of the survey, whereas the initial round as well as previous round information serve as predictor variables.

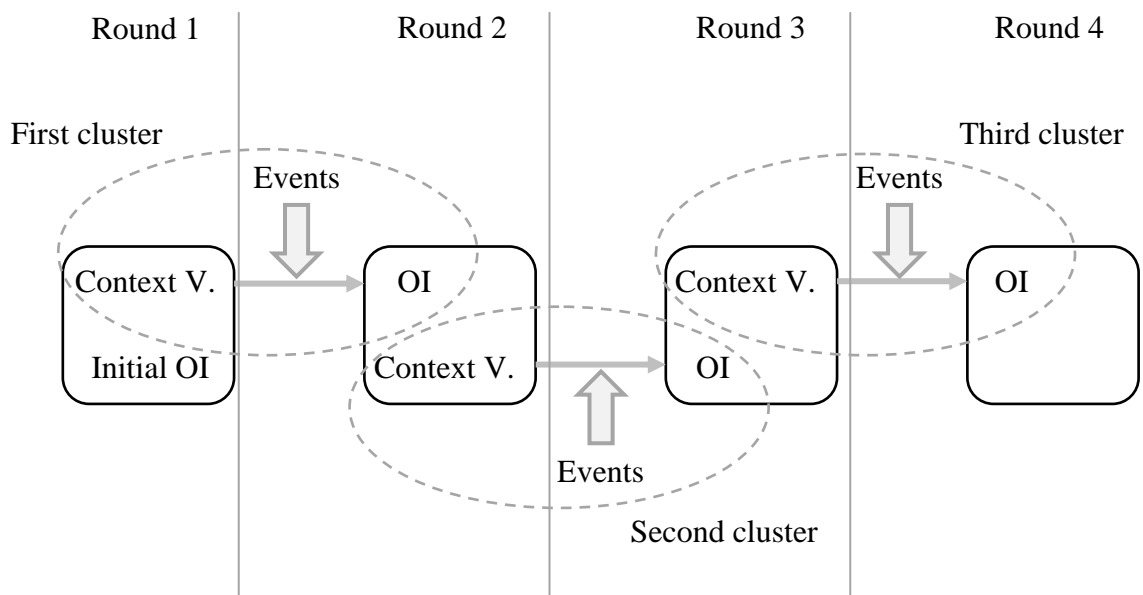


Figure 30: Structure of data set for hierarchical model

Multilevel models are typically analyzed with hierarchical linear modeling (HLM<sup>17</sup>). Since the late 90s, random coefficient models as one specific application in HLM have gained increased attention (Hofmann & Gavin, 1998) due to the theoretical ground work of many researchers as well as the relative easy to use software applications (Hitt et al., 2007). Echambadi, Campbell, and Agarwal (2006) do not only support the use of HLM in multilevel settings but even call it "imperative" for more interesting research settings.

While following the process described by Aguinis et al. (2013), which is based on a variety of standard works about multilevel modeling (e.g., Hox, 2010; Raudenbush & Bryk, 2002), his outline of the methodology is for a general case. To model the effect of events, which happen between two rounds of survey while neglecting time as a predictor, the approach described by Aguinis et al. (2013) needs refinement. It is most accurately described by Schonfeld and Rindskopf (2007) and serves as the basis for our model.

<sup>17</sup> We acknowledge that the abbreviation HLM is used for a statistics software. However, here HLM is used as the abbreviation for the statistical method of hierarchical linear modeling.

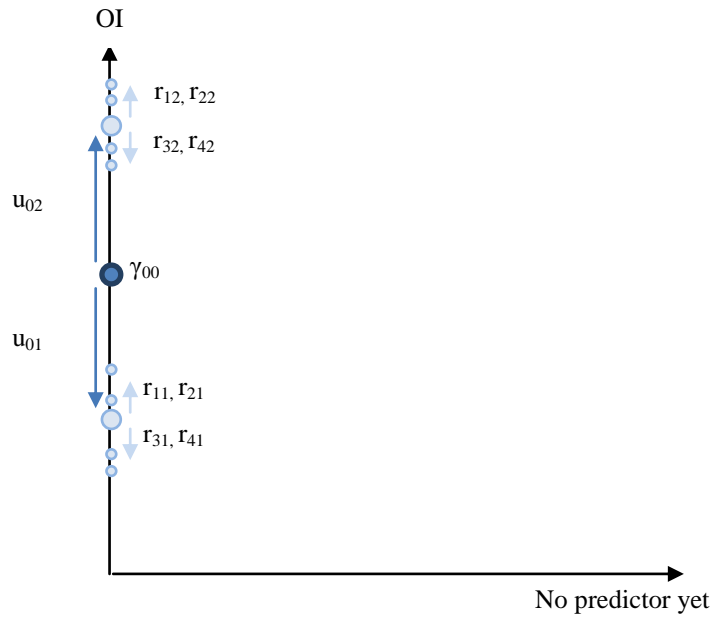
### 3.4.1.1 Unconditional means model (Null model)

The unconditional means model recognizes the nested nature of the data. However, it does not include any predictors, which means, that there is only a variation in intercepts across and within firms. There are no slopes included in this model, which is illustrated in Figure 31. The notation used in the following sections is summarized in Table 13.

Notation in model	Type	Description
$00$	Subscript	Grand Mean for all firms and all rounds
$0j$	Subscript	Firm mean for all rounds
$1j, 2j, 3j$	Subscript	Level 2 Term
$ij$	Subscript	Level 1 Term
$Y_{ij}$	Prediction	Predicted variable of the equation
$\beta$	Coefficient	General coefficient
$\gamma_{ij}$	Coefficient	Fixed effect coefficient, which does not vary across firms
$u_{ij}$	Coefficient	Random effect coefficient, which varies across firms
$r_{ij}$	Residuum	General error term

**Table 13: Notation of components of multilevel models**

The purpose of the unconditional means model is to quantify the degree of heterogeneity of the researched construct between and within firms (Aguinis, Gottfredson, & Culpepper, 2013; Holcomb, Coombs, Sirmon, & Sexton, 2009; Raudenbush & Bryk, 2002; Singer & Willett, 2003; Snijders & Bosker, 1999). That is, to investigate and quantify the amount of variance that exists within firms and the amount of variance that exists between firms. It is essential to understand the amount of between-firm variance since the existence of this variance is a precondition for multilevel modeling and the interpretation of results (Bliese & Hanges, 2004; Raudenbush & Bryk, 2002).



**Figure 31: Unconditional means model**

The level 1 equation for the unconditional means model describes the dependence of the predicted variable on all level 1 observations and can be mathematically described with

$$Y_{ij} = \beta_{0j} + r_{ij} \quad (3-6)$$

In the unconditional means model,  $Y_{ji}$  is the predicted OI strength for the  $i$ th round of the survey in company  $j$  and  $\beta_{0j}$  is the intercept for each company  $j$ . There is no predictor included, which predicts the strength of OI yet.  $r_{ij}$  is the error term or, indicated by the subscript  $ij$ , the level 1 residual error term. It shows the unexplained differences of observations with regards to the predicted OI for each round of the survey and in each firm. The residual term can be used to calculate the amount of variance residing within the groups – that is, at the firm level. Moreover, changes in the residual term can be used to assess the pseudo  $R^2$  increase over the models and thus their quality (Raudenbush & Bryk, 2002). As the model increases in complexity and accuracy by adding predictors and moderators, the residual unexplained variance decreases.

A multilevel model assumes that there are not only differences within groups (i.e. firms) but also between groups. To capture this variance and the differences across firms the level 1 intercept  $\beta_{0j}$  differs across firms and can be rewritten as

$$\beta_{0j} = \gamma_{00} + u_{0j}, \quad (3-7)$$

whereas  $\gamma_{00}$  is the grand mean intercept across all firms and  $u_{0j}$  is the deviation from the mean for each firm  $j$ . This leads to the full combined model

$$Y_{ij} = \gamma_{00} + u_{0j} + r_{ij} \quad (3-8)$$

Based on the combined model, the variance residing at each level can be analyzed using the residual terms. The heterogeneity between firms is reflected by the variance of the intercepts  $u_{0j}$  with regards to the grand mean intercept  $\gamma_{00}$  and denoted by  $\tau_{00}$ . The variation within firms (that is, variance of each individual firm over the three rounds) is reflected by  $r_{ij}$  and denoted by  $\sigma^2$ . This is the major difference to common OLS regressions. As Raudenbush and Bryk (2002) note, independent and normally distributed random errors with constant variance, as assumed in OLS regressions, are likely to be violated in hierarchical models. Thus, a split in between and within-firm errors is required.

Having modeled both between-firm and within-firm variance, the intraclass correlation (ICC) can be calculated. The intraclass correlation defines the proportion of level 2 variance to total variance. The proportion of total variance accounted for by between-firm difference can be modeled as  $ICC = \tau_{00} / (\tau_{00} + \sigma^2)$  and reflects "*the average correlation between any pair of composite residuals*" (Singer & Willett, 2003, p. 97). For multilevel modeling to be adequate, the ICC should be at least 5-15% (Hedges & Hedberg, 2007; Mathieu, Aguinis, Culpepper, & Chen, 2012). The ICC of this study is 61% – that is, 61% of variance is accounted for by between-firm differences. Based on this very considerable amount of variance (Bliese & Hanges, 2004) multilevel modeling is an adequate approach to data analysis, as a low ICC would make multilevel modeling unnecessary.

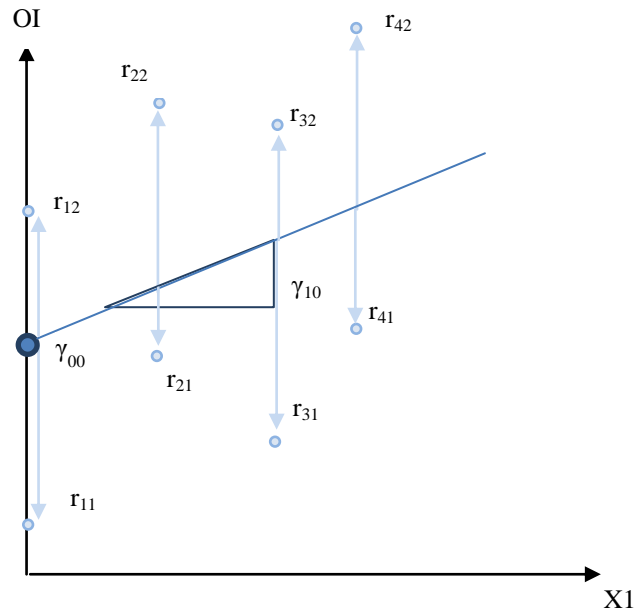
In specifying the model the goal is to reduce the residual error terms (and hence increase the pseudo R<sup>2</sup>) as a means to understand effect size. Therefore, the following section is concerned with the inclusion of predictor variables.

### ***3.4.1.2 Random intercept and fixed slope model***

Building on the unconditional mean model, the next step is the integration of predictor variables, which advances the model to also include slopes. There are two ways of modeling the predictor variables. Their effect can be either assumed to be constant across all firms or to vary across firms. When the predictor is assumed to be constant across firms a fixed slope



model is specified. Since the intercept is specified to be random – that is, to vary between firms (see previous section) – a model including fixed slopes is called *random intercept fixed slope model* (RIFSM).



**Figure 32: Random Intercept and Fixed Slope Model (no hierarchy)**

Figure 32 shows the assumed relationship between OI and the predictor X1. Compared to the null model, each observed value of OI strength is now assigned to a value of X1. The individual residuals  $r_{ij}$  refer to the level 1 within-firm variance. According to the variance distribution, which was calculated in the null model, it is assumed that there is variance between firms in their intercepts. Thus, each firm starts from a different (random) intercept and increases by the identical slope  $\gamma_{10}$ , i.e., the relationship between OI and event is the same across firms. Figure 33 displays this assumption.

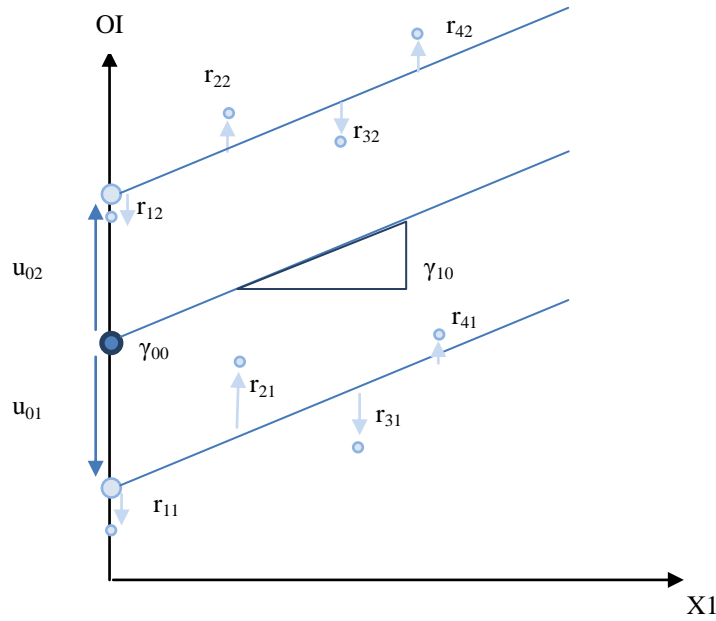


Figure 33: Full RIFSM model with two levels

A RIFSM with one independent variable can be described with the level 1 equation

$$Y_{ij} = \beta_{0j} + \beta_{1j}X1_{ij} + r_{ij} \quad (3-9)$$

This is similar to an OLS regression equation as the predictor as well as the predicted variable are on the same level (here: within-firm level) (Hofmann & Gavin, 1998). As in the unconditional means model,  $Y_{ji}$  is the predicted OI strength for the  $i$ th round of the survey in company  $j$ ,  $\beta_{0j}$  is the intercept for company  $j$  and  $r_{ij}$  is the error term or level 1 residual term.  $\beta_{1j}$  is the slope parameter for all companies with  $X1_{ij}$  being the within-firm specific level 1 parameter for one feedback event. In RIFSM, the coefficient  $\beta_{1j}$  does not vary between firms, so it can be substituted by  $\gamma_{10}$ , which is denoted by 0 and not  $j$ .

Multilevel modeling further allows explaining variance by introducing a level 2 predictor variable  $W1$  (or more) in the level 1 intercept equation. It follows the logic of the earlier equation (equation 3-7) including a predictor variable.

$$\beta_{0j} = \gamma_{00} + \gamma_{01}W1_j + u_{0j} \quad (3-10)$$

Paralleling the unconditional means model,  $\gamma_{00}$  is the grand mean intercept across all firms and  $u_{0j}$  is the deviation from the mean for each firm  $j$ .  $W1_j$  is a firm specific level 2 predictor

variable with a slope coefficient  $\gamma_{01}$ . For simplicity reasons there is only one level 2 predictor in this equation included.

Combining the level 1 and level 2 equations, the full model results in

$$Y_{ij} = \gamma_{00} + \gamma_{10}X1_{ij} + \gamma_{01}W1_j + u_{0j} + r_{ij} \quad (3-11)$$

When adding covariates, this would add more terms to the equation in two ways. Either, if the covariate is on the within-firm level, a term  $\gamma_{20}X2_{ij}$  would be added or, if the covariate is on the firm-level, a term  $\gamma_{02}W2_j$  would be added. Note that the difference is the subscript  $i$  for within-firm level specification.

Thus, the full RIFSM model is defined by random intercepts through the inclusion of  $u_{0j}$  and fixed slopes through constraining the  $\gamma$  coefficients to be the same for all firms. In our model, the feedback event predicts the OI strength as a low-level direct effect. It describes the effect of a variable, which is on the same level as the dependent variable. Moreover, the control variables do influence OI strength either on the same level (group mean centered number of employees and company age) or from a higher level. This effect is called cross-level direct effect because they influence OI strength directly from another level. Both effects are highlighted in Figure 34.

As both effects explain variance, they reduce the residual error on both levels. As mentioned earlier, low-level direct effects explain variance on the within-firm level, which should lead to a reduction of  $\sigma^2$ , which is the variance of the residual term  $r_{ij}$ . The cross-level direct effects explain variance caused by variables, which are different between firms and remain constant within firms. Therefore, they reduce the residual term  $u_{0j}$ , which describes the between-firm variance in intercepts (Aguinis et al., 2013).

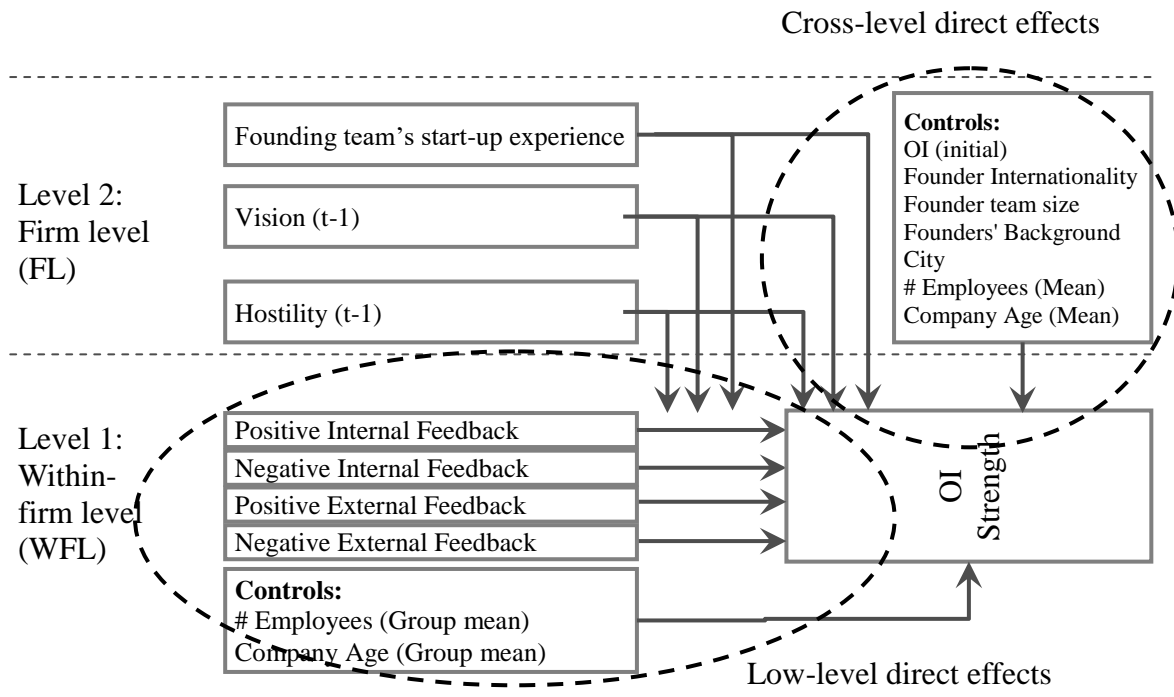


Figure 34: Overview about direct effects on OI strength

Equation 3-11 predicts the firm-specific OI strength based on a shared intercept  $\gamma_{00}$ , common within-firm effects  $\gamma_{10}$  for one of the four different feedback events, and one shared level 2 firm effect  $\gamma_{01}$  e.g., for the control variable founder internationality. As in common OLS regressions, the intercept  $\gamma_{00}$  is interpreted as the value of strength of OI if all predictors are 0; in this case, if no feedback event happened as well as having an average founding team's start-up experience. The centering decisions are further elaborated in a later chapter. The slope coefficients are the amount of change of the strength of OI if the respective predictor changes by one unit with the other variables constant.

### 3.4.1.3 Random intercept random slope model

The RIFSM of the previous chapter can be extended to include random slopes by releasing the constraint of fixed slopes. Specifying random slopes assumes that the relationship between a level 1 predictor and the dependent variable varies between firms. That is, for some firms a positive event might strongly increase OI whereas in another firms the effect of positive feedback on OI is much weaker. Figure 35 illustrates varying slopes. A model including random intercepts and random slopes is called a *random intercept random slope model* (RIRSM) or a *random coefficient model* (RCM). Typically, all factors, which influence the

effect of level 1 independent variables on the predicted variable should be included in the model. In building the RIRSM, it is acknowledged that even though firm specific level 2 predictors and important covariates are incorporated, it cannot be assumed that the main effects are fully explained by the observed between-firm parameters. The level 1 main effects can still vary randomly across firms due to other unknown variables, which are not included in the model. Therefore, their influence needs to be taken into account by releasing the assumption that each level 1 slope coefficient is identical for each firm.

Based on careful theoretical reasoning the model presented in this study assumes that there is variance in slopes as it hypothesizes different effects of feedback events on firms' OI. Besides this theoretical foundation for choosing one over the other model, it can be statistically tested if the RIRSM is superior. First, conducting a Likelihood Ratio (LR) test provides a test of the fit of a RIRSM. Second, the variance in slopes needs to be significantly different from zero (Aguinis et al., 2013) to conclude that the predictors show different effects across firms and to justify a RIRSM.

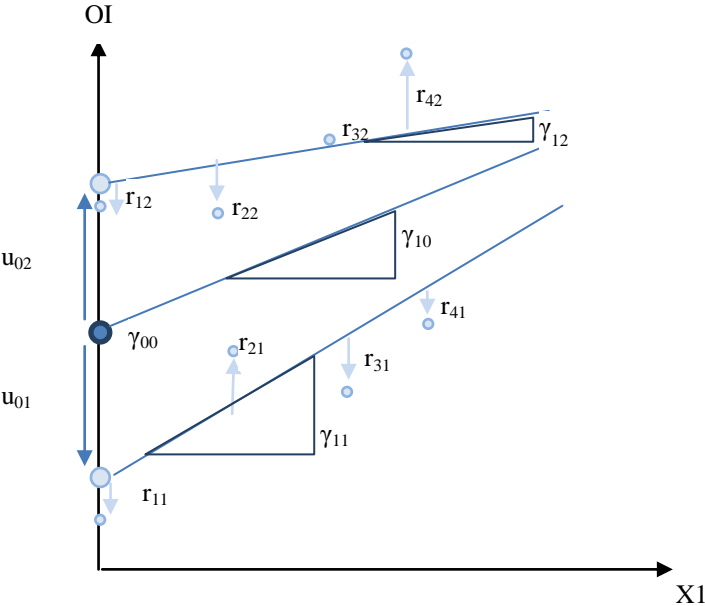


Figure 35: Random Coefficient Model

The model specification includes the level 1 equation introduced in the previous section.

$$Y_{ij} = \beta_{0j} + \beta_{1j}X1_{ij} + r_{ij} \tag{3-12}$$

As in the RIFSM, the intercept is allowed to vary across firms and is assumed to be explained by  $W1$ .

$$\beta_{0j} = \gamma_{00} + \gamma_{01}W1_j + u_{0j} \quad (3-13)$$

In addition, the slopes are now allowed to vary across firms. That is, similar to the level 2 intercept equation, the level 1 coefficient is split into a part that is constant across firms and a part that can vary between firms (indicating variance in slopes).

$$\beta_{1j} = \gamma_{10} + u_{1j} \quad (3-14)$$

In this equation  $\gamma$  refers to the fixed part whereas  $u$  denotes additional residual terms reflective of variance in slopes.

This results in a combined RIRSM as follows:

$$Y_{ij} = \gamma_{00} + \gamma_{10}X1_{ij} + \gamma_{01}W1_j + u_{0j} + u_{1j}X1_{ij} + r_{ij} \quad (3-15)$$

As mentioned in the beginning of this section, there are three ways to determine whether a RIRSM or a RIFSM is the superior model specification: Theoretical foundation, the LR test and a significant variance in slopes  $\tau_{11}$ .

The theoretical foundation has been elaborated in chapter 2 and comes to the conclusion that the effects of events are different for each firm due to different company characteristics.

The LR test indicates whether one model fits the data significantly better than another less parameterized model (Raudenbush & Bryk, 2002; Schonfeld & Rindskopf, 2007; Singer & Willett, 2003). In most cases the deviance, which is calculated as the twofold negative log-likelihood, is used to show how likely it is that the model estimation produced the sample data (Raudenbush & Bryk, 2002; Snijders & Bosker, 1999). There are two estimation methods in which LR tests are used: Restricted Maximum Likelihood (REML) or Full Information Maximum Likelihood (FIML) also called Maximum Likelihood (ML). The estimation method affects the reliability of the LR test. While REML only uses the variance estimates, ML also includes the regression coefficients and the covariances. Therefore, ML is preferred and the overall model fit should be compared and not only the variances (Aguinis et al., 2013). However, as Hox (2010) notes, differences of REML and FIML estimations are typically small. ML, which is also the standard in STATA, is used in this analysis. When using robust estimators to compute the standard errors, one implicitly assumes that the specifications of the

model might not be valid. In such a case, LR tests should not be used for choosing one model over the other.

The LR test for the given model comparing a main effects RIFSM (level 1 slopes are fixed) and a main effects RCM model (level 1 slopes vary) is not significant ( $p > \chi^2 = .5$ ), indicating that the RIRSM is better suited with only 50% probability. However, due to the use of robust estimation techniques instead of ML estimation, the interpretation of LR test results to decide, whether RIRSM or RIFSM is superior, is limited (Hox, 2010; Leeuw & Meijer, 2008).

The variance in slopes is significantly different from zero for both external feedback events as well as negative internal feedback ( $p < .05$ ). Only positive internal feedback shows no residual variance and consequently a standard error of 0. More complex models fail to calculate standard errors of residuals. Still, if some variances of random components are not significantly different from 0, one can continue using this component in the random part of the equation (Schonfeld & Rindskopf, 2007) and more importantly, it does not imply to use a RIFSM.

In sum, theoretical considerations as well as the slope variance support the use of RIRSM. The LR test, which does not show significant results should not be considered in models where robust estimation is used.

#### ***3.4.1.4 Cross-level interaction model***

Finally, after including a random component to the slopes, additional level 2 variables might be included to explain these differences. This is referred to as a cross level interaction effect since a level 2 variable is supposed to explain differences in level 1 predictor and dependent variables across firms. The initial equation is the general level 1 equation used in RIFSM.

$$Y_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + r_{ij} \quad (3-16)$$

As in the previous section, level 2 intercepts are specified as random:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}W_{1j} + u_{0j} \quad (3-17)$$

To model cross-level interactions, the random slope equations further include a level 2 predictor.

$$\beta_{1j} = \gamma_{10} + \gamma_{11}W_{1j} + u_{1j} \quad (3-18)$$

The coefficient  $\gamma_{11}$  represents the moderating effects of the level 2 variable  $W1_j$  on the respective slopes determined by the level 1 variable  $X1_{ij}$ . In this simplified case, it is the interaction of a founding team’s start-up experience with the effect of one feedback event on the strength of OI.

The combined cross-level interaction model looks as following:

$$Y_{ij} = \gamma_{00} + \gamma_{10}X1_{ij} + \gamma_{01}W1_j + \gamma_{11}X1_{ij}W1_j + u_{0j} + u_{1j}X1_{ij} + r_{ij} \tag{3-19}$$

When taking the covariates into account, this leads to a model combining all three types of relationships or effects, which Aguinis et al. (2013) describe: low-level direct effects, cross-level direct effects, and cross-level interaction effects. The full model is shown in Figure 36. The added cross-level interaction effects influence the way each company reacts to the feedback events. Depending on a constant company characteristic, the effect of an event is either stronger or weaker. Thus, cross-level interaction effects explain between-firm variance in slopes (Aguinis et al., 2013).

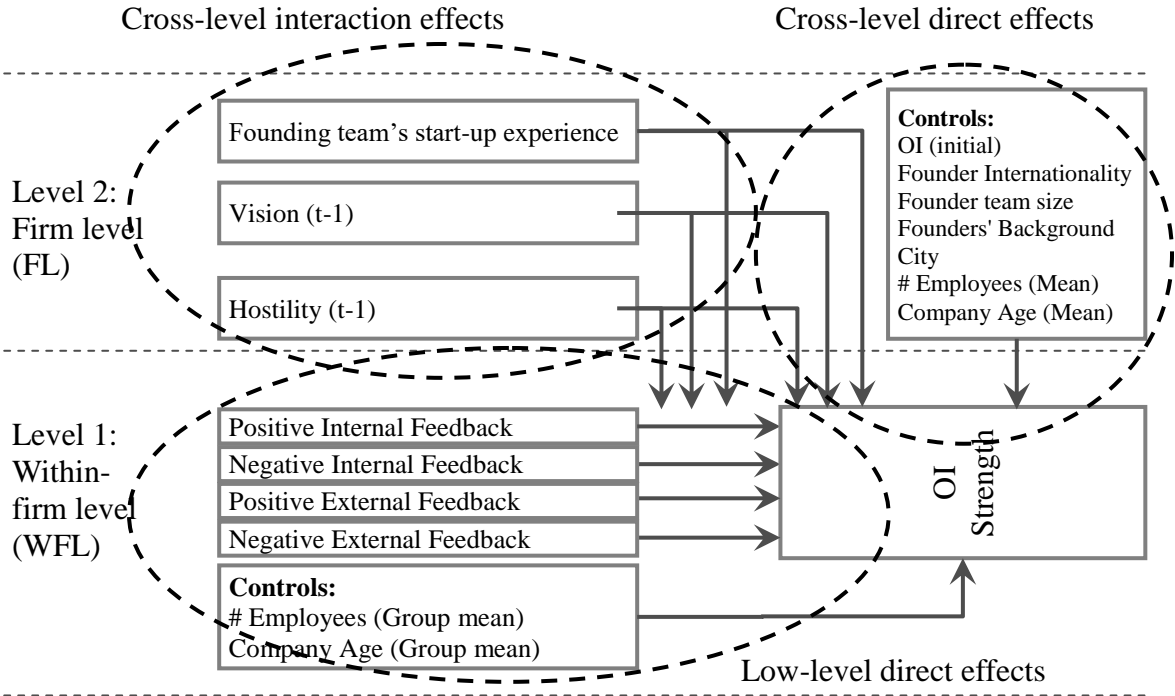


Figure 36: Overview about full hierarchical model



In this dissertation, two models are used to analyze the moderating effects of the context variables on the effect of internal and external feedback on OI strength separately. They extend the simplified theoretical model described above by adding different moderating variables and covariates. However, it does not change the mathematical logic and model as such, only the number of predictors varies. To reduce complexity, the following full models only show the 7 level 2 covariates combined in one parameter called  $CV_j$  and the two level 1 controls as  $CV_{ij}$ .

Other notations are found in Table 14.

<b>Parameter</b>	<b>Notation in example</b>	<b>Level</b>	<b>Description</b>
$OI_{ij}$	$Y_{ij}$	1	Dependent variable, OI strength
$CV_{ij}$	-	1	Control variables on level 1
$CV_j$	$Wl_j$	2	Control variables on level 2
$pFBe_{ij}$	$X1_{ij}$	1	Event: Positive external feedback
$nFBe_{ij}$	$X1_{ij}$	1	Event: Negative external feedback
$pFBi_{ij}$	$X1_{ij}$	1	Event: Positive internal feedback
$nFBi_{ij}$	$X1_{ij}$	1	Event: Negative internal feedback
$GT\_EXP_j$	$Wl_j$	2	Context: A founding team's start-up experience
$Host_{ij}$	$Wl_j$	2	Context: Environmental hostility
$Vision_{ij}$	$Wl_j$	2	Context: Organizational vision
$pFBi_{ij} Host_{ij}$	$X1_{ij} Wl_j$		Exemplary Interaction

**Table 14: Notation of OI model in cross-level interaction model**

The final models used in this dissertation are:

Effects of external events:

$$\begin{aligned}
OI_{ij} = & \gamma_{00} + \gamma_{10}pFBe_{ij} + \gamma_{20}nFBe_{ij} + \gamma_{30}pFBi_{ij} + \gamma_{40}nFBi_{ij} + \gamma_{50}CV_{ij} \\
& + \gamma_{01}GT\_EXP_j + \gamma_{02}Host_{ij} + \gamma_{03}Vision_{ij} + \gamma_{04}CV_j \\
& + \gamma_{11}pFBe_{ij}GT\_EXP_j + \gamma_{21}nFBe_{ij}GT\_EXP_j + \gamma_{12}pFBe_{ij}Host_{ij} \\
& + \gamma_{22}nFBe_{ij}Host_{ij} + \gamma_{13}pFBe_{ij}Vision_{ij} + \gamma_{23}nFBe_{ij}Vision_{ij} \\
& + u_{0j} + u_{1j}pFBe_{ij} + u_{2j}nFBe_{ij} + u_{3j}pFBi_{ij} + u_{4j}nFBi_{ij} \\
& + u_{5j}CV_{ij} + r_{ij}
\end{aligned} \tag{3-20}$$

Effects of internal events:

$$\begin{aligned}
OI_{ij} = & \gamma_{00} + \gamma_{10}pFBe_{ij} + \gamma_{20}nFBe_{ij} + \gamma_{30}pFBi_{ij} + \gamma_{40}nFBi_{ij} + \gamma_{50}CV_{ij} \\
& + \gamma_{01}GT\_EXP_j + \gamma_{02}Host_{ij} + \gamma_{03}Vision_{ij} + \gamma_{04}CV_j \\
& + \gamma_{11}pFBi_{ij}GT\_EXP_j + \gamma_{21}nFBi_{ij}GT\_EXP_j + \gamma_{12}pFBi_{ij}Host_{ij} \\
& + \gamma_{22}nFBi_{ij}Host_{ij} + \gamma_{13}pFBi_{ij}Vision_{ij} + \gamma_{23}nFBi_{ij}Vision_{ij} + u_{0j} \\
& + u_{1j}pFBe_{ij} + u_{2j}nFBe_{ij} + u_{3j}pFBi_{ij} + u_{4j}nFBi_{ij} + u_{5j}CV_{ij} + r_{ij}
\end{aligned} \tag{3-21}$$

### 3.4.1.5 Specifics of longitudinal research

In growth models, one can simply add the time variable as a predictor variable  $X2_{ij}$  to model growth over time. Its coefficient  $\gamma_{20}$  would indicate the growth of OI strength as time passes. Typically, time would also be included in the random part of the equation to account for individual growth rates per firm, which makes RCM appropriate (Bliese & Ployhart, 2002). The approach has been used in many studies, e.g., on dynamics of individuals in teams (Chen, 2005; Chen, Ployhart, Thomas Helena C., Anderson Neil, & Bliese, 2011; Liu, Mitchell, Lee, Holtom, & Hinkin, 2012) or expatriates performance and feelings (Firth, Chen, Kirkman, & Kim, 2014).

In this study, time is explicitly not included as a separate predictor. Here, the initial level of the predicted variable  $OI(t_1)$  is incorporated in the model as a level 2 covariate  $\gamma_{02}W2_j$  as recommended by Schonfeld and Rindskopf (2007). This way, it affects the random intercept of each firm, which deviates from the mean and reduces the residual level 2 variance by explaining constant effects on  $OI(t_2)$  to  $OI(t_4)$ , which have not been measured. The

information of different rounds is then used to investigate differences and reasons for change compared to the initial level of OI strength. To compensate for possible long term strengthening or formation of the OI in new ventures, one of the controls in the model is firm age.

Another option to account for previous levels of OI strength is to include a level 1 predictor  $OI(t-1)$  instead of a level 2 predictor  $OI(t)$ . This follows the argumentation that OI strength might be serially correlated and might not fluctuate around a specific value. Based on the outlined definition of OI as being central and enduring, the initial OI is used as covariate. In addition, data acquisition points only differ by 4 months, which might seem small to show changes in OI as a function of time even though the subjects of observation are start-up companies. Moreover, an additional control for the predicted variable at  $t-1$  along with moderators at time  $t-1$  reduces level 2 variance and thus diminishes the effect of level 2 moderators (Schonfeld & Rindskopf, 2007). Schonfeld and Rindskopf (2007) describe this as "overcontrol" (p. 428), because the moderators at time  $t-1$  are most likely also influenced by OI strength at  $(t-1)$ . They conclude that *"if the investigator is already controlling for trait effects in the form of level-2 Time-0 [...], there may not be the need to introduce  $Y_{(t-1)}$  [ $Y$  is their notation for the predicted variable; the Author] as a control variable in the level-1, within-person equation"* (Schonfeld & Rindskopf, 2007, p. 428). Thus, the inclusion of  $OI(t-1)$  is not necessary in this model.

The methodology used in this dissertation is in line with recently published articles. E.g., Bono et al. (2013) studied the influence of positive and negative work events on blood pressure and stress levels while controlling for the initial blood pressure and stress level.

#### **3.4.1.6 Centering decisions**

Centering of variables fulfills a twofold purpose. It reduces collinearity (Hofmann & Gavin, 1998; Kreft, Leeuw, & Aiken, 1995; Schonfeld & Rindskopf, 2007) and simplifies the interpretation of the results. Specifically, whether a variable is grand mean or group mean centered will *"answer inherently different conceptual and theoretical questions"* (Hofmann & Gavin, 1998, p. 628).

In most cases, level 1 variables are to be group mean centered in order not to mix between-firm and within-firm variance and level 2 variables are grand mean centered in a two level hierarchical model (Aguinis, Gottfredson, & Culpepper, 2013; Bono, Glomb, Shen, Kim, &

Koch, 2013; Hofmann & Gavin, 1998; Liu, Mitchell, Lee, Holtom, & Hinkin, 2012). The definition of the appropriate level, however, is not straight forward. Kreft et al. (1995) concluded that the decision is finally to be determined by theory.

### **Group Mean Centering**

In group mean centering, the data is centered around each group's (here firm's) mean. In cross-level interactions, this ensures that only intra-group (Ilies et al., 2011) or in our case within-firm variations are measured. It eliminates between firm variance from the predictors because each firm has an identical mean of 0. This way, the coefficients of group mean centered variables show the change of OI strength within each firm based on a change of each firms' group mean centered predictor, which is the slope of OI strength. It does not interact with the intercept of each firm (Hofmann & Gavin, 1998). To also include the between-firm variance, firm means can be added as level 2 variables. Both, level 1 or level 1+2 models are found in research (Ilies, Johnson, Judge, & Keeney, 2011; Wang, Liao, Zhan, & Shi, 2011).

There are few level 1 variables in the model, which are subject to group mean centering.

**The age of a start-up company** changes per definition over time. However, due to the nature of the survey it constantly grows by 4 months every round for each firm. The level 1 changes should not cause strong effects on OI, which is characterized as enduring. There might be OI differences between younger and older firms, thus a level 2 mean age for each company is added to the model.

**The number of employees** is a common indicator of short-term and long-term performance of a start-up company (Klotz et al., 2014). Within-firm changes of employee numbers give hints about the actual performance but can also be caused by natural fluctuation and show a random pattern. Between-firm differences reflect mid- to long-term performance of the companies. Therefore, both group mean centered level 1 and means at level 2 are included in the model.

All four **feedback events** are level 1 variables. The events do either occur or not in each round for each company. The events are coded as dummy variables. This means that 0 stands for "no feedback" and 1 stands for "feedback received". Thus, all coefficients are already well interpretable as 0 is no feedback. Group mean centering, which would be preferable for level 1 variables in order to interpret intercepts and interactions, would in this case complicate the

interpretation as an example shows. In two firms A and B, feedback events occurred and are denoted as 1. If no feedback was received the value of the variable is 0. If the values are group mean centered, 0 would no longer mean "no feedback" but some state in between "no feedback" and "feedback received", which cannot be interpreted. Moreover, "feedback received" and "no feedback" had different values for each company, which eliminates any comparability. The example is summarized in Table 15.

Finally, as centering in HLM is especially critical for level 1 variables, the dependent variable is not centered (Hofmann & Gavin, 1998; Raudenbush & Bryk, 2002).

		Round 1	Round 2	Round 3	Round 4	Firm Mean
No centering	Firm A	0	0	1	0	.25
	Firm B	0	1	0	1	.50
Group mean centered	Firm A	-.25	-.25	.75	-.25	0
	Firm B	-.50	.50	-.50	-.50	0

**Table 15: Exemplary group mean centering of dummy variables**

### **Grand Mean Centering**

In grand mean centering, the data is centered around the grand mean of all firms. By doing so, there is still variance between firms, which is reflected in the intercept. The level 2 coefficients show the influence of level 2 predictors adjusted for the level 1 influence (Hofmann & Gavin, 1998). According to Misangyi et al. (2006), a variable with a within-firm variation of 30-60% can be either treated as a level 1 or level 2 variable or even on both levels.

All variables describing founder team characteristics like background, number of founded start-ups, internationality and founder team size as well as location of the start-up and the initial level of OI strength are level 2 variables and grand mean centered.

The two remaining context variables, environmental hostility and organizational vision, are theorized as constant with little changes during one year. Industries change over time but significant and sudden changes are rare. However, as start-ups tend to operate in uncertain and novel environments (e.g., Aldrich & Fiol, 1994) one single entrant might change the

industry dramatically. A company's vision is the long-term goal of a company and a central part of the identity, which does not change often (Locke & Kirkpatrick, 1999). Still, start-ups without a proven business model might need to adapt their vision from time to time.

The calculated ICCs are 67% for vision and 63% for hostility in an unconditional means model, which shows a significant amount of variance on a within-firm level of 33% and 37% respectively. This is in line with theory describing "*context as an ongoing function of the entities that create the context*" (Griffin, 2007, p. 860).

However, based on theoretical reasoning that context variables are typically situated one level above the investigated phenomena (Griffin, 2007) and the interest in incremental explanation of the outcome variable, hostility and vision are at level 2 and grand mean centered.

#### ***3.4.1.7 Advantages of the applied HLM with longitudinal setting***

One essential advantage of the proposed methodology is that it overcomes many limitations regarding the analysis of causal relations. Even though causality cannot be assumed with certainty, the setup reduces the likelihood of reverse causality. The theory outlines a profound foundation of the direction of the hypothesized effects, which is further supported by the between-firm change model used in this study. By not only using longitudinal data but also linking the outcome variable to data of the previous round, reciprocal causality can be substantially diminished (Ilies, Johnson, Judge, & Keeney, 2011; Singer & Willett, 2003). Though it is acknowledged that causal relations cannot be fully investigated in setups other than experiments, hypotheses and model interpretations are phrased implying causal relations as it is the advantage of the model that reverse causality is less likely than in most other settings.

#### **3.4.2 Post-estimation statistics and model validity**

Hierarchical linear modeling with cross-level interaction effects follows assumptions similar to OLS. If those assumptions are violated, the validity of the model can be questioned. It might lead to model misspecification. Snijders and Bosker (1999) and Raudenbush and Bryk (2002) describe a set of methods with which the validity of the model can be tested.

### 3.4.2.1 Normality of residuals

The multilevel residuals are assumed to be normally distributed with means of zero (Snijders & Bosker, 1999). If this condition cannot hold true, it indicates a model misspecification (Snijders & Bosker, 1999). In order to check for a normal distribution a Shapiro-Wilk test for normal distribution is conducted and normality can be assumed ( $p < .000$ ). Moreover, the plot of residuals against quantiles of a normal distribution, which is depicted in Figure 37, confirms the result of the Shapiro-Wilk test.

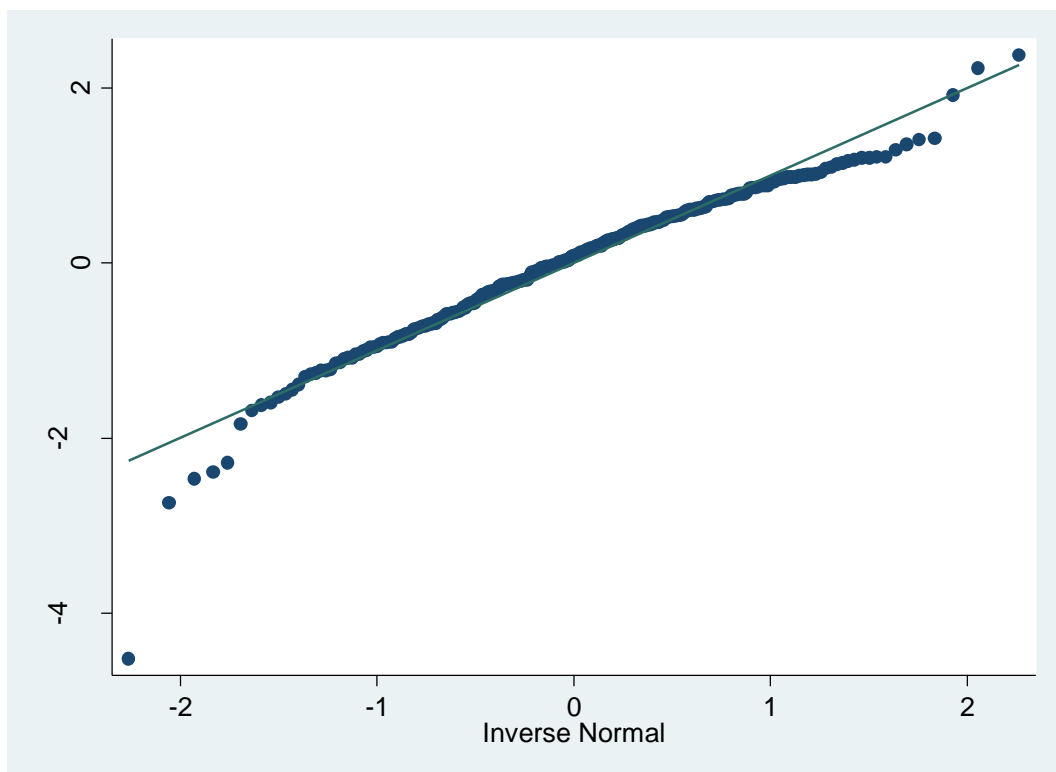


Figure 37: Plot of residuals against quantiles of a normal distribution

### 3.4.2.2 Uncorrelated residuals of random terms

In addition to normally distributed residual variances and uncorrelated level 1 and level 2 residuals, HLM usually assumes that the covariances of random effect terms are zero if not explicitly stated otherwise. However, in more complex models like the one used here, STATA cannot converge on a solution. This prevents the use of an unstructured covariance matrix. Thus, the covariance structure between the random variances of all four feedback events, the two group mean centered covariates company age and number of employees and the residual variance is assumed to be zero.

### 3.4.2.3 Homoscedasticity of residuals

In general, heteroscedasticity describes changes as a function over an independent variable and can be caused by omitted predictors (Singer & Willett, 2003; Snijders & Bosker, 1999). For example, if the variance of the organizational vision increases the larger the company gets, most likely a third variable explaining the increasing variance of the organizational vision is missing. Figure 38 illustrates a typical example of heteroscedasticity.

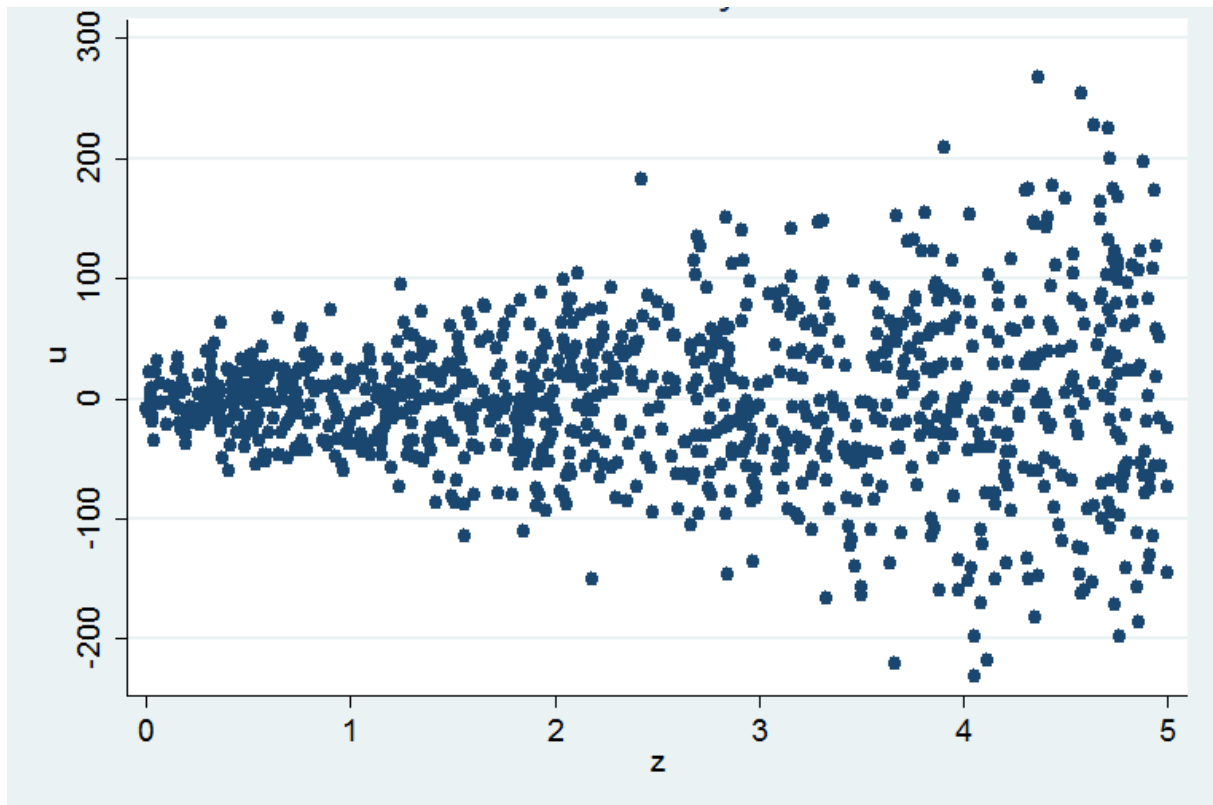


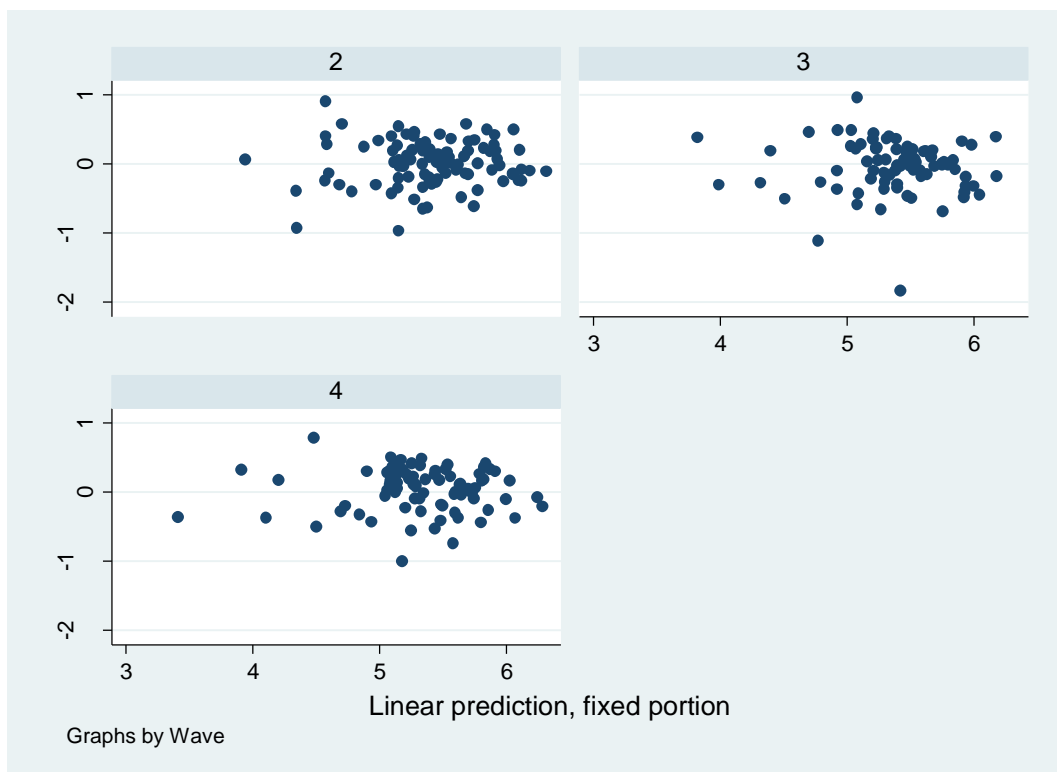
Figure 38: Heteroscedasticity, example from Smart (2012)

In random coefficient models, the "*observations are heteroscedastic because their variances depend on the explanatory variables*" (Snijders & Bosker, 1999, p. 126). All unexplained change of variance is subsumed in the random error terms of HLM. Thus, heteroscedasticity of variables does not cause problems in RCM.

However, the residual error is assumed to be constant in HLM regression (Raudenbush & Bryk, 2002). To check for heteroscedasticity, the residuals of the final model are plotted against the fixed portion of the linear prediction ( $x_b$ ) (Gutierrez, 2008) for each round of the survey. As can be seen in Figure 39, there is no systematic variation of residuals from round 2



to round 4 of the survey, which supports the conclusion that heteroscedasticity of residuals is no issue in this model.



**Figure 39: Distribution of residual errors**

#### **3.4.2.4 Robust estimation of standard errors**

Snijders and Bosker (1999) and Raudenbush and Bryk (2002) propose to use robust or "sandwich" estimators if assumptions about normality, homoscedasticity and uncorrelated covariance structures are not satisfied. Whereas normality of residual errors and homoscedasticity can be assumed, a less restrictive covariance matrix of residuals cannot be tested due to software restrictions. In this situation Raudenbush and Bryk (2002) propose to test with robust estimators. It *"supplies a basis for [...] hypothesis tests even if the HLM assumptions about the distribution and covariance structure of the random effects are incorrect"* (Raudenbush & Bryk, 2002, p. 278). It is further proposed to use random estimators to *"examine discrepancies between model-based and robust standard errors"* in order to identify model misspecification (Raudenbush & Bryk, 2002, p. 278). A robust estimation of the model does not show large variations of standard errors, which indicates model fit and supports the assumption that the random terms are uncorrelated. Having both

methods applied, the estimators are consistent in their findings. To be conservative, results with robust estimation are presented here.

## 4 Results

The following chapter presents the results of the analysis. First, descriptive statistics and correlations are presented. Second, the results testing the hypotheses are shown. Finally, robustness checks are presented in order to investigate the reliability of the results.

### 4.1 Descriptive statistics and correlations

Table 16 shows Pearson correlations as well as means and standard deviations of all variables used in the model. Additionally, the variance structures of level 1 variables are presented. These measures are based on separate null model calculations with the respective variable as the dependent variable. All four types of feedback events show a large amount of variance on the within-firm level. That is, for each firm there is variance in the amount and frequency of events experienced over the four data acquisition rounds. For example, a firm might experience positive external feedback in one round but not in the next, or any of the other rounds. While events differ over time within firms (within firm variance), there are also differences between firms. That is, the number and frequency varies between firms such that some firms might experience each event during each round and other firms might experience each event only once.

Interestingly, variance on the between-firm level is especially high for positive events, no matter if they are internal or external. It could be assumed that the occurrence of events is related to company characteristics, which might cause endogeneity. For example, firms that have better performance might experience more positive feedback. To investigate if this is a problem in our data set we ran several robustness checks. Based on these results it can be assumed that endogeneity is unlikely to impact the results. This result is further supported by the use of a longitudinal HLM, which is better suited to find causal relations than cross-sectional analyses. The checks are summarized and described in section 4.2.7.

Both controls, number of employees and company age, show only little variance on a within-firm level (8% and 5% respectively). As described earlier, despite little variation both are included as level 1 variables. Age changes during the survey by four months and employee number changes might not be strong for each firm but they are likely to happen particularly to successful ventures.

Means, Standard Deviations, Variance Proportions, Correlations

Variables	Means	s.d.	Between-firm variance	Within-firm variance	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
<b>Within-Firm level (Level 1)</b>																			
1. OI Strength	5.39	0.71	61%	39%		0.08	-0.10	0.06	-0.01	0.07	-0.05								
2. # Employees	2.18	0.90	92%	8%	0.03		0.36***	0.00	0.05	0.00	0.02								
3. Company Age	2.74	1.38	95%	5%	0.10	0.31***		-0.05	-0.04	-0.07	0.01								
4. Positive Internal Feedback	0.11		24%	76%	0.12	-0.05	-0.06		0.05	0.04	-0.01								
5. Negative Internal Feedback	0.04		0%	100%	-0.27***	-0.09	-0.16**	0.08		0.08	0.17**								
6. Positive External Feedback	0.31		27%	73%	0.12	-0.13*	-0.25***	0.05	0.12		0.03								
7. Negative External Feedback	0.08		10%	90%	0.03	-0.23***	-0.25***	0.05	0.19**	0.14*									
<b>Between-Firm level (Level 2)</b>																			
8. Hostility (t-1)	0.00	0.93			-0.11	0.07	-0.04	-0.07	0.15*	0.01	0.03								
9. Vision (t-1)	0.00	0.77			0.48***	-0.32***	-0.09	0.08	-0.22***	0.09	-0.01	-0.17**							
10. F. Team's Start-up Experience	1.12	1.32			-0.01	0.13*	-0.02	0.04	0.08	-0.07	0.07	0.16*	-0.07						
11. OI Strength at t(1)	0.00	0.60			0.59***	0.07	0.20***	-0.06	-0.23***	0.04	-0.10	-0.04	0.40***	-0.11					
12. City Founding Team	0.26	0.44			0.02	-0.16**	-0.03	-0.13*	-0.12	-0.13*	0.09	0.14*	0.01	0.03	0.03				
13. Internationality	0.11	0.32			0.02	-0.11	-0.11	-0.01	-0.01	0.25***	-0.02	-0.04	0.09	-0.18**	0.09	-0.04			
14. Founding Team Size	2.45	1.01			-0.11	0.15*	-0.23***	0.07	0.01	0.04	-0.11	0.10	-0.01	-0.03	0.04	-0.12	0.26***		
15. Founding Team Background	6.29	5.91			-0.11	0.35***	0.31***	-0.10	-0.12	-0.15*	-0.11	0.02	-0.18**	0.29***	-0.04	-0.17**	-0.08	0.23***	

Table 16: Descriptive Statistics: Means, Standard Deviations, Variance Proportions, and Pearson Correlations, s.d. = standard deviation, \*p < .05, \*\*p < .01, \*\*\*p < .001

Following best practice for correlations of multilevel models (Bledow, Rosing, & Frese, 2013; Wang, Liao, Zhan, & Shi, 2011), OI Strength and level 1 variables were averaged per firm for between-firm correlations (n=98), which are presented below the diagonal. As discussed in chapter 3.3.3.2 multicollinearity is unlikely to be a problem in the data set.

There are several significant correlations in the between-firm calculations. The first interesting section is that it is more likely that feedback events happen in smaller (Positive external:  $\beta = -.13$ ,  $p < 0.05$ ; negative external:  $\beta = -.23$ ,  $p < 0.001$ ) and younger companies (Negative internal:  $\beta = -.16$ ,  $p < 0.01$ ; Positive external:  $\beta = -.25$ ,  $p < 0.001$ ; negative external:  $\beta = -.25$ ,  $p < 0.001$ ). This is in line with our definition of feedback as a significant event that affects the whole company. The bigger the company, the more salient feedback needs to be that more than 50% of the employees and founders mention this event. The example, that the largest participant with over 100 members won a prestigious German award (Winner of Stiftung Warentest) shows that also larger companies still receive significant feedback, which affects the identity of the whole organization.

The strength of the company's vision is correlated with several variables. It is most strongly correlated with the average ( $\beta = .48$ ,  $p < 0.001$ ) and initial OI ( $\beta = .40$ ,  $p < 0.001$ ), which is consistent with the theoretical framework of Gioia et al. (2010) who posited that vision is the basis for a strong OI.

Initial OI strength is very strongly correlated with average identity of the following survey rounds ( $\beta = .59$ ,  $p < 0.001$ ). This is reasonable and why the initial OI strength is included as a control variable. The inclusion of initial OI eliminates all between-firm influences of OI strength, which already existed at the beginning of the study. Moreover, initial OI strength is higher in start-ups that were older at the beginning of the survey ( $\beta = .20$ ,  $p < 0.001$ ).

The last variable to be highlighted is founder team background. There are several interesting correlations with the aggregated work experience of the founder team in new ventures. Work experience of founder teams is significantly correlated with larger ( $\beta = .35$ ,  $p < 0.001$ ) and older ( $\beta = .31$ ,  $p < 0.001$ ) companies<sup>18</sup>. This is in congruence with previous studies showing similar effect sizes (Bosma, van Praag, Thurik, & Wit, 2004; Delmar & Shane, 2006).

Further, the correlations indicate that start-ups in Berlin have to cope with a more hostile environment than those in Munich ( $\beta = .14$ ,  $p < 0.05$ ) and get less positive internal ( $\beta = -.13$ ,  $p$

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<sup>18</sup> Average age of companies is considered as being a similar measure to venture survival, which is examined in most studies.

< 0.05) and external feedback ( $\beta = -.13$ ,  $p < 0.05$ ). Moreover, Berlin founders are less experienced than founders in Munich ( $\beta = -.17$ ,  $p < 0.01$ ). This might be in line with the perception that Munich start-ups focus on B2B high-tech whereas Berlin Start-ups often tend to concentrate on B2C IT business (McKinsey & Company, 2013).

In addition, Table 16 displays the correlations for level 1 variables ( $n=259$ ) above the diagonal with group mean centered variables. The within-firm correlations show that number of employees is significantly correlated with firm age ( $\beta = .36$ ,  $p < .001$ ). That is, on average firm size increases by 1.4 employees per year (number of employees being a logarithmic variable). Moreover, both, external and internal negative feedback events are moderately correlated ( $\beta = .17$ ,  $p < 0.01$ ). Again, VIFs are below 10 and indicate that multicollinearity is not an issue (see e.g., Hitt, Bierman, Uhlenbruck, & Shimizu, 2006). To eliminate concerns of endogeneity several robustness checks were performed. Negative internal events did not significantly explain negative external events in the following round and vice versa. The same approach is used for positive events and also in this case no significant relationships are found. Therefore, it can be concluded that endogeneity is unlikely to be a problem in the data set (see chapter 4.2.7 for robustness checks).

All correlations are in line with theory and previous research, which supports the construct validity of the model (Bledow et al., 2013).

## **4.2 Results of HLM analysis**

The results of the HLM analysis are shown in Table 17 for interactions between external events and context variables and in Table 18 for interactions between internal events and context variables. The models follow the order introduced in chapter 3.4.1. The full model is composed in five steps. First, (i) the null-model, then (ii) adding the control variables, (iii) events, (iv) context variables and, finally (v) the interactions.

	Model 1 – Null Model		Model 2 - Controls		Model 3 – Events (Level 1)		Model 4 – Context variables (Level 2)		Model 5 – Interaction effects	
Evaluation Criteria	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Constant	5.367 ***	0.065	5.350 ***	0.158	5.245 ***	0.176	5.032 ***	0.197	5.018 ***	0.190
<b>Controls<sup>a</sup></b>										
OI Strength at (t1)			0.607 ***	0.090	0.599 ***	0.090	0.486 ***	0.087	0.503 ***	0.086
Firm age (Group means, L1)			-0.217	0.140	-0.123	0.134	-0.083	0.122	-0.119	0.119
Firm age (Average; L2)			-0.011	0.038	-0.001	0.039	0.013	0.036	0.007	0.035
# Employees (Group means, L1))			0.240	0.190	0.156	0.198	0.074	0.172	0.076	0.162
# Employees (Average; L2)			0.027	0.059	0.033	0.058	0.105 †	0.060	0.114 †	0.061
Founder Team Size			-0.095 †	0.054	-0.095 †	0.051	-0.078	0.048	-0.082 †	0.047
<b>Independent Variables</b>										
Positive Internal Feedback					0.232 **	0.089	0.223 *	0.095	0.260 **	0.099
Negative Internal Feedback					-0.182	0.181	0.015	0.196	-0.053	0.222
Positive External Feedback					0.144	0.092	0.126	0.089	0.164 †	0.089
Negative External Feedback					-0.010	0.159	0.019	0.171	0.022	0.125
Organizational Vision (t-1)							0.205 **	0.077	0.245 **	0.089
Environmental Hostility (t-1)							-0.102 **	0.039	-0.097 *	0.040
Founding Team's Start-up Experience							0.028	0.036	-0.002	0.036
<b>Interactions</b>										
pFB_Ext x Vision(t-1)									-0.183	0.131
nFB_Ext x Vision(t-1)									0.446 *	0.191
pFB_Ext x Hostility(t-1)									-0.031	0.064
nFB_Ext x Hostility(t-1)									0.275 †	0.163
pFB_Ext x FT_EXP									0.070	0.049
nFB_Ext x FT_EXP									0.268 **	0.092
<b>Variance components</b>										
L1 Variance $\sigma^2 = \text{var}(r_{1j})$	0.204		0.202	$\Delta 1\%b$	0.175	$\Delta 13\%$	0.173	$\Delta 1\%$	0.165	$\Delta 5\%$
L2 Variance $\tau_{00} = \text{var}(u_{0j})$	0.319		0.172	$\Delta 46\%c$	0.142	$\Delta 17\%$	0.100	$\Delta 30\%$	0.092	$\Delta 8\%$
<b>Slope variance</b>										
Firm age $\tau_{50} = \text{var}(u_{5j})$					0.000		0.000		0.000	
# Employees $\tau_{60} = \text{var}(u_{6j})$					0.196		0.043		0.000	
Positive Internal Feedback $\tau_{10} = \text{var}(u_{1j})$					0.000		0.000		0.000	
Negative Internal Feedback $\tau_{20} = \text{var}(u_{2j})$					0.009		0.070		0.230	
Positive External Feedback $\tau_{30} = \text{var}(u_{3j})$					0.029		0.055		0.066	
Negative External Feedback $\tau_{40} = \text{var}(u_{4j})$					0.226		0.282		0.045	
<b>Model fit and R<sup>2</sup> <sup>d</sup></b>										
-2LL	480.5		433.9		420.5		401.6		381.2	
R <sup>2</sup> Raudenbush Level 1			0.010		0.142		0.152		0.191	
R <sup>2</sup> Raudenbush Level 2			0.461		0.555		0.687		0.712	
R <sup>2</sup> Raudenbush Level 2 based on Model 2					0.174		0.419		0.465	

S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p < .1; \*p < .05; \*\*p < .01, \*\*\*p < .001.

a) Other control variables where highly insignificant in all models and are not shown in this model (Internationality, Startup Experience, Location)

b) This value indicates the proportional additional variance explained by adding level 1 effects to the model. The largest effect is seen as expected when the level 1 feedback events are added followed by the interaction effects.

c) This value shows the proportional additional variance explained by adding the level 2 effects. As most variables and the focus of this study is on level 2, it is not surprising that the large drops in unexplained variance happen when the level 2 controls (especially the initial OI strength) and the level 2 moderators are added.

d) Pseudo R<sup>2</sup>s are calculated as described by Raudenbush and Bryk (2002).

**Table 17: HLM model of the moderating influence of vision, hostility and a founding team's start-up experience on the effect of external feedback on OI strength**

	Model 1 – Null Model		Model 2 - Controls		Model 3 – Events (Level 1)		Model 4 – Context variables (Level 2)		Model 5 – Interaction effects	
Evaluation Criteria	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Constant	5.367 ***	0.065	5.350 ***	0.158	5.245 ***	0.176	5.032 ***	0.197	5.059 ***	0.198
<b>Controls*</b>										
OI Strength at t(1)			0.607 ***	0.090	0.599 ***	0.090	0.486 ***	0.087	0.478 ***	0.085
Firm age (Group means, L1)			-0.217 †	0.140	-0.123	0.134	-0.083	0.122	-0.089	0.122
Firm age (Average; L2)			-0.011	0.038	-0.001	0.039	0.013	0.036	0.012	0.035
# Employees (Group means, L1))			0.240	0.190	0.156	0.198	0.074	0.172	0.081	0.171
# Employees (Average; L2)			0.027	0.059	0.033	0.058	0.105 †	0.060	0.102 †	0.060
Founder Team Size			-0.095 †	0.054	-0.095 †	0.051	-0.078	0.048	-0.072	0.049
<b>Independent Variables</b>										
Positive Internal Feedback					0.232 **	0.089	0.223 *	0.095	0.235 *	0.092
Negative Internal Feedback					-0.182	0.181	0.015	0.196	-0.221	0.257
Positive External Feedback					0.144	0.092	0.126	0.089	0.105	0.091
Negative External Feedback					-0.010	0.159	0.019	0.171	-0.019	0.179
Organizational Vision (t-1)							0.205 **	0.077	0.255 **	0.082
Environmental Hostility (t-1)							-0.102 **	0.039	-0.095 *	0.041
Founding Team's Start-up Experience							0.028	0.036	0.025	0.036
<b>Interactions</b>										
pFB_Int x Vision(t-1)									-0.117	0.156
nFB_Int x Vision(t-1)									-0.404 **	0.15
pFB_Int x Hostility(t-1)									0.130	0.102
nFB_Int x Hostility(t-1)									-0.266 **	0.100
pFB_Int x FT_EXP									-0.037	0.104
nFB_Int x FT_EXP									0.137 *	0.069
<b>Variance components</b>										
L1 Variance $\sigma^2 = \text{var}(r_i)$	0.204		0.202	$\Delta 1\%^b$	0.175	$\Delta 13\%$	0.173	$\Delta 1\%$	0.174	$-\Delta 1\%$
L2 Variance $\tau_{00} = \text{var}(u_{0j})$	0.319		0.172	$\Delta 46\%^c$	0.142	$\Delta 17\%$	0.100	$\Delta 30\%$	0.092	$\Delta 8\%$
<b>Slope variance</b>										
Firm age $\tau_{50} = \text{var}(u_{5j})$					0.000		0.000		0.000	
# Employees $\tau_{60} = \text{var}(u_{6j})$					0.196		0.043		0.046	
Positive Internal Feedback $\tau_{10} = \text{var}(u_{1j})$					0.000		0.000		0.000	
Negative Internal Feedback $\tau_{20} = \text{var}(u_{2j})$					0.009		0.070		0.000	
Positive External Feedback $\tau_{30} = \text{var}(u_{3j})$					0.029		0.055		0.046	
Negative External Feedback $\tau_{40} = \text{var}(u_{4j})$					0.226		0.282		0.236	
<b>Model fit and R<sup>2</sup> <sup>d</sup></b>										
-2LL	480.5		433.9		420.5		401.6		392.2	
R <sup>2</sup> Raudenbush Level 1			0.010		0.142		0.152		0.147	
R <sup>2</sup> Raudenbush Level 2			0.461		0.555		0.687		0.712	
R <sup>2</sup> Raudenbush Level 2 based on Model 2					0.174		0.419		0.465	

S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p <.1; \*p<.05; \*\*p<.01, \*\*\*p<.001.

a) Other control variables where highly insignificant in all models and are not shown in this model (Internationality, Startup Experience, Location)

b) This value indicates the proportional additional variance explained by adding level 1 effects to the model. The largest effect is seen as expected when the level 1 feedback events are added followed by the interaction effects.

c) This value shows the proportional additional variance explained by adding the level 2 effects. As most variables and the focus of this study is on level 2, it is not surprising that the large drops in unexplained variance happen when the level 2 controls (especially the initial OI strength) and the level 2 moderators are added.

d) Pseudo R<sup>2</sup>s are calculated as described by Raudenbush and Bryk (2002).

**Table 18: HLM model of the moderating influence of vision, hostility and a founding team's start-up experience on the effect of internal feedback on OI strength**



### 4.2.1 Null model

The null model is calculated for two reasons. First, it shows the components of variance at each level. As Table 16 shows, there is a significant proportion of variance on level 1 (39%) and on level 2 (61%) resulting in an ICC of .61. That is, 61% of variance in OI lies between-firms, while 39% is on the within-firm level. The theoretical model hypothesizes that variables at different levels (level 1 variables (events) and level 2 variables (experience, vision, and hostility)) impact OI strength. Only when there is a considerable amount of variance on each level the use of a multilevel approach is recommended (Mathieu et al., 2012). The results of the null model indicate that there is variance within and between firms, which again supports the appropriateness of the multilevel approach.

Second, to determine the appropriateness of a multilevel model a likelihood ratio test against a linear regression was performed while using the maximum likelihood estimator. The results showed a significant difference ( $\chi^2 = 76.12$ ;  $p < .001$ ), which supports the multilevel approach.

### 4.2.2 Model including controls

The control variables are entered in model 2. While founder team size has a negative and moderately significant influence ( $\gamma = -.10$ ,  $p < .1$ ), initial OI strength has a positive and significant impact on OI strength ( $\gamma = .61$ ,  $p < .001$ ). Since OI is conceptualized as a rather stable construct (Albert & Whetten, 1985) its initial value significantly predicts future values. As described in section 3.4.1.5, by including the initial OI value, the fixed effect of OI is incorporated in the model. Thus, all fixed effects from omitted variables are already recognized in OI(t1) and therefore show no effect on OI strength of rounds 2 to 4. Hence, specifically the *change or growth* of OI strength is predicted in the model.

The strong influence of initial OI can also be seen in the decrease of unexplained variance. If model 2 is further split to first include all controls without initial OI and in a second step only introduce initial OI, the individual contribution of OI strength to the explained variance can be separated. Out of the 46% decrease in unexplained variance, 41% is due to OI(t1) and only 5% are due to the other control variables as can be seen in Table 19.

	<b>Model 1 - Null Model</b>	<b>Model 2a - Without OI(t1)</b>	<b>Model 2 – Controls</b>
L2 Variance $u_{0j}$	0.319	0.303 $\Delta 5\%$	0.172 $\Delta 46\%^a$

a) Delta calculation based on Model 1

**Table 19: Separation of the contribution to explained variance of OI strength**

The within-firm variance is decreased by 1% due to the inclusion of *firm age* and *number of employees* as level 1 variables.

Overall, the inclusion of control variables reduced the residual variance on both levels. This reduction indicates the effect size (Aguinis et al., 2013). Raudenbush and Bryk (2002) and Snijders and Bosker (1999) proposed a method of calculating a pseudo  $R^2$  based on the changes in residual variances. While Raudenbush and Bryk (2002) calculate the  $R^2$  for level 1 and level 2 only by considering the proportional reduction in error variance, Snijders and Bosker (1999) additionally take the change of the other level into account. This study uses the method for calculating  $R^2$  proposed by Raudenbush and Bryk (2002). The pseudo  $R^2$  values are shown at the bottom of Table 17. Due to the strong effect of the initial OI strength on explained variance, a large part of the level 2 variance is already explained with the inclusion of the variables in model 2. In order to evaluate the effect sizes above and beyond this effect, a  $R^2$  value with model 2 as baseline is presented in addition to the effect sizes based on the null model.

### 4.2.3 Main effects model with level 1 variables

Model 3 includes all four feedback events as the low-level direct effects variables. As described in chapter 3.4, RIRSM is used for all models as the effect of events on OI might differ from one firm to another. In contrast to the order of the hypotheses, events are included before the context variables in the model because they are on the same level as the dependent variable OI strength, which follows the outlined statistical method. A table with the context variables added first can be found in appendix 8.6. The results do not change.

Only positive internal feedback has a significant influence on an increase in OI strength (internal:  $\gamma = .23, p < .01$ ). This confirms hypothesis 4. A histogram of OI change<sup>19</sup> for positive internal events shows that almost all cases lead to a positive or at least unchanging effect on OI (Figure 40).

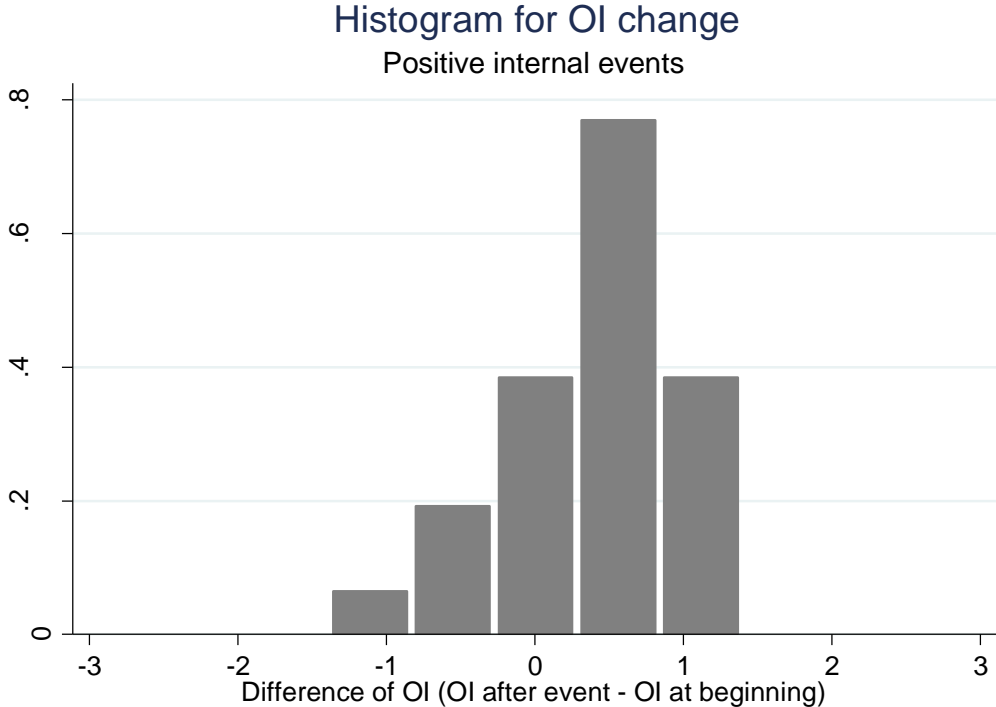
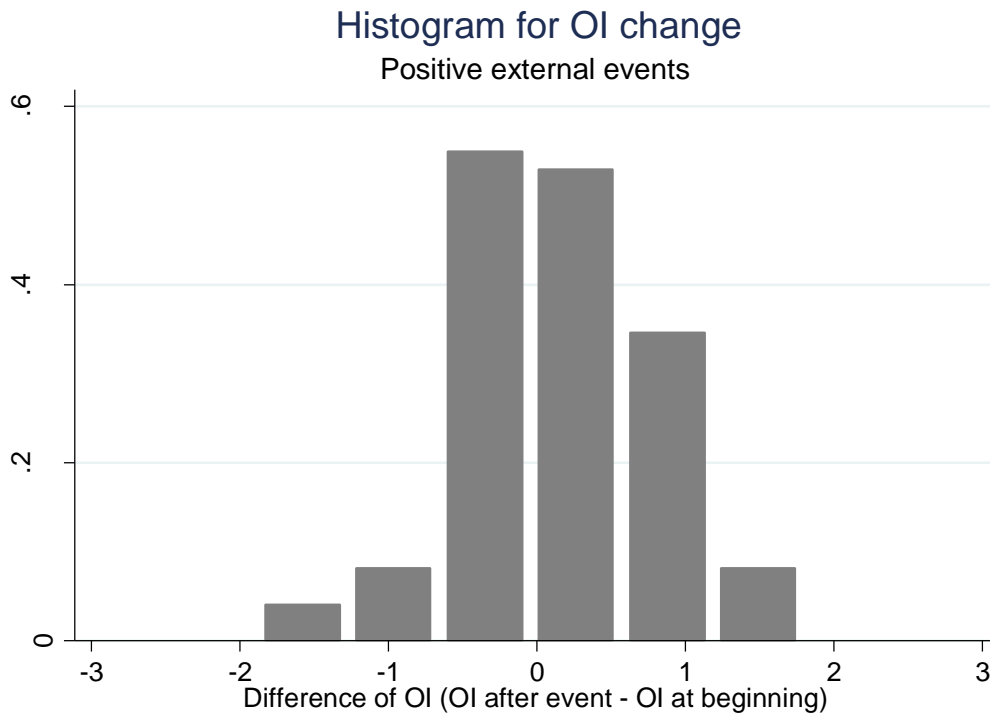


Figure 40: Effects of positive internal events on OI; histogram

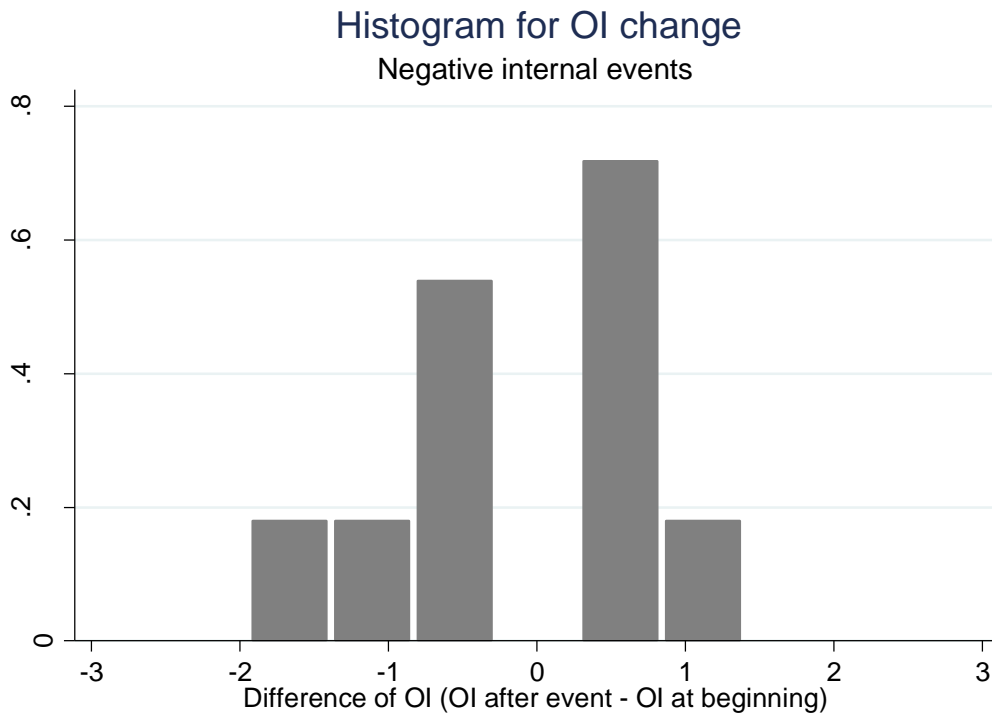
In contrast to the hypotheses positive external feedback ( $\gamma = -.18, p > .1$ ), negative internal feedback ( $\gamma = .14, p > .1$ ), and negative external feedback ( $\gamma = -.01, p > .1$ ) do not have significant effects. Thus, hypotheses 5, 6 and 7 are not confirmed. The histogram of the OI change for positive external feedback depicts that most cases are gathered around 0 with some positive exceptions, which indicates a mostly unchanged OI in case of a positive external feedback (Figure 41).

<sup>19</sup> OI change is calculated as the difference between OI at the beginning and after the event: OI change = OI\_after – OI\_beginning

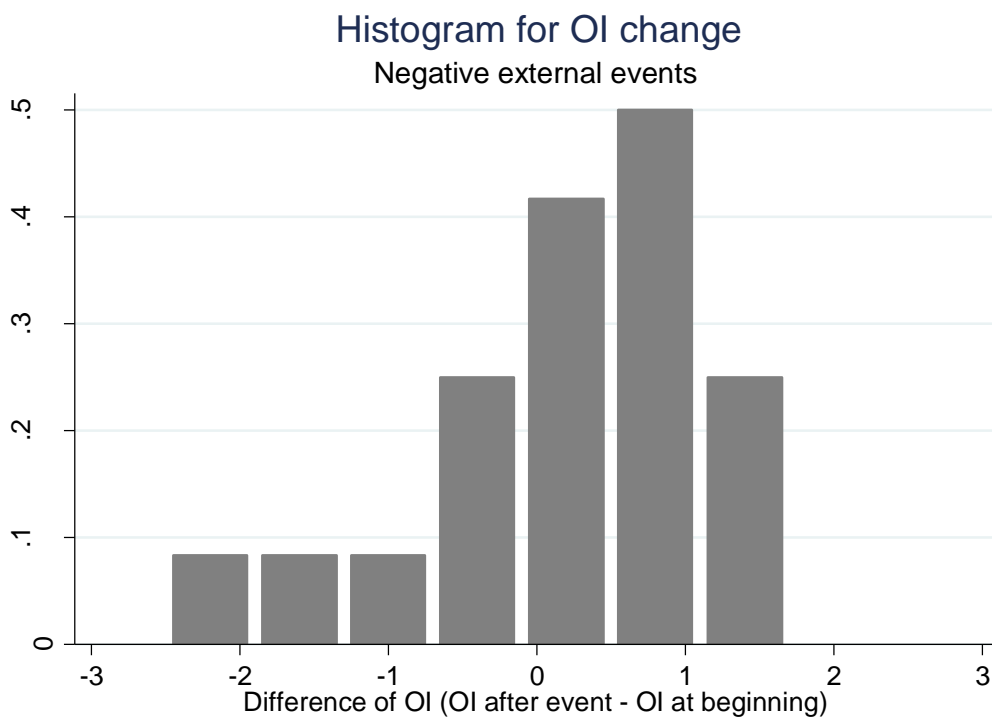


**Figure 41: Effects of positive external events on OI; histogram**

In contrast, the histograms for OI change in case of negative internal or external events are more distributed and show negative, zero, and positive change. This hints to a more complex relationship which can be explained by moderating variables. They are depicted in Figure 42 and Figure 43.



**Figure 42: Effects on negative internal events on OI; histogram**



**Figure 43: Effects of negative external events on OI; histogram**

Considering the random parts of the equation, the slope variance of firm age and positive internal feedback are close to zero. However, the estimation failed to calculate standard errors. Even though these two variables could be deleted from the random part of the equation (Schonfeld & Rindskopf, 2007), they are kept due to theoretical reasons, which have been explained before (chapter 3.4.1.3).

By adding the low-level direct effects, considerable residual variance is explained. The level 1 residual variance decreases by 13% and level 2 residual variance by 17%. Feedback does not only affect the level of OI strength in an organization but is also absorbed differently in other organizations, which supports the decision of random coefficient modelling.

#### **4.2.4 Main effects model with level 2 variables**

In model 4 the level 2 direct effects variables are added. A founding team's start-up experience does not have a significant effect ( $\gamma = 0.03$ ;  $p > .1$ ). It seems that a founding team's start-up experience does not directly influence OI strength. Thus, hypothesis 1 is not confirmed. The organizational vision – as perceived by the organizational members – is strongly and positively related to OI strength ( $\gamma = .21$ ,  $p < .01$ ). Hence, hypothesis 2 is supported. Hostility has a significant effect on OI strength ( $\gamma = -.10$ ,  $p < .01$ ). That is, the more hostile an environment, the weaker the OI strength. Hence, hypothesis 3 is supported.

The inclusion of the main effects of the level 2 variables caused a substantial reduction of level 2 variance by 30% whereas level 1 residual variance did not change considerably (1%). This decrease of error variance leads to a level 2 pseudo  $R^2$  (Raudenbush & Bryk, 2002) of .687 and a level 1 pseudo  $R^2$  of .152 (the null model being the base).

#### **4.2.5 Interaction model with external feedback**

The final model includes the interaction terms of all level 2 direct effects variables (context variables) with feedback events. It is split into two parts. This section is depicting interaction effects with external feedback; the next section highlights interactions of context variables and internal events.

Following Aguinis et al. (2013), interaction effects are included even though the main effects are not significant. It leads to a further reduction of both level 1 (5%) and level 2 (8%) residual variance, which supports the decision as the final model better explains the data.

Compared to the null model, the final cross-level interaction model explains 71% of the initial residual variance of OI strength between firms and 19% of the residual variance within firms.

Table 17 shows that there are significant interactions between external feedback events and a founding team's start-up experience, vision, and hostility.

The interaction effects can be described in two ways, which are both presented in the following section. First, the interaction term  $\gamma$  in the regression statistics is significant, which means that one variable is significantly influencing the effect of the other variable as long as all other values are kept at 0 (which is the mean if mean centered). However, this does not explain the magnitude of the main effect under different conditions of the moderating variable. For example, if vision significantly moderates the effect of a negative external event on OI strength, one can conclude that the effects are significantly different for different values of vision. Yet, no statement about the specific effect for one specific level of vision can be made.

To investigate this, marginal effects are calculated in a second step. Typically, several different regressions or *slope tests* are calculated. The difference is that – instead of keeping all values at 0 – the coefficients  $\beta$  are calculated for specific values of a moderator variable. For example, the intercepts and coefficients of negative external feedback are calculated for vision having values of -3, -2, -1, 0, 1, 2, and 3 standard deviations away from the mean. This allows drawing conclusions for these specific conditions. There might be no effect of negative external feedback on OI strength at a strong vision (= high, one standard deviation above mean), which is significantly different from 0 while at weak vision conditions (= low, one standard deviation below mean) a negative external event might have a significant negative effect on OI strength. Both values do not state that these effects are different (and hence significant) but show the exact coefficient under a condition of interest. Depending on how the hypotheses are phrased, either option to interpret the interactions is of interest.

Significance in one option does not require the other condition to be significant.

#### ***4.2.5.1 Interaction with a founding team's start-up experience***

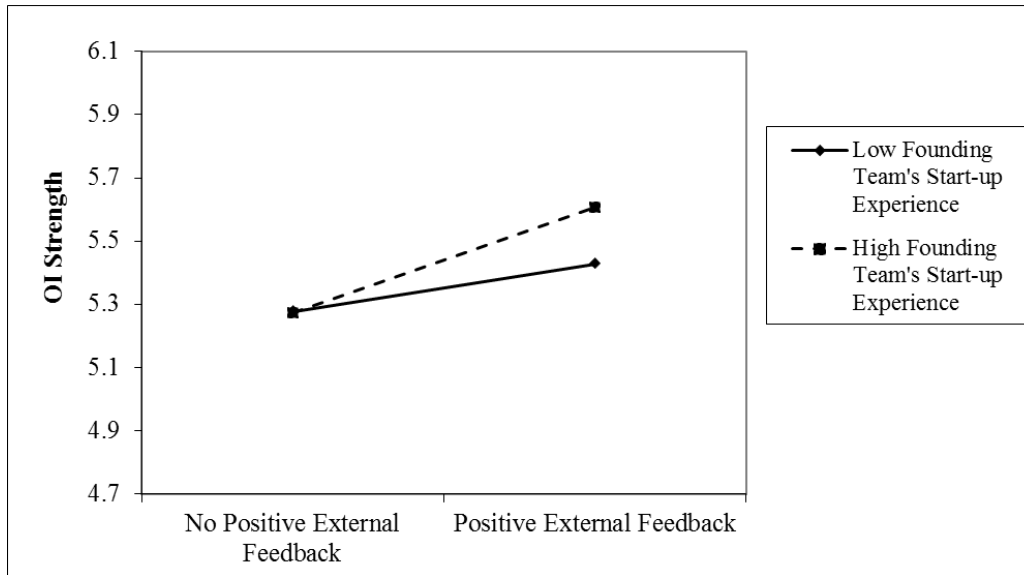
The moderating role of a founding team's start-up experience on the relationship of external feedback events with OI strength is plotted in Figure 44 and Figure 45 for positive and negative external feedback respectively. The two and all following interaction graphs visualize the effect of feedback on the x-axis against OI strength on the y-axis. The interaction

effects are further analyzed by calculating slopes for the respective main effect with the moderator variable not being at their mean but one standard deviation below and one standard deviation above mean. This procedure is called simple slope test. In all illustrations, other covariates are kept at zero, which denotes also the mean value if centered. The only exception is the included averages for company age and number of employees. The slopes are depicted for the means of both variables, which are higher than zero (2.7 years for average company age and 2.1 for the logarithmic average number of employees). The interaction effects are plotted for two scenarios. First, it is drawn for high values of the context variable (one standard deviation above the mean) and second, for low (one standard deviation below the mean) values of the context variable. The coefficients and intercepts, which are calculated in the simple slope tests are subject to further interpretation about the validity of the moderating effect.

A founding team's start-up experience has a mean of 1.1 previously founded start-ups with a standard deviation of 1.3 start-ups. Thus, the low value of -1 standard deviation would result in -0.2 founded start-ups. For reasons of consistency, the interaction plots of experience are still depicted with 1 standard deviation above mean and 1 standard deviation below mean. However, marginal effects are computed for whole numbers of 0 to 4 previously founded start-ups instead of from -3 to +3 standard deviations.

The moderating impact of founding team's start-up experience on the effect of positive external events on OI strength is not significant ( $\gamma = .07, p > .1$ ). As plotted in Figure 44, both, companies with inexperienced and experienced founders can build on positive events but there is no significant difference in how the companies deal with the feedback to strengthen their OI.





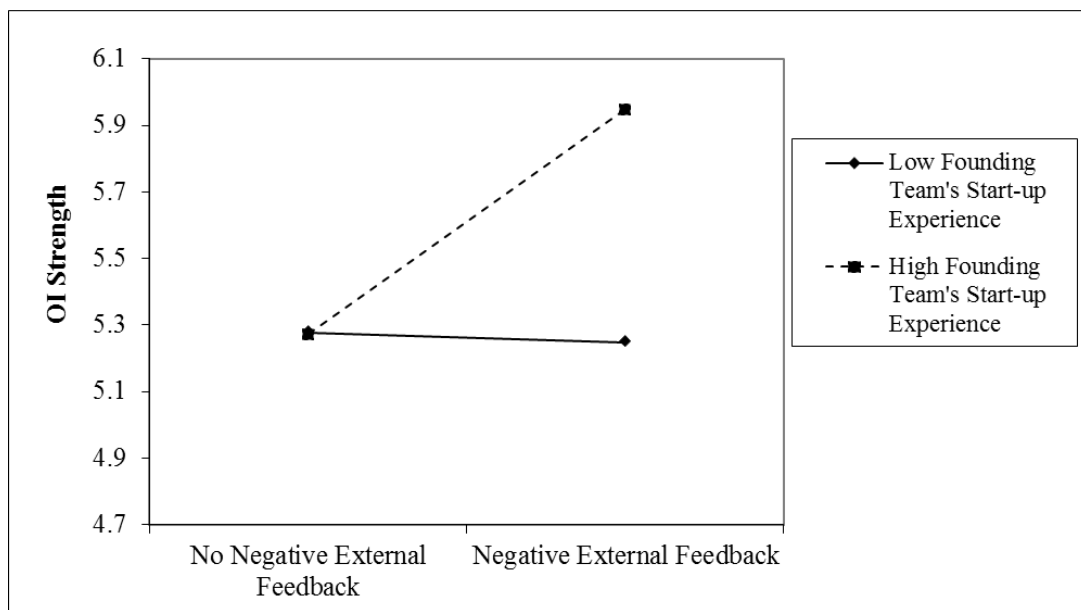
**Figure 44: The moderating role of a founding team’s start-up experience on the effect of positive external feedback on OI strength**

The marginal effects for a founding team’s start-up experience are computed in a way that each slope is calculated for one additional founded venture starting from zero experience. As can be seen in Table 20, the effect of positive external feedback is always positive, independent of the value of a founding team’s start-up experience (slope coefficients for experienced with 2 start-ups:  $\beta = .31$ ,  $p < .001$ ; inexperienced with 0 start-ups:  $\beta = .16$ ,  $p = < .1$ ). Thus, hypothesis 8b cannot be confirmed.

<i>Positive external feedback at values for experience</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
<i>0 founded start-ups</i>	<b>0.16</b> †	<b>0.09</b>	<b>-0.01</b>	<b>0.34</b>
<i>1 founded start-up</i>	0.24 ***	0.07	0.09	0.38
<i>2 founded start-ups</i>	<b>0.31</b> ***	<b>0.09</b>	<b>0.14</b>	<b>0.47</b>
<i>3 founded start-ups</i>	0.38 **	0.12	0.14	0.61
<i>4 founded start-ups</i>	0.45 **	0.16	0.13	0.76

**Table 20: Marginal effects of positive external feedback for different values of a founding team’s start-up experience. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; † $p < .1$ ; \* $p < .05$ ; \*\* $p < .01$ , \*\*\* $p < .001$ .**

The interaction term of a founding team's start-up experience and negative external feedback is significantly and positively related to OI strength ( $\gamma = .27, p < .01$ ) which confirms hypothesis 8d, which predicted that ventures with more experienced teams will be able to increase OI strength in case of negative external feedback. Figure 45 shows the nature of the interaction relationship such that founder teams with more experience are able to translate negative external feedback into OI strength.



**Figure 45: The moderating role of a founding team's start-up experience on the effect of negative external feedback on OI strength**

When conducting simple slope tests in a margins computation (Table 21), the slope coefficient for teams with no experience (no previously founded start-ups) is not significant ( $\beta = .02, p > .1$ ). They cannot significantly improve the OI strength with negative feedback events. Firms with experienced founders even starting from 1 previously founded venture, however, can find support for their OI also in negative events (for 2 founded start-ups:  $\beta = .55, p < .01$ ), which confirms Hypothesis 8d.

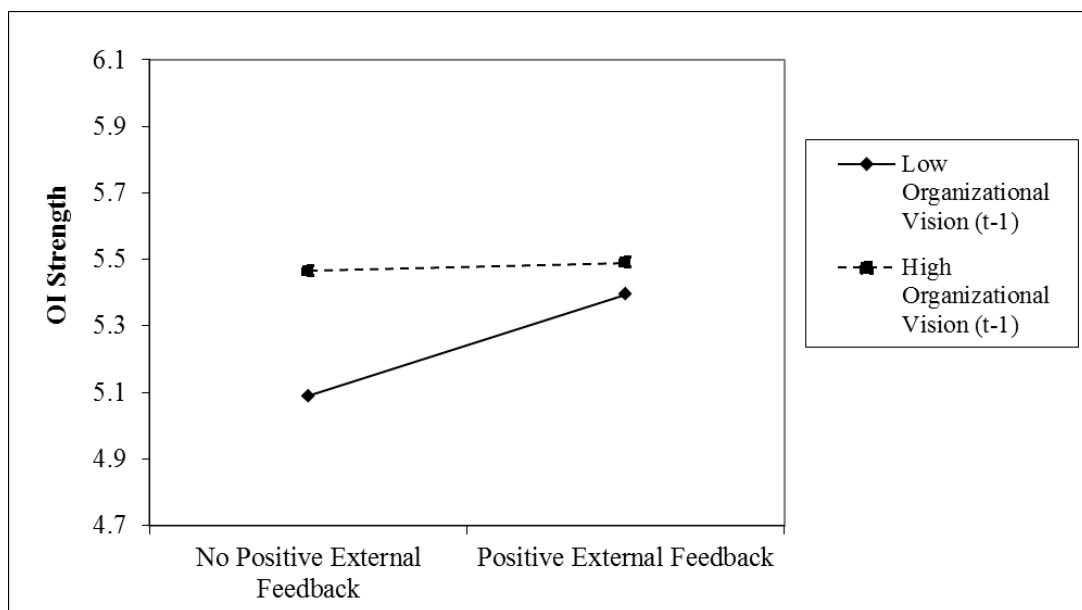
<i>Negative external feedback at values for experience</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
<i>0 founded start-ups</i>	<b>0.02</b>	<b>0.13</b>	<b>-0.23</b>	<b>0.26</b>
<i>1 founded start-up</i>	0.29 *	0.12	0.05	0.53
<i>2 founded start-ups</i>	<b>0.55 **</b>	<b>0.18</b>	<b>0.21</b>	<b>0.90</b>
<i>3 founded start-ups</i>	0.82 ***	0.25	0.33	1.32
<i>4 founded start-ups</i>	1.09 ***	0.34	0.43	1.75

**Table 21: Marginal effects of negative external feedback for different values of a founding team's start-up experience. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p <.1; \*p<.05; \*\*p<.01, \*\*\*p<.001.**

#### 4.2.5.2 Interaction with organizational vision

The result in Table 17 shows that the interaction between vision and positive external feedback on OI strength is not significant ( $\gamma = -.18, p > .1$ ) while there is a significant positive interaction between organizational vision and negative external feedback ( $\gamma = .45, p < .05$ ). This initially supports hypothesis 9d, but not hypothesis 9b.

The interaction effect between vision and positive external feedback on OI strength is shown in Figure 46. Organizations with stronger visions already have a stronger OI even without feedback. But if they receive positive feedback it does not lead to a further increase in OI while organizations with a weak vision significantly profit from positive external feedback.



**Figure 46: The moderating role of organizational vision on the effect of positive external feedback on OI strength**

Due to the significant main effect of vision on OI strength, when calculating the intercepts for both high and low vision, the one for organizations with high vision ( $\beta_0 = 5.46$ ; 95% confidence interval: 5.31 – 5.62) is found to be significantly higher than the one for organizations with low vision ( $\beta_0 = 5.09$ ; 95% confidence interval: 4.88 – 5.30).

Again, marginal effects are calculated using simple slope tests. In order to investigate the interaction of organizational vision with feedback on OI strength in greater detail two cases are estimated: a high vision strength scenario with one standard deviation above mean and a low vision strength scenario with one standard deviation below mean. The simple slope tests show that organizations with a strong vision do not significantly gain from positive external feedback (+1 s.d.:  $\beta = .02$ ;  $p > .1$ ). On the other hand, companies with a weak vision do significantly profit from positive external feedback (-1 s.d.:  $\beta = .30$ ,  $p < .05$ ), which supports Hypothesis 9b even though the interaction itself is not significant. The marginal effects are depicted in Table 22.

<i>Positive external feedback at values for vision</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
-3 s.d.	0.59 †	0.34	-0.08	1.25
-2 s.d.	0.45 †	0.24	-0.03	0.92
<b>-1 s.d.</b>	<b>0.30 *</b>	<b>0.15</b>	<b>0.00</b>	<b>0.60</b>
<i>Mean</i>	0.16 †	0.09	-0.01	0.34
<b>+1 s.d.</b>	<b>0.02</b>	<b>0.11</b>	<b>-0.20</b>	<b>0.24</b>
+2 s.d.	-0.12	0.19	-0.50	0.26
+3 s.d.	-0.26	0.29	-0.82	0.31

**Table 22: Marginal effects of positive external feedback for different values of organizational vision. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p <.1; \*p<.05; \*\*p<.01, \*\*\*p<.001.**

The positive effect of negative feedback on OI strength is increased by stronger visions ( $\gamma = .45$ ,  $p < 0.05$ ), which is illustrated in Figure 47. That is, the relationship between negative feedback and OI is positive when there is a strong vision.

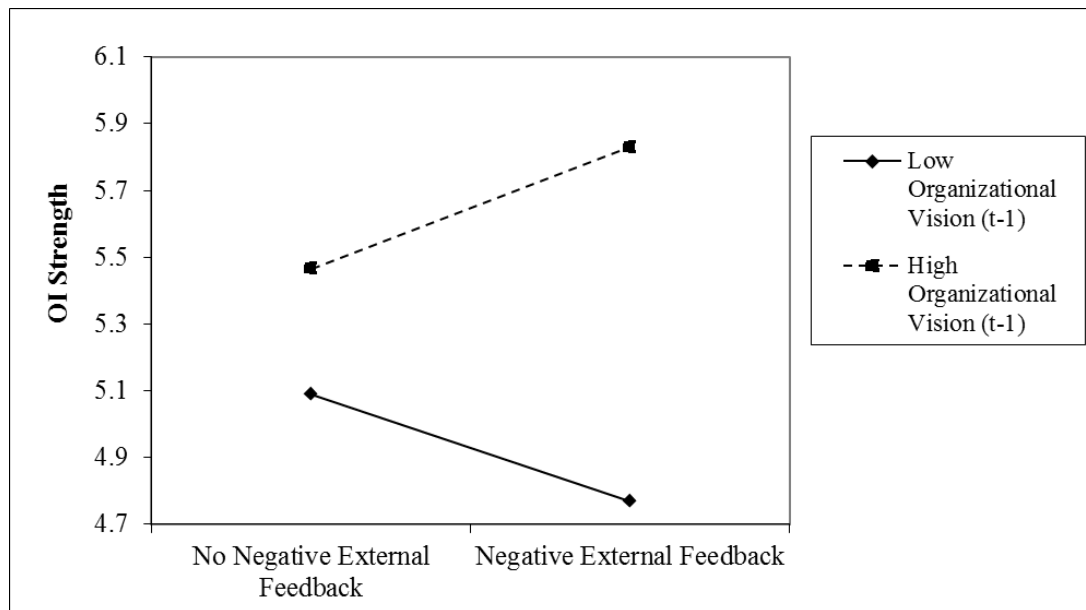


Figure 47: The moderating role of organizational vision on the effect of negative external feedback on OI strength

As can be seen in the marginal effects computation in Table 23, the already stronger OI for organizations with a high vision is further increased (+1 s.d.:  $\beta = .36$ ,  $p < .05$ ) while organizations with a low vision suffer from negative feedback and their OI is weakened (-1 s.d.:  $\beta = -.32$ ,  $p = .12$ ).

However, only at values of vision below -1.1 standard deviations, there is a significant negative coefficient. Still, this effect confirms hypothesis 9d.

<i>Negative external feedback at values for vision</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
-3 s.d.	-1.01 *	0.47	-1.94	-0.08
-2 s.d.	-0.66 *	0.33	-1.32	-0.01
-1 s.d.	<b>-0.32</b>	<b>0.21</b>	<b>-0.72</b>	<b>0.08</b>
Mean	0.02	0.13	-0.23	0.27
+1 s.d.	<b>0.36 *</b>	<b>0.18</b>	<b>0.01</b>	<b>0.72</b>
+2 s.d.	0.71 *	0.30	0.11	1.30
+3 s.d.	1.05 *	0.44	0.18	1.92

Table 23: Marginal effects of negative external feedback for different values of organizational vision. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p < .1; \*p < .05; \*\*p < .01, \*\*\*p < .001.

#### 4.2.5.3 Interaction with environmental hostility

No significant interaction could be found for hostility and positive external feedback on OI strength ( $\gamma = .03, p > .1$ ). Figure 48 illustrates the relationship of positive external feedback on OI strength in case of low and high hostility. In both cases, high and low environmental hostility, OI strength is increasing if positive external feedback is received. Hence, hypothesis 10b is not supported.

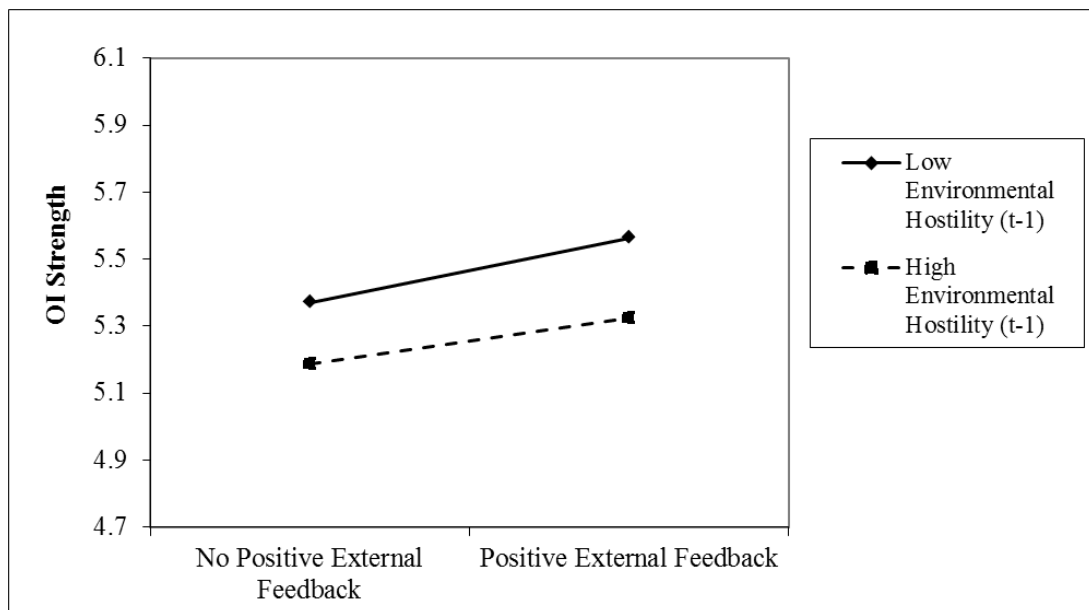


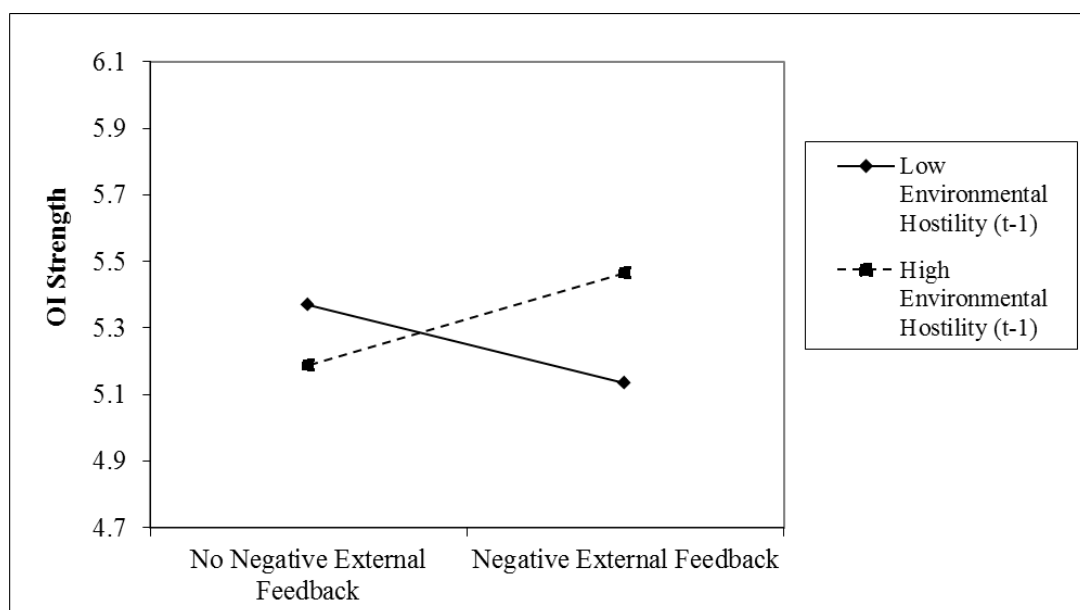
Figure 48: The moderating role of environmental hostility on the effect of positive external feedback on OI strength

This is also visible in the marginal effects calculation. As depicted in Table 24, there are only few marginally significant effects with little changes of the slope coefficients for different values of environmental hostility.

<i>Positive external feedback at values for hostility</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
-3 s.d.	0.25	0.19	-0.12	0.63
-2 s.d.	0.22	0.14	-0.05	0.50
-1 s.d.	<b>0.19</b> †	<b>0.10</b>	<b>-0.01</b>	<b>0.39</b>
Mean	0.16 †	0.09	-0.01	0.34
+1 s.d.	<b>0.14</b>	<b>0.11</b>	<b>-0.08</b>	<b>0.36</b>
+2 s.d.	0.11	0.16	-0.20	0.41
+3 s.d.	0.08	0.21	-0.33	0.48

**Table 24: Marginal effects of positive external feedback for different values of environmental hostility. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p < .1; \*p < .05; \*\*p < .01, \*\*\*p < .001.**

The interaction of hostility with negative external feedback on OI strength is marginally significant and positive ( $\gamma = .28, p < .1$ ) as depicted in Figure 49. Again, simple slope calculations were conducted to investigate marginal effects. Negative feedback is interpreted differently in organizations with low hostility than in organizations facing high hostility. Organizations facing low hostility (one standard deviation below mean) are negatively affected by a negative external event (-1 s.d.:  $\beta = -.24, p > .1$ ), while organizations in a highly hostile environment gain from negative external events in terms of a strengthened OI (+1 s.d.:  $\beta = .28, p > .1$ ).



**Figure 49: The moderating role of environmental hostility on the effect of negative external feedback on OI strength**

However, a significant effect is only visible with more extreme values of hostility ( $p < .1$  for +2 standard deviations) leading to mixed results for hypothesis 10d. The full table is summarized in Table 25.

<i>Negative external feedback at values for hostility</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
-3 s.d.	-0.75	0.49	-1.72	0.22
-2 s.d.	-0.49	0.35	-1.18	0.19
<b>-1 s.d.</b>	<b>-0.24</b>	<b>0.21</b>	<b>-0.55</b>	<b>0.18</b>
<i>Mean</i>	0.02	0.13	-0.23	0.27
<b>+1 s.d.</b>	<b>0.28</b>	<b>0.18</b>	<b>-0.07</b>	<b>0.63</b>
+2 s.d.	0.53 †	0.31	-0.07	1.13
+3 s.d.	0.79 †	0.45	-0.10	1.67

**Table 25: Marginal effects of negative external feedback for different values of environmental hostility. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; † $p < .1$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .**

#### 4.2.6 Interaction model with internal feedback

Following the interaction results of the context variables with external feedback events on OI strength, this section describes how internal events are influenced in their effects on OI strength by the context variables.

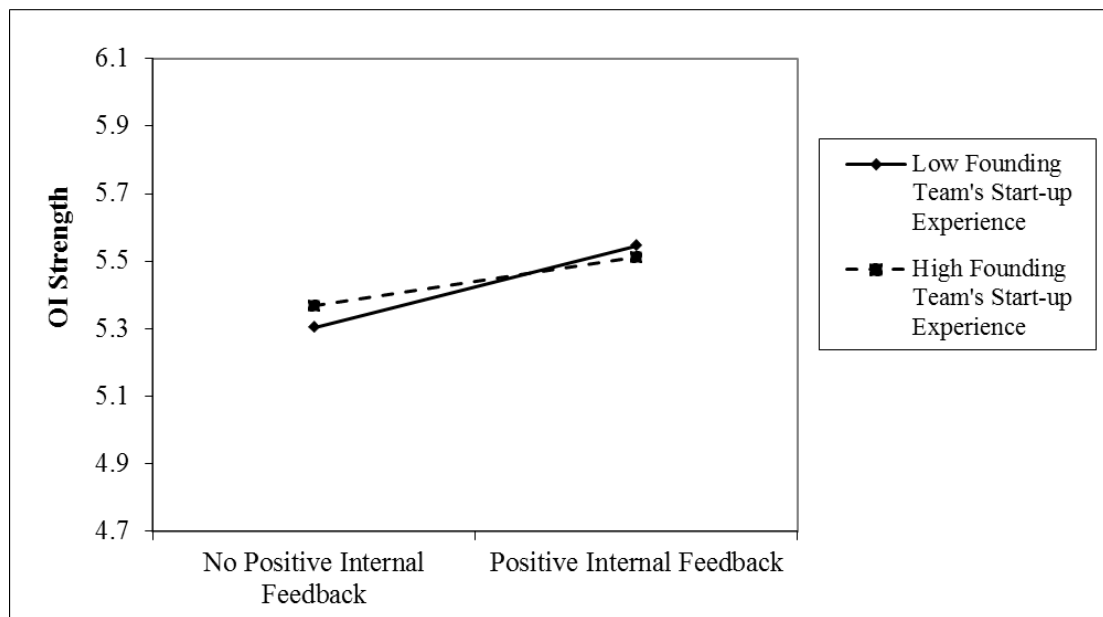
In line with the previous argumentation, interaction effects are included even though the main effects are not significant (Aguinis et al., 2013). This further reduces the level 2 residual variance by 8% while level 1 variance is slightly increasing by 1%. The final cross-level interaction model explains now 71% (instead of a  $R^2$  of 69% without interactions) of the initial residual variance of OI strength between firms and 15% (also  $R^2$  of 15% without interactions) of the residual variance within firms in comparison to the null-model.

The interactions between internal feedback events and the context variables a founding team's start-up experience, vision, and hostility on OI strength are summarized in model 5 of Table 18. The graphs and tables are following the same conventions as described in the previous section. As before, both the interaction graphs and the results of the marginal effects calculation are described.



#### 4.2.6.1 Interaction with a founding team's start-up experience

The results in Table 18 show no significant interaction between positive internal events and a founding team's start-up experience on OI strength ( $\gamma = -.04, p > .1$ ). As can be seen in Figure 50, both, companies with inexperienced and experienced founders can build on positive internal events but similarly to the previous case of external events there is no significant difference in how the positive feedback adds to the OI.



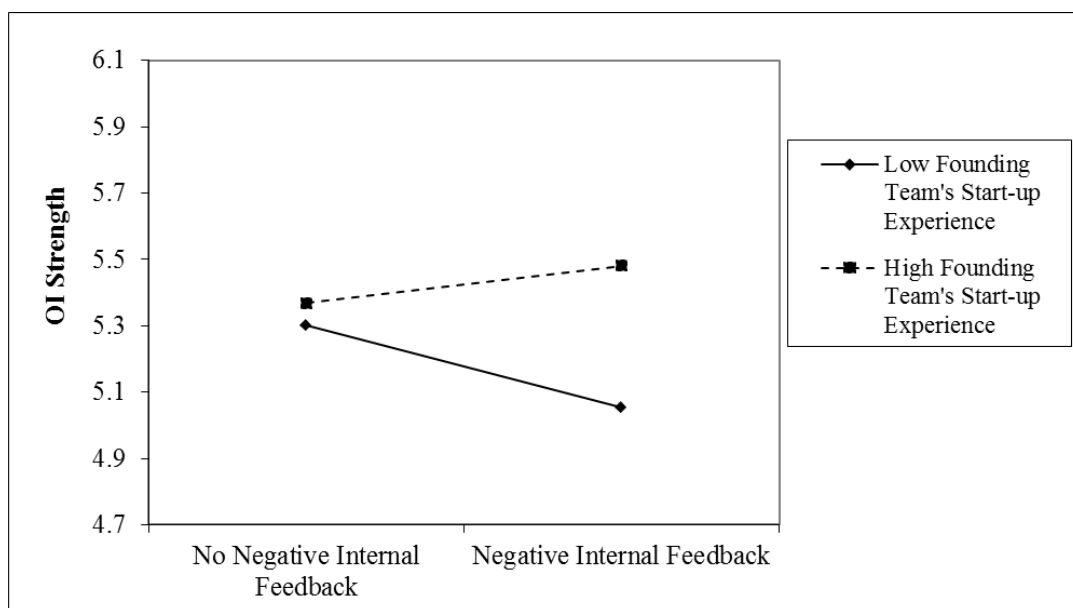
**Figure 50: The moderating role of a founding team's start-up experience on the effect of positive internal feedback on OI strength**

The marginal effects for a founding team's start-up experience show even some contrary results. As depicted in Table 26, only founding teams with no experience significantly gain from positive internal feedback ( $\beta = .23, p < .05$ ). However, the high standard errors for other experience levels do not allow drawing conclusions from this finding. Hence, hypothesis 8a cannot be confirmed.

<i>Positive internal feedback at values for experience</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
<i>0 founded start-ups</i>	0.23*	0.09	0.05	0.42
<i>1 founded start-up</i>	0.20	0.16	-0.11	0.50
<i>2 founded start-ups</i>	0.16	0.25	-0.33	0.65
<i>3 founded start-ups</i>	0.12	0.35	-0.56	0.81
<i>4 founded start-ups</i>	0.09	0.45	-0.79	0.97

**Table 26: Marginal effects of positive internal feedback for different values of a founding team’s start-up experience. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p <.1; \*p<.05; \*\*p<.01, \*\*\*p<.001.**

Confirming hypothesis 8c, the founding team’s start-up experience is significantly influencing how negative internal feedback affects OI strength. The higher the experience, the more positive is the effect of negative internal feedback ( $\gamma = .14, p < .05$ ). The interaction is depicted in Figure 51.



**Figure 51: The moderating role of a founding team’s start-up experience on the effect of negative internal feedback on OI strength**

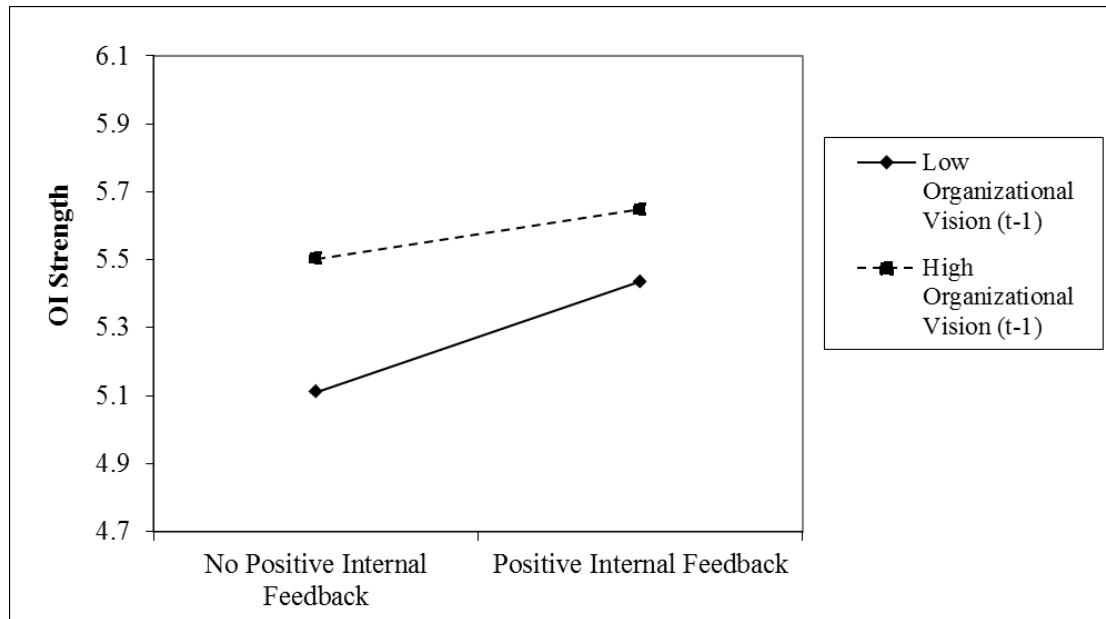
The marginal effects calculation, however, highlights that no slope coefficient is significantly different from 0 (Table 27). Thus, hypothesis 8c is only backed by the direct HLM output but not by the margins calculation.

<i>Negative internal feedback at values for experience</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
<i>0 founded start-ups</i>	-0.22	0.26	-0.72	0.29
<i>1 founded start-up</i>	-0.08	0.24	-0.55	0.40
<i>2 founded start-ups</i>	0.06	0.25	-0.43	0.55
<i>3 founded start-ups</i>	0.19	0.27	-0.34	0.73
<i>4 founded start-ups</i>	0.33	0.31	-0.28	0.94

**Table 27: Marginal effects of negative internal feedback for different values of a founding team’s start-up experience. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p <.1; \*p<.05; \*\*p<.01, \*\*\*p<.001.**

#### 4.2.6.2 Interaction with organizational vision

As can be seen in the summary of Table 18, the result for the interaction between positive internal feedback and organizational vision on OI strength is not significant ( $\gamma = -.12, p > .1$ ). Positive internal feedback is positively influencing the OI strength independent of the level of organizational vision. Thus, hypothesis 9a is not supported. The interaction between vision and positive internal feedback is depicted in Figure 52.



**Figure 52: The moderating role of organizational vision on the effect of positive internal feedback on OI strength**

The marginal effects calculation is in line with this finding. However, while for low vision OI is significantly strengthened by positive internal feedback (-1 s.d.:  $\beta = .32$ ,  $p < .05$ ), no significant slope coefficients can be found for high vision values (+1 s.d.:  $\beta = .14$ ,  $p > .1$ ). It displays a similar, yet much weaker tendency as for positive external feedback that a stronger vision inhibits strengthening effects of positive feedback. The slopes are constantly decreasing with increasing values for organizational vision, which seems to support hypothesis 9a. The marginal effects are summarized in Table 28.

<i>Positive internal feedback at values for vision</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
-3 s.d.	0.50	0.36	-0.20	1.21
-2 s.d.	0.41 †	0.24	-0.07	0.89
-1 s.d.	<b>0.32 *</b>	<b>0.14</b>	<b>0.05</b>	<b>0.60</b>
Mean	0.23 *	0.09	0.05	0.41
+1 s.d.	<b>0.14</b>	<b>0.16</b>	<b>-0.17</b>	<b>0.46</b>
+2 s.d.	0.05	0.27	-0.47	0.58
+3 s.d.	-0.04	0.38	-0.79	0.72

**Table 28: Marginal effects of positive internal feedback for different values of organizational vision. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p < .1; \*p < .05; \*\*p < .01, \*\*\*p < .001.**

In case of negative external feedback, a strong vision significantly negatively affects how feedback is received and how it influences OI strength ( $\gamma = -.40$ ,  $p < 0.01$ ), supporting hypothesis 9c. The effect is illustrated in Figure 53. While negative internal feedback can be even positive for OI strength as long as the vision is unclear (one standard deviation below mean), it drastically weakens the OI if the vision has been clear and above mean.

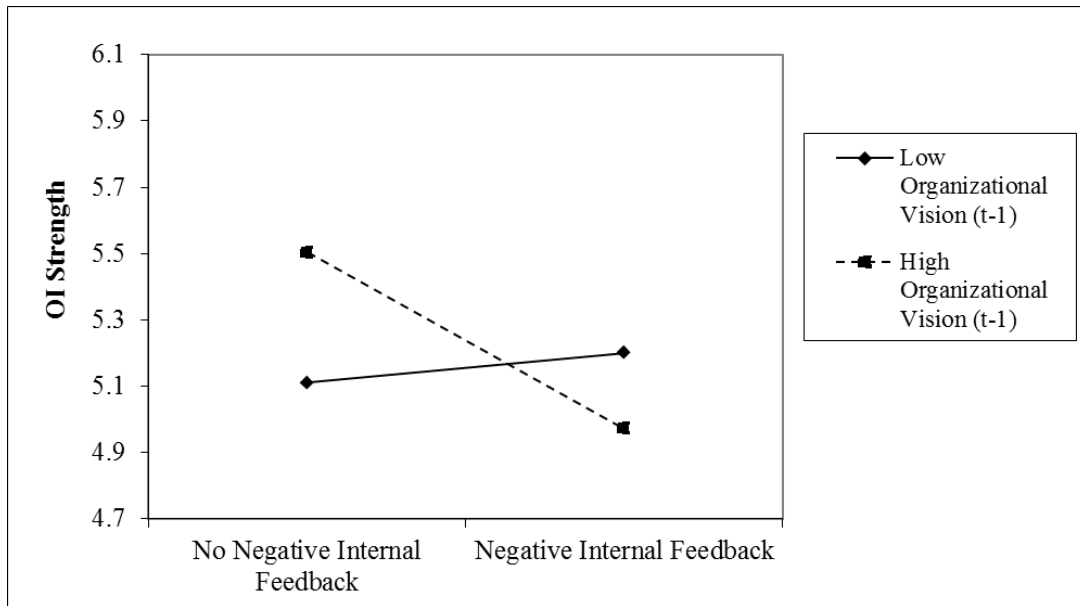


Figure 53: The moderating role of organizational vision on the effect of negative internal feedback on OI strength

This tendency is further supported by the margins calculation. As summarized in Table 29, especially for more extreme values of vision, the effects of negative internal feedback differ significantly from each other (-2 s.d.:  $\beta = .40$ ,  $p < .05$ ; +2 s.d.:  $\beta = -.84$ ,  $p < .1$ ). In case of low vision (1 s.d. below mean) and high vision (1 s.d. above mean) the slopes do not significantly differ from 0. Hence, even though the interaction is significant, for 68% ( $\pm 1$  s.d. around mean) of all observations, no significant effects can be found. Therefore, hypothesis 9c can only be partly confirmed based on the results of the margins calculation.

<i>Negative internal feedback at values for vision</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
-3 s.d.	0.71 **	0.25	0.22	1.20
-2 s.d.	0.40 *	0.19	0.02	0.78
-1 s.d.	<b>0.09</b>	<b>0.20</b>	<b>-0.29</b>	<b>0.47</b>
Mean	-0.22	0.26	-0.72	0.28
+1 s.d.	<b>-0.53</b>	<b>0.35</b>	<b>-1.21</b>	<b>0.15</b>
+2 s.d.	-0.84 †	0.45	-1.72	0.04
+3 s.d.	-1.15 *	0.56	-2.24	-0.06

Table 29: Marginal effects of negative internal feedback for different values of organizational vision. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; † $p < .1$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

#### 4.2.6.3 Interaction with environmental hostility

The interaction between positive internal feedback and environmental hostility on OI strength is not significant ( $\gamma = .13, p > .1$ ). Figure 54 depicts that independent of the level of hostility OI strength is positively affected in case of a positive internal event. Hence, hypothesis 10a is not supported.

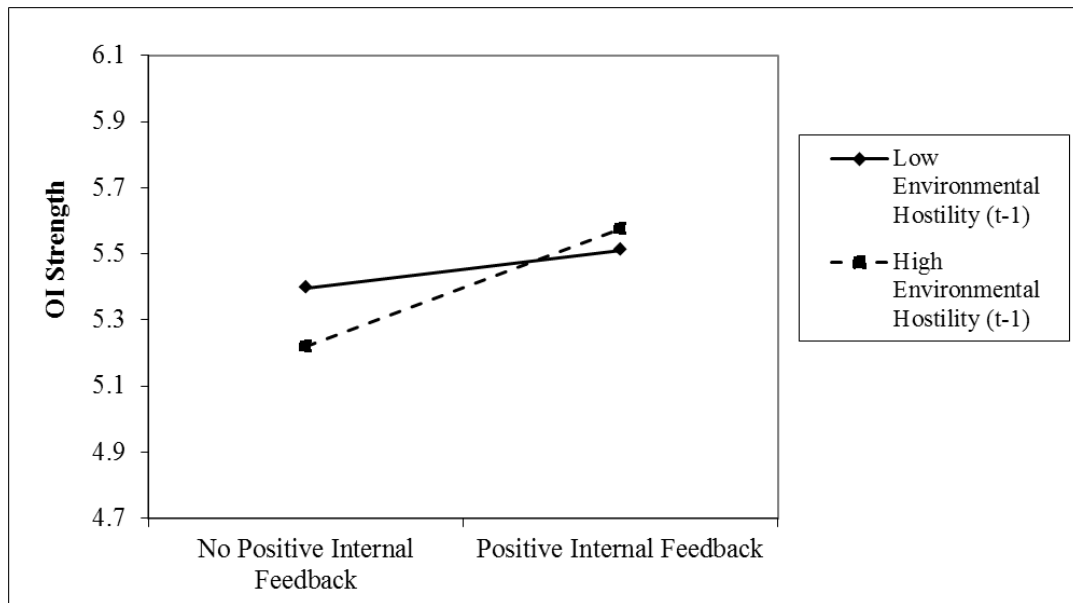


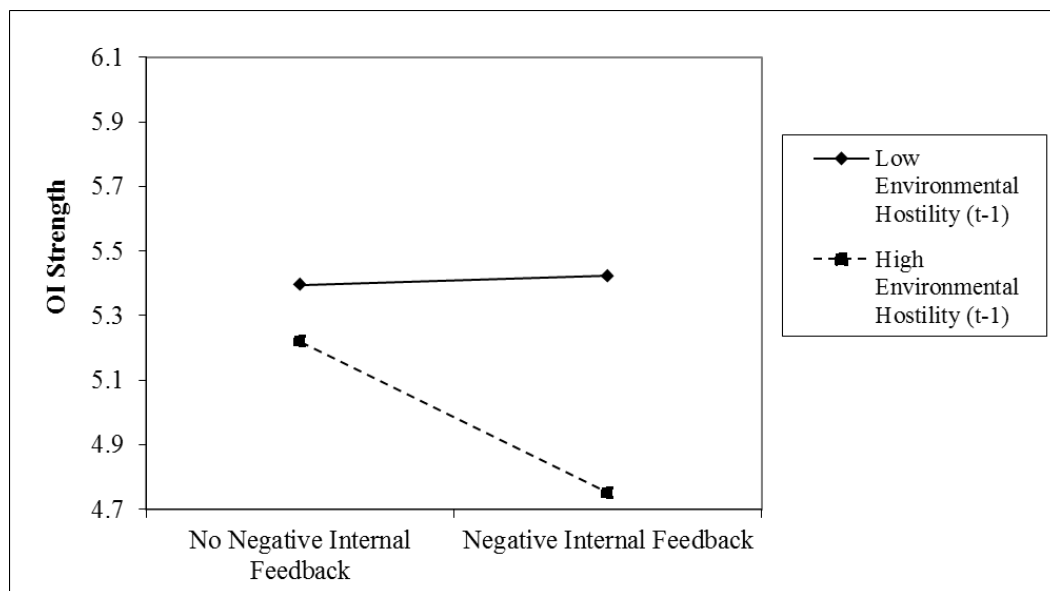
Figure 54: The moderating role of environmental hostility on the effect of positive internal feedback on OI strength

When calculating the marginal effects, it seems that for growing values of hostility, the effect of positive internal feedback increases (Table 30). While at one standard deviation below mean, there are no significant effects for positive internal feedback (-1 s.d.:  $\beta = .11, p > .1$ ), it becomes significant for values equal or above mean (+1 s.d.:  $\beta = .36, p < .01$ ). Therefore, hypothesis 10a is partly supported because marginal effects calculation illustrates that the effect of positive internal feedback increases with increasing hostility.

<i>Positive internal feedback at values for hostility</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
-3 s.d.	-0.13	0.29	-0.70	0.44
-2 s.d.	-0.01	0.20	-0.40	0.39
<b>-1 s.d.</b>	<b>0.11</b>	<b>0.13</b>	<b>-0.13</b>	<b>0.36</b>
<i>Mean</i>	0.24 *	0.09	0.05	0.42
<b>+1 s.d.</b>	<b>0.36 **</b>	<b>0.14</b>	<b>0.08</b>	<b>0.63</b>
+2 s.d.	0.48 *	0.22	0.05	0.91
+3 s.d.	0.60 †	0.31	-0.01	1.20

**Table 30: Marginal effects of positive internal feedback for different values of environmental hostility. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p <.1; \*p<.05; \*\*p<.01, \*\*\*p<.001.**

The effects of negative internal feedback on OI strength are significantly influenced by environmental hostility ( $\gamma = -.27, p < .01$ ). As depicted in Figure 55, negative internal feedback is more harmful to the OI strength in hostile environments. This result supports hypothesis 10c.



**Figure 55: The moderating role of environmental hostility on the effect of negative internal feedback on OI strength**

The marginal effects show similar results to positive internal feedback (Table 31). In cases of low hostility, no significant coefficient could be found. Only for cases with high hostility, the coefficients are significantly negative. Yet, also these results support hypothesis 9c illustrating

that with increasing hostility negative internal feedback is more negatively affecting OI strength. In cases of low hostility (-1 s.d.:  $\beta = .03$ ,  $p > .1$ ) there is almost no effect of negative internal feedback. In contrast, if competition is fierce, negative internal feedback is significantly weakening the OI (+1 s.d.:  $\beta = -.47$ ,  $p < .05$ ).

<i>Negative internal feedback at values for hostility</i>	<i>dy/dx (slope coefficient)</i>	<i>S.E.</i>	<i>95% confidence interval</i>	
-3 s.d.	0.52	0.48	-0.41	1.46
-2 s.d.	0.28	0.40	-0.50	1.05
<b>-1 s.d.</b>	<b>0.03</b>	<b>0.32</b>	<b>-0.60</b>	<b>0.66</b>
<i>Mean</i>	-0.22	0.26	-0.72	0.28
<b>+1 s.d.</b>	<b>-0.47 *</b>	<b>0.21</b>	<b>-0.88</b>	<b>-0.05</b>
+2 s.d.	-0.71 ***	0.21	-1.12	-0.31
+3 s.d.	-0.96 ***	0.24	-1.43	-0.49

**Table 31: Marginal effects of negative internal feedback for different values of environmental hostility. S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p <.1; \*p<.05; \*\*p<.01, \*\*\*p<.001.**

#### 4.2.7 Further robustness checks

In addition to pre- and post-estimation statistics, several tests have been conducted to ensure the validity of the model.

The descriptive statistics highlighted some correlations, which require further investigation to test for endogeneity. First, event occurrence might be related to company characteristics. As mentioned in section 4.1, company performance might lead to an increase of positive feedback events or decrease of negative events. However, running hierarchical regressions with RCM with a performance variable (Higashide & Birley, 2002) predicting positive and negative internal or external events, no significant effects can be found for all models, which is depicted in Table 32.

Moreover, due to the aforementioned correlation, performance has been incorporated in the full model as robustness check. The results, which are shown in appendix 8.7, do not show any significant deviations from the examined models. However, the moderating effect of environmental hostility loses its marginal significance through a deterioration of the standard error.



<i>Dependent variable (current feedback event)</i>	<i>Independent variable</i>	<i>Coefficient</i>	<i>S.E.</i>
Positive intern	Performance in t-1	.018	.017
Negative intern	Performance in t-1	-.007	.010
Positive extern	Performance in t-1	.003	.025
Negative extern	Performance in t-1	-.013	.014

**Table 32: Test for dependence of feedback on organizational performance, HLM regressions with RCM of negative and positive feedback respectively, S.E. = Standard Error, \*p < .05, \*\*p < .01, \*\*\*p < .001**

Another source of endogeneity might be serially correlated events. The effects of feedback events on OI strength are modeled not considering the events, which might have happened in previous rounds. If feedback events of previous rounds are correlated with current events and the feedback previously received is not modeled accordingly, residuals would not be independent of the main effects, which would lead to endogeneity. For example, a positive internal event might follow a positive external one or vice versa. Alternatively, if negative internal feedback is received in one round, this might lead to a negative external event in the following round and vice versa. To test for the serial correlation of both positive and negative events, feedback events in the previous round have been regressed on events in the successive round. As summarized in Table 33, no significant effects are found in all four models.

<i>Dependent variable (current feedback event)</i>	<i>Independent variable (previous feedback event)</i>	<i>Coefficient</i>	<i>S.E.</i>
Positive intern	Positive extern	.064	.044
Negative intern	Negative extern	.033	.069
Positive extern	Positive intern	.056	.079
Negative extern	Negative intern	.112	.148

**Table 33: Test for serially correlated feedback, HLM regressions with RCM of negative and positive feedback respectively, S.E. = Standard Error, \*p < .05, \*\*p < .01, \*\*\*p < .001**

In conclusion, it is unlikely that endogeneity is a major problem in the model.

## **5 Discussion**

This dissertation aims to examine how an early venture's OI is affected by the start-up experience of the founding team, the organizational vision and the environmental hostility and how the process of OI formation and legitimization is influenced through internal and external feedback within the context of the outlined organizational parameters. Based on survey data gathered from 696 founders and employees from 98 start-up companies during 1.3 years of observation, this dissertation finds that main effects of contextual variables are significant for organizational vision and environmental hostility but not for the start-up experience of the founding team. Negative internal and external feedback events weaken the OI and positive internal and external events strengthen the OI. However, only positive internal events show significant effects. The effects of other feedback events are seemingly more complex than directly influencing OI strength. Significant interactions on the effects of negative internal and negative external events with OI strength have been found for all three context variables. Results for positive feedback interactions are mixed.

The results have implications on the OI literature regarding the process of OI formation and legitimization as well as identity change processes. Further, it contributes to entrepreneurship research because it clarifies the process of new venture development in terms of OI formation and how founders can actively influence the effects of feedback on OI strength, which is ultimately also affecting venture survival and success. From a practical perspective, it is shown that new ventures can influence how feedback is interpreted and reacted to. Depending on organizational parameters, even negative feedback can be used to strengthen the understanding about who the company is and what is central about the organization.

In this section, the outlined results are discussed and contributions to research are presented. Moreover, practical implications are highlighted and limitations of this study are detailed.

### **5.1 General findings in this dissertation**

As hypothesized, the results show that OI strength is affected differently by context variables and different types of feedback. This is not only the case for the direct effects of context variables (hypotheses 1-3) and of positive and negative feedback (hypotheses 4-7) but also for interactions with the organizational parameters and context variables founding team's start-up experience, organizational vision and environmental hostility (hypotheses 8-10). An overview

about the tested hypotheses and the results is depicted in Table 34. In total, 9 of 19 hypotheses are supported by the HLM results, 3 hypotheses are only partly supported by marginal effects calculation, and for 7 hypotheses no significant results could be found. Check marks in brackets denote that the marginal effects computation partly supports the hypothesis even if the interaction term is not significant.

Hypotheses	Result
H1 The higher the founding team's start-up experience, the stronger a new venture's OI	×
The stronger the organizational vision, the stronger a new venture's OI	✓
H2 The higher the environmental hostility, the weaker a new venture's OI	✓
H3	
H4 Positive internal feedback has a positive effect on a new venture's OI strength	✓
H5 Positive external feedback has a positive effect on a new venture's OI strength	×
H6 Negative internal feedback has a negative effect on a new venture's OI strength	×
H7 Negative external feedback has a negative effect on a new venture's OI strength	×
H8a The higher the founding team's start-up experience, the stronger the positive effect of positive internal feedback on a new venture's OI strength	×
H8b The higher the founding team's start-up experience, the stronger the positive effect of positive external feedback on a new venture's OI strength	×
H8c The higher the founding team's start-up experience, the weaker the negative effect of negative internal feedback on a new venture's OI strength	✓
H8d The higher the founding team's start-up experience, the weaker the negative effect of negative external feedback on a new venture's OI strength	✓
H9a The stronger the organization's vision, the weaker the positive effect of positive internal feedback on a new venture's OI strength	(✓)
H9b The stronger the organization's vision, the weaker the positive effect of positive external feedback on a new venture's OI strength	(✓)
H9c The stronger the organizational vision, the stronger the negative effect of negative internal feedback on a new venture's OI strength	✓
H9d The stronger the organizational vision, the weaker the negative effect of negative external feedback on a new venture's OI strength	✓
H10a The higher the environmental hostility, the stronger the positive effect of positive internal feedback on a new venture's OI strength	(✓)
H10b The higher the environmental hostility, the stronger the positive effect of positive external feedback on a new venture's OI strength	×

H10c	The higher the environmental hostility, the stronger the negative effect of negative internal feedback on a new venture's OI strength	✓
H10d	The higher the environmental hostility, the weaker the negative effect of negative external feedback on a new venture's OI strength	✓

**Table 34: Summary of results and hypotheses**

## 5.1.1 Direct effects

### 5.1.1.1 Direct effects of context variables

It has been hypothesized that organizational vision, environmental hostility and a founding team's start-up experience influence OI strength directly. However, only organizational vision and environmental hostility show significant effects.

Organizational vision is found to increase OI strength, which confirms hypothesis 2. As proposed by Gioia et al. (2010), vision influences how strong the OI is perceived. Vision, stories or the desired future image support the construction of an initial OI (Lounsbury & Glynn, 2001). The positive effects of vision are in line with past research, which found that a strong vision has positive effects on new venture performance like sales, employment or firm value and is used as *"a way that organization leaders integrate all these elements [mission, strategy, values, and goals; the author] into a form that guides future action"* (Baum et al., 1998, p. 51), which ultimately strengthens the understanding of who we are.

Environmental hostility weakens the OI in emerging organizations as hypothesized in hypothesis 3. Hostility seems to have a diffusing effect on what the new venture stands for. Hostile environments consist of more competitors (Green et al., 2008). Therefore, organizational members compare their own OI to a higher number of comparable organizations in the process of OI legitimization and might perceive their own OI as less strong and unique. As highlighted in section 2.3.3, this result is in contrast to some researchers who theorize that hostility is playing a strengthening role in the perception of OI. Their arguments that organizations in competitive environments better know who they are and what they want to achieve (e.g., Albert & Whetten, 1985) is not reflected in the results in the context of OI formation in young entrepreneurial firms.

A founding team's start-up experience, however, has no significant effect on OI strength. This is in contrast to the hypothesized influence of experienced founders (hypothesis 1), who have been theorized as legitimizing factor and being able to set better initial claims (e.g., Dencker, Gruber, & Shah, 2008: Population ecology; Gioia, Price, Hamilton, & Thomas, 2010; Wright, Robbie, & Ennew, 1997). It was expected that experienced founders would be able to form stronger OIs because of their status in the organization and their influence in shaping the organization from the beginning (Scott & Lane, 2000). However, the results do not seem to support these arguments. Neither does the summary of correlations in Table 16 show a significant relationship between the founding team's start-up experience and initial OI strength, nor does the HLM model show a significant effect of the founding team's start-up experience on OI strength. Also in previous research, results about the direct influencing power of more experienced founders or serial entrepreneurs are mixed. For example, Westhead and Wright (1998) did not find any significant effects of the founder experience on firm size, venture performance, or financial measures. They argue that habitual entrepreneurs might have a better understanding about the start-up phase but their knowledge about growing firms and best practices remains unclear. Moreover, outside support from mentors might compensate for the lack of experience (Westhead & Wright, 1998). In line with this, Cassar (2014) found that experienced entrepreneurs are not significantly better in opportunity evaluation and are still prone to be overly optimistic in their evaluation of the business potential. This seems to be transferable to the results of this study. In line with Cassar (2014) and combined with findings from Gioia et al. (2010), founders' first claims about the organization need to be refined in the first years of a start-up and experienced founders seem to be not always able to install a better understanding about the new venture at the formation of the company. Accordingly, neither a positive effect on the initial OI strength nor a more successful OI formation is visible in the results.

Delmar and Shane (2006) propose a differentiated perspective about the direct effects of a founding team's start-up experience. They found that while the effect on venture survival is already visible if the founding team has any prior experience, sales figures are significantly improved only if the founding team founded 4 or more start-ups before the current one. Delmar and Shane (2006) consequently suggest a distinction of the outcome variables and a stronger focus on differing functions of experience. This ambiguity in the effects of experience is further elaborated in the entrepreneurial learning literature. Generally speaking, founders are able to learn from past experiences and can apply their knowledge in new situations (Wiklund & Shepherd, 2001). They are able to better adapt organizations to the

requirements of a changing environment (Dencker et al., 2008: evolutionary economics). This improves the entrepreneurial judgement of founders (e.g., Baron & Ensley, 2006). However, research is still inconclusive if the gained knowledge is transferable to new start-up ventures due to e.g., task heterogeneity, cognitive biases (Cassar, 2014) or time span between the events (Reuber & Fischer, 1999).

These discussions indicate that a founding team's start-up experience does not directly affect organizational parameters but that it is better visible in specific situations as a moderating effect. Experienced founders do not directly cause organizations to be more successful, have better performance or, as the results received here suggest, a stronger OI. They might be able to positively influence processes, which allow for better decisions, better guided sensemaking processes or stronger sensegiving activities through more plausible claims. Specifically, experienced founders seem to better moderate the interpretation and renegotiation processes of OI formation, which take place if negative feedback is received. A similar effect is described by Baum, Locke, and Smith (2001), who found that personality traits and skills of founders are only indirectly affecting venture growth by influencing organizational and motivational factors, which in turn supported venture growth.

#### *5.1.1.2 Direct effects of feedback events*

Both negative and positive feedback has been hypothesized to influence the OI strength directly.

Positive feedback confirms each member's perception of the OI and legitimizes the identity claims of the organization (Suddaby & Greenwood, 2005). Members of the organization have two options of how to react to positive feedback. They can accept feedback as legitimate, which supports their OI or they can decide to ignore positive feedback because it is not accepted as valid. Scott and Lane (2000) emphasized the legitimacy of the source of feedback as important parameter to determine the effect on the OI. Both options are reflected in the outcomes of this study.

The effect of positive internal feedback is significant ( $\gamma = .23$ ,  $p < .01$ ) confirming the findings from previous research and Hypothesis 4. Independent of the organizational context and company characteristics, positive internal feedback increases the OI strength. It seems that the immediate impression of internal feedback is in most cases accepted as legitimate, considered as significant and not influenced by other parameters. This is further supported by the lack of

significant interaction effects with positive internal feedback. This result is highlighted in the next section in greater detail.

Positive external feedback has no significant positive effect on OI strength in robust modelling<sup>20</sup>. Hence, hypothesis 5 cannot be confirmed. Even while there are indications about the positive influence of positive external feedback, significant positive effects can only be seen under specific circumstances like low vision or a high founding team's start-up experience, which are discussed in subsequent sections. It might be more often subject to interpretation and not accepted as such to influence the shared understandings of members of an organization. As described earlier, external feedback is different to internal feedback because it comes from external sources. While this might sound trivial it has two important implications.

First, the source of feedback can be questioned in its legitimacy to give feedback or in its own image about the organization. While the legitimacy of the feedback source was not subject of investigation in this study, differences in the perception of positive internal and external feedback indicate that it plays a role in how feedback is received and interpreted. While internal sources might be accepted as legitimate sources for feedback, external stakeholders might be questioned in their role as appropriate senders of feedback (Kroezen & Heugens, 2012). A more detailed investigation of this connection is subject to future research.

Second, external sources give feedback on the basis of their externally reflected image of the company (Dutton & Dukerich, 1991) while internal sources give feedback based on their informed knowledge about the OI. External image and OI can be either aligned or different depending on the level of information and knowledge, the perceived relevance of the connection or the perceived legitimacy of the organization from the outsider's point of view (Scott & Lane, 2000). Internal positive feedback, however, is always referring to the actual OI and the existing level of OI strength directly, because members are knowledgeable about the OI directly. The positive internal feedback is therefore strengthening the OI immediately. External parties give feedback based on their accessibility to and interpretation of information. A positive external feedback might come as well only because external expectations have been low initially.

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<sup>20</sup> Marginally significant effects in maximum likelihood estimation, which is not as conservative as robust modelling.

Therefore, positive external feedback is interpreted internally and in cases in which the feedback fits to but does not exceed the internal perceptions of OI, it is acknowledged and supports the existing OI without further strengthening it. Thus, the average effect of positive external feedback can be weaker than that of positive internal feedback. However, as can be seen if the histograms of Figure 40 and Figure 41 are compared, sometimes positive external feedback is as helpful as positive internal one.

Moreover, it was hypothesized that both internal and external negative feedback weakens the perceived OI. Negative feedback threatens the shared understandings of who the organization is and might lead to a renegotiation of claims and assumptions (e.g., Corley & Gioia, 2004; Ravasi & Schultz, 2006). However, no significant effects have been found for negative feedback. Hence, hypotheses 6 and 7 are not confirmed. As described in Figure 9, negative feedback can lead to three different outcomes: Ignoring the feedback and thus no change in OI strength, defense of OI and thus strengthening the OI, and start of a renegotiation process and thus initially weakening the OI but potentially strengthening the OI on the long run. Similarly to the positive case, members can either decide to ignore the feedback and keep the OI as it is. This might be the case if the source of the feedback is found to be not legitimate. On the other hand, the members of the organization can decide to react on the feedback in two ways. They can start the process of renegotiating the OI or they can decide to defend their identity and try changing the external perception through impression management. This affects the perceived strength of OI differently. In case of identity defense, the members of the organization agreed that their identity is appropriate and that joint efforts are needed to change external perceptions (Gioia et al., 2000). This might lead to even stronger perceptions of the OI as members decided consciously in favor of the OI. In case of identity renegotiation, however, the organization undergoes a phase of ambiguity (see Figure 2). Depending on the severity of the feedback and the ability to accept feedback and adjust the OI, sensemaking and sensegiving processes take place to change or form the OI.

It was hypothesized that the dominating outcome for entrepreneurial ventures is a renegotiation process, which leads to a weakened OI in case of a negative internal or external feedback. However, the results seem to indicate that different effects are prevalent. It can be seen in the histograms of Figure 42 and Figure 43 that weakening, ignoring or strengthening effects exist. Thus, negative events might in some cases strengthen the OI, sometimes it weakens the OI, and in some cases it does not affect the OI at all.



Even though not hypothesized in the direct effects of negative events, the results are not surprising if findings in the theoretical part are interpreted accordingly. In the phase of OI formation and legitimization, either feedback is actively searched for as a means for critical self-reflexivity (Coupland & Brown, 2004) and organizational learning (Brown & Starkey, 2000), or it is welcomed as source for validation of the construed external feedback (Gioia et al., 2010). Thus, negative feedback can both, strengthen or weaken the perceived OI depending on organizational parameters. The legitimizing effect seems to be even stronger than hypothesized such that the hypothesized negative effects are not visible.

When considering the interaction effects with external feedback, it is noteworthy that all interactions with negative feedback are significant while interactions with positive feedback are not. This further supports the assumption that negative events are much more subject to context interpretation even if they come from internal sources while positive events are more easily accepted. Similar effects have been found for individuals. Negative events evoke much stronger cognitive, emotional and other reactions of individuals than neutral or positive effects (Taylor, 1991). This relationship is further discussed in the next chapter.

Regarding the control variables, founder team size has moderately significant effects in the main effects model ( $\gamma = -.10$ ,  $p < .1$ ). The larger the founder team, the more does the OI strength decrease in this study. This might be due to a more heterogeneous representation of the company through the founders or less visible heroes in the organization. In line with this observation, Wry et al. (2011) proposed that the identity is considered as more legitimate when members speak consistently and coherently about the respective group. This effect should be further pursued in future research as it might give detailed insights into how the internal sensemaking process works and how identification with leaders and organizations are interconnected. Moreover, it might give hints on an optimal founding team size from an OI perspective. Figure 56 shows the tendency, which was found in this study. It seems that a founding team size of 2 is optimal for an initial OI. For larger teams, the initial OI value slowly decreases. While this is a very rough analysis with no compensation for age of the organization at the beginning of the study, it reflects the results of the advanced analysis of the HLM model used in this dissertation.

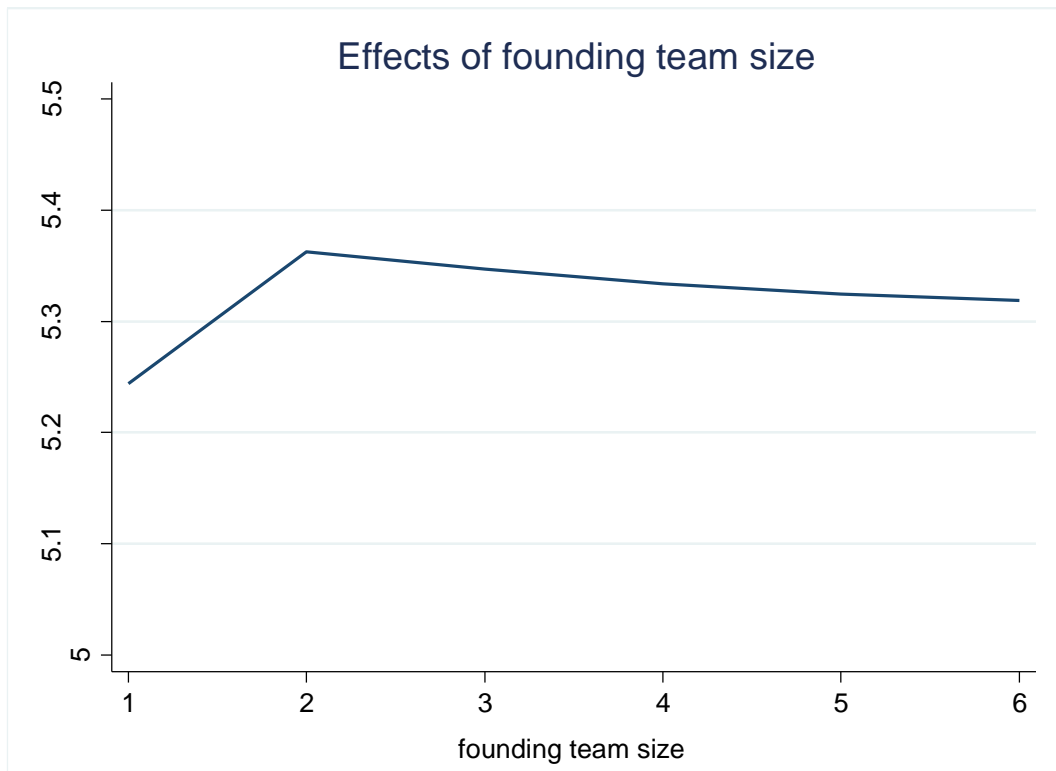


Figure 56: Effects of founding team size on the initial OI strength

### 5.1.2 Interaction effects

Three variables which set the context in the proposed feedback handling processes are analyzed in their interactions with feedback events on OI strength. All organizational characteristics – founding team’s start-up experience, organizational vision, and environmental hostility – show significant interactions with negative feedback but not with positive feedback in their effects on OI strength. This complements the findings that positive feedback has overall positive effects on OI strength while negative feedback has effects only under certain conditions.

#### 5.1.2.1 Interactions with a founding team’s start-up experience

The moderating role of a founding team’s start-up experience on the effect of negative feedback on OI strength is supported by significant results of this study if negative internal (hypothesis 8c) and negative external feedback events (hypothesis 8d) take place. While negative internal and negative external feedback weaken the shared understandings about what is central in the organization and thus the OI strength if founders are inexperienced,

founding teams with experienced serial entrepreneurs can strengthen the OI if negative feedback is received. This supports the discussed role of experience as influencing OI not per se but only when events take place.

The relationship between positive feedback and OI strength, however, is not significantly influenced by the start-up experience of founding teams. In contrast to the hypotheses 8a and 8b, experienced founders are not significantly better in utilizing positive feedback to strengthen the OI. As mentioned in section 2.5.1, no research could be found about the supporting power of start-up experience in case of positive feedback. Only Cope (2005) mentions that entrepreneurs use tested and proven responses to both positive and negative events. Hence, serial entrepreneurs have a reservoir of proven answers to positive and negative events. In case of negative events, "*proactive generative learning*" sensitizes founders and helps them with future critical events (Cope, 2005, p. 387). However, Cope (2005) does not elaborate further if and how those experiences are transferable to new situations. Moreover, he stresses that learning might even be counterproductive because wrong conclusions are drawn from past experiences.

It seems that the general expertise, which founders gain from experiences in previous start-up companies, cannot in any case be transferred to other occasions (e.g., Wiklund & Shepherd, 2003) or that past positive experience does not lead in all cases to knowledge, which can be applied in new positive feedback situations. In line with this, Minniti and Bygrave (2001) highlight that managers might come to wrong conclusions if they relate their actions to positive outcomes and continue applying these practices. Because there is no causal relation in many cases, they might continue with wrong actions, which resulted in good outcomes *despite* them or which are neither supporting nor harming the effects. For example, founders might be inclined to relate the positive performance of the venture to their idea of internal team events. Even though, the team events might keep the employees away from work and having conducted different action might have boosted the performance even more, the founder only sees his work and might refer back to it later to manage situations with bad performance. Thus, the initially positive events lead to experience and putative knowledge about behavior, which is not best practice. This theory seems to be supported by the results of this study. It seems that founders are not applying best practices when it comes to positive events, which leads to no significant differences of experienced and inexperienced founders.

In addition, other theoretical studies highlight that positive experiences seem to less strongly trigger learning processes than negative experiences or learning from making mistakes. Thus,

experienced founders might own a reservoir of answers to negative events but not to positive ones. This assumption is described in studies which emphasize that learning from past events can only occur in the right setting: objective reflection of the event, a neutral or third perspective on the reasons and possible alternatives for actions and reactions (Cope, 2005; Gibb, 1997). These circumstances might be less likely in positive events which require less advice or mentoring compared to negative events. Therefore, critical incidents particularly resulted in "*fundamental, higher-level*" learning which can also be applied to future situations (Cope & Watts, 2000, p. 104). Hence, the learning effect might be smaller for positive events, which negatively affects the ability to support positive feedback events in the future. Based on the results of this study, Cope's (2005) call for further research is supported to investigate distinctive forms of experience and learning, and how experienced and inexperienced founders differ in their reactions to positive feedback.

In summary, the start-up experience of founding teams is only influencing the effect of negative feedback events on OI strength. Through their experience they might help to interpret feedback in a more favorable and useful way, which leads to a more positive effect of negative feedback. Neither direct positive influences of experience nor supporting power for positive feedback have been found.

#### ***5.1.2.2 Effects of organizational vision***

Moreover, the results support also the hypotheses that organizational vision influences how feedback is affecting the OI strength. Positive external feedback loses its supporting effect if a strong vision supported the OI already. While organizations with a strong vision have stronger identities, a positive external event might be – to some extent – anticipated and does not strengthen the OI as much as in organizations with a less clear understanding of who they want to become. This softening effect in the support of OI is significant for positive external feedback (hypothesis 9b) and visible but not significant for positive internal events (hypothesis 9a). Past research did not differentiate between types of feedback and their effects on the organization. However, it seems that there are some differences in the way organizations with clear and strong visions deal with internal and external positive feedback.

If one examines the effects of both feedback events, it can be seen that both internal and external positive feedback strengthen the OI if the organizational vision is not strong. If there is a clear and strong vision, positive feedback strengthens the OI only in cases of internal feedback but not if external positive feedback is received. As discussed in section 5.1.1.2,

external image and OI are distinct phenomena. Internal feedback refers to what insiders understand who the organization is. If the vision is strong and positive internal feedback is received, it further strengthens the OI as members see that vision and OI are in congruence. External feedback however, addresses the construed external image which reflects the insiders' opinion about what outsiders think of the organization. If a strong vision exists, which is also visible to outsiders, external feedback might refer more to the vision of the company – hence the desired future – instead of the OI – hence the past and the present. The external feedback might be more influenced by a desirable state of the organization and not by the core understandings and values the organization has at the moment of feedback. This interpretation of external feedback in cases of a strong vision might affect the credibility of the feedback and weakens its strengthening effects on the OI.

On the other hand, negative internal feedback is seriously affecting the OI strength if the vision is strong. It seems that the hypothesized relationship of negative internal feedback and misalignment of vision and OI is supported (hypothesis 9c). Once, members give negative feedback internally, it highlights a divergence of what the company is aiming at and what the company currently stands for in the OI legitimization process. In cases with no or a less strong vision, negative feedback highlights only what is reflected in the vision already. Thus, negative feedback is much more serious in cases with a strong and clear vision.

As hypothesized, negative external feedback events strengthen the OI if the organization has a strong vision about what it wants to become while organizations with a less strong vision suffer from negative external feedback in terms of OI strength (hypothesis 9d).

In summary, organizational vision fulfills multiple functions. It serves as an initial foundation for the first identity claims and facilitates sensemaking processes leading to stronger understanding of who the company is and thus a stronger OI during OI legitimization. In addition, it helps to put received feedback into perspective through serving as baseline for what the desired future identity should look like. Finally, it guides the identity renegotiation processes through emphasizing core strengths and targets. However, it should be mentioned that the organizational vision might also prevent necessary change in organizations in which change would be necessary as highlighted by Schultz and Hernes (2013). Lastly, while a strong vision supports a strong OI directly, it diminishes the positive effects of positive feedback.

### *5.1.2.3 Effects of environmental hostility*

In addition to the direct effects of environmental hostility, it significantly interacts with negative feedback on OI strength. Hence, hypotheses 10c and 10d are supported. As hypothesized, negative internal feedback significantly weakens the OI in hostile environments. In contrast, there is little effect of negative internal feedback in low hostility environments. This supports the aforementioned arguments that the main factor for the negative impact on OI is the lack of time to engage with the negative feedback. As described earlier, if negative internal feedback is received, there is neither an interpretation of the feedback source nor can an organization decide to defend its OI against the source. Once, negative internal feedback takes place, it initiates an identity renegotiation process. In hostile environments however, new ventures need to focus on growth and the long-term (Covin & Slevin, 1989) and cannot spend time in internal sensemaking processes while competitors advance. Adverse internal feedback requires a shift to emphasize internal relations, which is harmful in several ways. If the management decides to refocus, external events might be overseen and a competitive disadvantage might evolve. On the other hand, if the management ignores the feedback, it might become a major issue and severely damage the internal relations of organizational members. Thus, starting a renegotiation process increases ambiguity and insecurity, which is specifically harmful in hostile environments. In contrast, organizations in environments with low hostility are better able to emphasize internal relations and react on internal feedback through sensemaking and sensegiving without neglecting external relations.

If negative external feedback is received in highly hostile environments, it strengthens the perceived OI compared to a weakening effect in environments with low hostility. As discussed previously, negative external feedback seems to serve as a helpful outsider's perspective in an environment of competition and several comparable companies. Every feedback is most welcome in competitive and hostile environments. It clarifies the construed external image (thus, what others think about the organization) which is essential to validate strategic options (Daft & Weick, 1984), to react appropriately to competition, and ultimately to survive in an environment where failure rates are high (Green et al., 2008). Moreover, operating in adverse environments might have trained organizations to defend them against competition and change and to focus on their own strengths (e.g., Fox-Wolfgramm, Boal, & Hunt, 1998) while organizations in more friendly environments might be caught off guard by negative feedback (e.g., Elsbach & Kramer, 1996). They are not used to coping with negative

feedback. They might question it and start renegotiation processes. However, maintaining a strong identity and resistance to change might not always be a successful strategy. As Fox-Wolfgramm et al. (1998) found in their study, banks who defended their businesses and did not adapt to a changed environment ultimately failed in their strategy, which the prospector banks succeeded. In line with this theory, previous studies have found that successful ventures tend to act and react more aggressively in hostile environments (Covin & Covin, 1990) while being more conservative in friendly environments (Covin & Slevin, 1989).

Effects of positive feedback are not significantly interacting with environmental hostility on OI strength. Based on the effects of hostility, which are outlined in section 2.5.3, positive feedback only interferes with interpretation of feedback and supporting processes. It seems that hostility cannot significantly influence how positive feedback is interpreted before affecting the OI or how positive feedback is strengthening the OI in the support process step.

Corley and Gioia (2004) outlined the positive impact of internal successes in a hostile environment and found evidence in the statements of managers and employees. Members were confirmed in their understandings about the current status and future outlook of the company. Yet, their observation is based on a single case. In the broad data set of this study, it seems that the effects of positive internal feedback are only minimally impacted by the environmental hostility. In the interaction graph as well as in the margins calculation of the slope test, there are hints that the effects of positive internal feedback get stronger with increasing hostility, which is in line with the hypothesis. However, the interaction effect is not strong enough to be significant. Future research needs to further investigate this hypothesis to conclude if environmental hostility has impact on the effects of positive internal feedback.

Similarly to positive internal feedback, environmental hostility is also not significantly influencing effects of positive external feedback on OI strength. Graph and slope test show almost no differences between low and highly hostile environments. In contrast to the posited assumptions, it seems that the interpretation of positive external feedback does not differ for companies with little or strong competition. While Suddaby and Greenwood (2005) described the effects in a competitive environment, organizations in a more friendly industry are similarly profiting from positive external feedback.

In summary, hostility negatively affects OI in that OI is perceived more weakly if competition is high. In case of negative feedback it acts differently for internally or externally received feedback. The negative effect of negative internal feedback is increased if the organization is

operating in a hostile environment. This is presumably caused by increasing ambiguity in the starting renegotiation process, which is especially harmful if competition is fierce. Negative external feedback, however, has a more positive effect in hostile environments. Any feedback helps to define the own strategic position in the field or industry and "war-proven" organizations are more experienced in defending their OI. Positive feedback is unaffected by environmental hostility.

#### 5.1.2.4 Context variables in the process of identity formation and legitimization

All three context variables were selected as organizational characteristics influencing the process of OI formation and legitimization. An influential role for all three variables, a founding team's start-up experience, organizational vision, and environmental hostility has been outlined in past research (see e.g., Powell & Baker, 2014; Schultz & Hernes, 2013; Wry, Lounsbury, & Glynn, 2011).

However, the context variables almost exclusively influence the effects of negative feedback. Positive internal feedback has significant direct effects and is not influenced by any context variable; the positive effects of positive external feedback are interacting with organizational vision only. Table 35 summarizes the significant interactions between feedback and the context variables on OI strength found in this study. "+" describes a supporting effect for OI strength and "-" characterizes negative influences as discussed in the previous sections. As this study did a quantitative analysis of the phenomena involved, the exact processes and mechanisms, which are affected by the investigated variables can only be assumed and delineated from theorizing based on previous research.

Step for feedback interpretation and reaction	Types of feedback			
	Positive internal	Negative internal	Positive external	Negative external
Interpretation of feedback, comparison with OI			E(+), V(-), H(+)	E(+), V(+), H(+)
Legitimization of source of feedback				E(+)
Support of OI	E(+), V(-), H(+)		E(+), V(-), H(+)	
Defense of OI				
Renegotiation of OI		E(+), V(-), H(-)		E(+), V(+), H(+)

**Table 35: Interaction effects for each step of feedback interpretation and reaction. E = A founding team's start-up experience, V = Organizational vision, H = Environmental hostility; Black = significant, Grey = not significant**



Organizational vision and environmental hostility interact with positive internal feedback on OI strength as seen in the marginal effects calculations. Therefore, it seems that both context variables are influencing the support mechanism of positive internal feedback because interpretation of feedback, legitimization of the source, defense of OI or renegotiation of OI are not or little applicable for positive internal feedback. It could be assumed that organizational members seek for reasons for the positive internal feedback and find it in the context they are working in. Despite having a weak vision or despite operating in a hostile environment, there are internal successes which are even more relevant than if they would have happened in a more benign context. Yet both interaction effects are not significant. Therefore, future research needs to further investigate the influence of organizational characteristics and contextual variables on positive internal feedback.

Organizational vision interacts with positive external feedback on OI strength. Because organizational vision affects the support mechanism in case of positive internal feedback, it can be assumed that it also affects this mechanism in case of positive external feedback. Past research indicated that such an interaction might exist (see 2.5.2; e.g., Ravasi & Schultz, 2006). Because vision builds on an existing internal OI and communicates a future desired image to external parties, it creates a link between organizational insiders and outsiders (Gioia et al., 2000). Due to this functionality, it helps to translate and interpret external views into an internal language to enhance a common understanding of the members. Gioia et al.'s (2010) case of CITS supports this perspective. The positive response of externals on a conference helped members to confirm the clearly formulated vision as valid and to strengthen their understanding of who they were as an organization and thus their OI. Hence, a closer examination of how exactly the organizational vision moderates the effects of positive external feedback on OI strength are recommended and need to be subject for future research. A founding team's start-up experience and hostility are not influencing any mechanisms for positive external feedback.

On the other hand, all contextual variables are influencing the renegotiation process. It seems that this central OI relationship of sensemaking and sensegiving activities, which has been outlined in section 2.1.3.1 and which is depicted in Figure 2, is most susceptible for manipulation. Positive feedback, which is not leading to renegotiation processes, is hardly influenced by the examined organizational parameters. Negative feedback, however, interacts with all selected context variables. The context variables are hypothesized to influence both sensemaking and sensegiving activities based on previous research about single case studies.

As can be seen in the example of negative internal feedback, this seems to be the case. This possibility of manipulating the renegotiation process and altering the outcomes is an important finding for OI and Entrepreneurship literature as well as for practitioners. Future research can complement this research by finding other variables which are able to positively or negatively change the renegotiation process and sensemaking and sensegiving activities.

Negative external feedback is addressing three processes in the organization. Initially, the external feedback is interpreted and compared to the OI. In addition, the legitimacy of the feedback source is evaluated. Lastly, a renegotiation process might be started. All three context variables have been found to significantly interact with negative external feedback. However, due to three possible modes of action, and several hypothesized relations based on past research, no specific effect can be identified. Therefore, future research needs to investigate how exactly negative feedback affects OI and how context variables interact with these processes.

Moreover, having primarily focused on sensemaking and sensegiving activities in this study and having derived the hypotheses based on these theoretical domains, some components of the interpretation and reaction process might be better approached with other theoretical perspectives in future research.

## **5.2 Contributions to theory of OI**

*"We are with Langley (1999) when she points out that process data [in the context of identity-as-process as opposed to identity-as-entity; the author] are 'notoriously challenging' (1999:706) because they have features that make them difficult to analyze: that is, they deal with 'events' and they often involve multiple levels of analysis. There is also the difficulty of obtaining access to organizations and organizational members for long periods of time (see also Langley and Abdallah, 2011). And then, of course, identity-as-process studies would invite the predictable common criticism that it might harbor no predictive power. All these factors might be seen as grounds for avoiding the study of identity-as-process, but there is a more optimistic way of viewing these challenges: they also might just create the opportunity to conduct some rather original organizational identity research that could generate a unique view of a unique phenomenon" (Gioia & Patvardhan, 2012, pp. 58–59).*

In extant literature, OI formation and change have been examined through grounded theory approaches or through theoretical considerations. Albert and Whetten (1985) constituted a still valid definition of what researchers commonly understand when they are talking about OI: central, distinctive, and enduring characteristics of an organization. Dutton and Dukerich (1991) extended the framework by linking image and identity, introducing the construed external image as the insider believes about how outsiders see the organization and emphasized the importance of investigating identity as the intersection of internal and external perceptions. Five years later, Gioia and Thomas (1996) further advanced the knowledge of OI through introduction of the desired future identity and thus a forward looking component in identity research. Since then, discussions about appropriate research perspectives (sensemaking vs. sensegiving; e.g., Harquail & King, 2003; Whetten, 2006) and the characteristics of OI (e.g., Gioia, Schultz, & Corley, 2000; Pratt & Foreman, 2000) have emerged among other topics. Recently, the formation of OI (e.g., Gioia et al., 2010) and change processes of OI (e.g., Ravasi & Schultz, 2006) attracted notable attention.

Thereby, recent papers have emphasized the need for future research with regards to several important aspects most explicitly articulated by Gioia and Patvardhan (2012) as quoted in the beginning of this chapter, in which they ask for longitudinal examinations of events at multiple levels to *"generate a unique view of a unique phenomenon"* (Gioia & Patvardhan, 2012, p. 59). This research addresses these calls and therefore contributes to identity research in various ways.

The first aspect is an integrated and general theoretical framework of identity formation and legitimization. Among others, Gioia et al. (2010) started combining sensemaking and sensegiving perspectives to build a grounded theory model of identity formation and called for more research integrating these perspectives to gain further insights. Gioia and Patvardhan (2012) noted the need for a combined process and entity perspective on how OI forms and changes. Together with other researchers they call for more longitudinal research about OI processes (e.g., Schultz & Hernes, 2013). Having conducted a 1.3 year long observation of 98 start-up companies to follow the formation of their OIs, this dissertation focused on the dynamics of OI through integrating existing theory and applying the model to empirical data. While acknowledging different gestalts and characteristics of OI, the target was to investigate how organizational parameters influence the OI strength and how events influence the perceived strength of OI during OI legitimization in emerging organizations. Due to the special need of new ventures for legitimization, even a comparatively short observation

period<sup>21</sup> was sufficient to observe changes in OIs. This allowed the team to use survey data from different participating organizations to examine OI formation and legitimization while building on existing frameworks. The study builds on the aggregation of several previous theoretical contributions and combines sensemaking and sensegiving processes which complement each other in the identity legitimization processes as a framework for contextual organizational parameters which influence these processes. While founders might use sensegiving activities to propose claims and impress their values and assumptions to form a preliminary OI, sensemaking processes continuously challenge these claims to form a shared understanding of who the company is. Once contested, a renegotiation process can take place, which includes sensemaking or both, sensemaking and sensegiving activities depending on the severity of incongruence of feedback and OI. The outlined interplay of sensemaking and sensegiving activities is applied to the OI legitimization process. In addition, it can also be used as framework for other processes in which OI is contested such as identity threats or change.

A second aspect is the investigation of causes for the OI formation and change. Past research which examined OI formation or change processes followed a grounded theory approach. While this greatly improved the understanding about detailed relationships in the observed cases, and allowed for some generalization to a broader context, previous researchers who applied grounded theory approaches observed only very specific situations in which the organizations act or need to react to. Most studies focused on identity threats as trigger for change (e.g., Dutton & Dukerich, 1991; Ravasi & Schultz, 2006; Schultz & Hernes, 2013). On the other hand, Gioia et al. (2010) described the formation of OI focusing on legitimizing feedback and positive responses from outsiders. A systematic approach classifying feedback and splitting reactions based on the type of feedback is missing. Correspondingly, Kjaergaard et al. (2011) ask for an extension to also include internal feedback in addition to external sources of feedback.

The current study addressed this by splitting different types of feedback into the 4 categories "positive internal feedback", "negative internal feedback", "positive external feedback", and "negative external feedback". The developed framework remains valid for each type of feedback. This allows to categorize previous research and to compare findings of different contexts with each other referring to the same underlying concepts. Research about identity

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<sup>21</sup> For example, Gioia et al. (2010) describe the formation of organizational identity over a period of 8 years; Schultz and Hernes (2013) use a 2-years and a 3-years period; Ravasi and Schultz (2006) investigate a company's identity for 8 years, extended by another 20 years through archival data.

threats typically describe negative feedback from external sources like customers (e.g., Schultz & Hernes, 2013), competitors (e.g., Ravasi & Schultz, 2006), regulators (e.g., Elsbach & Kramer, 1996), or press and public opinion (e.g., Dutton & Dukerich, 1991). This is sometimes followed by positive internal (e.g., Corley & Gioia, 2004) or negative internal (e.g., Corley, 2004) feedback during the study while results are sometimes not differentiated. In the examination of OI formation by Gioia et al. (2010) only positive feedback from external and internal sources is mentioned and integrated in their model. All these feedback events follow similar mechanisms yet a comparison of these studies and a split of events and reactions into components were difficult due to the lack of a combining framework. Based on 138 feedback events, the framework was developed, has been tested and results have been discussed. It has been found that all feedback types differ from each other. While the positive feedback events directly support the OI strength of a new venture, the effect of negative feedback is context sensitive and can weaken or strengthen the OI. Moreover, internal feedback events are received and interpreted differently than external feedback because the source of feedback is knowledgeable about the OI while external parties can only give feedback with respect to specific aspects of the organization. Future research can build on the categorization as well as the proposed models for identity formation and legitimization and identity renegotiation to support hypothesis development and to better position their findings compared to extant literature.

A third contribution to OI studies is the investigation of the influence of organizational parameters in which formation or change processes take place. Previous studies mainly examined single cases, in which one specific environment existed. They highlight relationships in a single case but this prevents researchers from concluding how these effects would look like in other environments. Thus, by investigating a broad range of organizations, the influence of organizational parameters is investigated. There is agreement that executives or top managers are most relevant for OI (e.g., Scott & Lane, 2000). However, it is unclear how and to what extent they influence processes of OI formation, feedback interpretation, and identity renegotiation (e.g., Gioia et al., 2010). Navis and Glynn (2011, p. 494) call explicitly to explore *"how identity dynamics might differ [...] under different levels of entrepreneurial experience (e.g., novice versus serial) [...]"*. The influence of industry characteristics have been put into perspective by Gioia et al. (2010) and Gioia and Patvardhan (2012) positing a limited influence on the exact gestalt of OI. However, the influence of the formation of OI remains to be clarified (Gioia et al., 2010). Similarly, Schultz and Hernes (2013) describe the influence of vision in two cases of OI change, however, a more general approach is needed to

better understand the influence of organizational vision on identity formation and legitimization processes. Based on the developed framework of OI formation and legitimization, the influence of all three organizational parameters has been investigated.

Fourth, the present study combines all three context variables and the feedback events to conduct a joint analysis of initial conditions and feedback. Following Gioia's and Patvardhan's (2012) call for a process perspective of OI instead of conceptualizing it as an entity, which can be described and characterized in detail, the change of OI strength is outlined for different levels of the context variables and their interaction with feedback events. The findings allow for a more differentiated view on these variables. This study shows that parameters like a clear organizational vision are not always positive. As claimed by Schultz and Hernes (2013), this study illustrates that a strong organizational vision can support a more positive interpretation of negative external feedback. However, it is also hindering positive external feedback to strengthen the OI. A similar effect is highlighted for environmental hostility. Therefore, it underscores that researchers should be aware of their dual character in terms of OI formation and change.

In addition, while this study investigates OI formation and legitimization, it has also relevance for OI change as already described above. The examination of OI in new ventures is unique in that there is little shared history yet and thus a temporal analysis as done by Schultz and Hernes (2013) is not applicable. Emerging organizations need to emphasize the identity in order to receive legitimization from external stakeholders in order to become successful. This supports a more rapid adaption to feedback and stronger effects on the perceived OI. However, the relationships are identical to those for OI change processes. In both cases, feedback is received and organizations need to interpret and react to it, which can lead for young and established ventures to an identity renegotiation process with sensegiving and sensemaking activities. This study therefore contributes to OI research not only by highlighting OI formation relations but also through findings which are transferable to OI change research. It allows future researchers to test organizational parameters possibly influencing OI processes on a common typology for different feedback events. It has been applied to a founding team's start-up experience, organizational vision and environmental hostility and different ways how they interfere in the process have been described, thus elaborating what was called for in previous research.

Lastly, the results suggest that OI renegotiation processes – hence, sensemaking and sensegiving activities – can be influenced. All three context variables have been found to

interfere with how negative feedback affects OI. This finding highlights possibilities for future research by investigating which other variables might interfere with the involved processes on the one hand; and emphasizes the need to explicitly incorporate organizational characteristics in grounded theory approaches and longitudinal observations of single organizations on the other hand. Ignoring context variables like hostility, experience of the management or the strength of organizational vision might lead to a biased view about how organizations cope with adverse events and might ultimately limit the generalizability of results.

### **5.3 Contributions to theory of entrepreneurship**

This study advances the present understanding of several aspects of entrepreneurship research. Foremost, it clarifies identity processes – that is the incorporation of feedback – during the formation of new ventures as demanded by other researchers (Navis & Glynn, 2011). As a central component for insiders' and outsiders' perceptions about the organization, identity supports the entrepreneurial ventures in their acquisition of resources and strategic planning. Moreover, the findings contribute to research about entrepreneurial experience, entrepreneurial vision, entrepreneurial environment, and entrepreneurial events.

This study enhances the current understanding of processes in the formation of a start-up through its illustration of how start-up companies deal with early feedback from stakeholders inside and outside the organization. Past research emphasizes the critical role of legitimization through stakeholders like venture capitalists, customers, or media (Gioia, Price, Hamilton, & Thomas, 2010; Navis & Glynn, 2010) and the start-up's efforts in business planning (Brinckmann, Grichnik, & Kapsa, 2010) and impression management (Lounsbury & Glynn, 2001). These examinations mainly deal with an active role of entrepreneurial ventures to influence their environment and the reactions of this environment. However, the formation of new ventures is a much more interactive process. Actions of start-ups lead to reactions of stakeholders, which again lead to reactions of the start-up. This study adds the perspective of the start-up's reaction to feedback from stakeholders. The start-up and its internal processes play a much more important role in interpreting and reacting to received feedback events than previously acknowledged. A new venture can not only decide how to incorporate the feedback into its organization but it can also influence how the feedback is interpreted. Based on these findings, future researcher investigating formation processes of a start-up should

follow a process perspective including actions as well as reactions from entrepreneurial ventures and their stakeholders. An insulated investigation of each would neglect significant influencers of the outcomes.

Building on this extended perspective, this research adds to the current understanding about adverse events. While previous research focused on the effects of adverse events on decision making (DeTienne et al., 2008), this study adds an enhanced understanding about the role of adverse events in the development of a strong OI during the development of a new venture. Depending on the context and the internal capabilities of the new venture, adverse events can negatively or positively affect the OI strength. This influence on an organizational level highlights that adverse events influence individuals within organizations as well as organizations as an entity and social actor.

Moreover, this study adds to the entrepreneurship literature through its examination of the moderating effect of experience which was requested by Marvel et al. (2014). Based on the central role of OI in the process of new venture development and legitimization (see chapter 1.1), the highlighted moderating effect of the founding team's start-up experience could be extended to contributing to existing research about venture performance and survival. While a founding team's start-up experience is not significantly positively affecting OI directly it seems to play a valuable moderating role in the interpretation and renegotiation of negative feedback. This might explain some inconclusive results in past research, in which the effects of experience directly on venture survival or performance is investigated (Reuber & Fischer, 1999). Both outcomes – venture survival and performance – are heavily depending on the internal handling of adverse events and in general on decisions and actions. If founders are better able to interpret and integrate different types of feedback in their organizations, the ventures are more likely to succeed in the long run (Reuber & Fischer, 1999). However, past studies investigating the relationship of founder experience and venture survival typically did not include the handling of different types of events in their analyses. Based on the results of this study, experienced founding teams and start-ups which receive positive feedback might not be able to capitalize on their experience and are thus as successful as inexperienced teams. On the other hand, teams receiving negative feedback depend more on the skills of their founders and experienced teams handling adverse events might show higher probabilities of survival and success than inexperienced teams. Therefore, start-up experience might not support the chances of venture survival directly but might – similarly to its effects on OI – be positively influencing the chances of survival if adverse events take place. Relying on the



outcomes of this study, it is therefore recommended that future research should focus more on the moderating role of start-up experience for processes like opportunity assessment or decision making instead of focusing on direct effects of a founding team's start-up experience on company outcomes. Alternatively, adverse events should be included as important variable if the effects of start-up experience are examined.

In addition, – assuming that the quality and content of negative and positive feedback is comparable – the differences in the effects of start-up experience on positive and negative feedback illustrate an altered learning mechanism and support Unger et al. (2011) who suggested that experience is not equal to knowledge or expertise. As discussed in section 5.1.2.1, it seems that experienced founders are not able to set themselves apart from inexperienced ones if positive events happen. However, in case of negative feedback founders can build on their learnings from experience and reach better outcomes in terms of OI strength than inexperienced founders. Therefore, learning from experience seems to take place mainly in adverse situations in a way that it can be applied to better handle similar situations. Positive feedback increases the experience of the founding team but might not lead to learning from this experience in a way that it can be applied to future events. It is suggested that future research investigates both, the assumption of comparable information quality of positive and negative events, and the role of different types of events in the process of learning from experience.

In addition, the understanding about entrepreneurial vision is enhanced in that this study highlights the strengthening effects of a collectively shared, future oriented and motivating vision on OI. This confirms many aspects of the propositions of Lounsbury and Glynn (2001) that a strong organizational vision (or entrepreneurial stories) supports an OI, which legitimizes the new venture. However, it adds to the propositions in that the organizational vision and expectations of stakeholders do not necessarily need to be aligned in order to strengthen the OI (see Lounsbury & Glynn, 2001, p. 552). A strong organizational vision can support the new venture's OI even if negative external feedback is received. Moreover, in contrast to existing theory (Baum, Locke, & Kirkpatrick, 1998; Lounsbury & Glynn, 2001) a strong organizational vision is not always positive for entrepreneurial ventures. In case of negative internal feedback, this study found that a strong organizational vision severely weakens the OI. It seems that adverse internal events create ambiguity and insecurity in cases when a strong organizational vision should align all members to a commonly shared understanding of the future. This is important because it emphasizes a better differentiation

between positive aspects of a vision as long as the new venture is doing well and negative aspects once the venture struggles in some dimensions. Therefore, future research about entrepreneurial vision should consider that a strong organizational vision is not always positive for the formation of a strong OI and the legitimization of emerging organizations. Hence, given that visions can be characterized along different dimensions<sup>22</sup>, researchers could distinguish between positive and negative content components or attributes of an organizational vision.

This dissertation also contributes to the research about entrepreneurial environments. While there is existing literature about the entrepreneurial environment in general, only few have investigated how entrepreneurial environments influence the formation of new ventures (Fisher et al., 2015). This study found that environmental hostility weakens the OI in new organizations. Accordingly, this study suggests that organizations in environments with intense competition struggle more to define a distinctive position for themselves. Moreover, negative external feedback is found to have a positive effect on OI strength if the entrepreneurial environment is hostile. These relationships are important because they impact strategic decisions of entrepreneurs. Due to the direct and indirect effects of hostility on the OI strength, entrepreneurs might be willing to take more risks, might change their focus of attention, or they might engage in different strategies to acquire resources. For example, in hostile environments, new ventures might be more willing to engage with external parties to receive more feedback which helps them to determine the optimal distinctive identity. Moreover, having a weaker OI makes it more difficult to legitimize the business and to acquire funding, which forces the organization to pursue different market strategies or it may even inhibit the success of a new venture. Therefore, future research should consider the influence on OI when examining the entrepreneurial environment.

Lastly, the findings in this study suggest that in entrepreneurial settings positive feedback has immediate effects on the OI strength while negative feedback can be influenced by company characteristics like a founding team's start-up experience and context parameters like environmental hostility and organizational vision. This adds to research about entrepreneurial success or entrepreneurial ecosystems in that it shows that chances of failure can be diminished if an optimal setup for receiving and handling negative feedback can be achieved. By comparing moderators on the effects of positive and negative feedback on OI strength, this study supports the focus on adverse events. Further, this study suggests that venture support

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<sup>22</sup> Content, attributes and way of communication; see chapter 2.3.2

should focus on internal capability building to better manage adverse feedback and not to avoid negative feedback because it can even have positive effects in certain situations. More research is needed on the optimal internal setup for feedback handling and on finding out which capabilities are required.

#### **5.4 Practical implications**

From a business perspective, this study is specifically relevant to founders of new ventures. Entrepreneurial environments are described as *"inherently uncertain, dynamic, and novel"* (Shepherd et al., 2010, p. 73). Founders who are trying to build new ventures in this environment do not only need to manage their own entrepreneurial identity as being distinct and still belonging to a community (Shepherd & Haynie, 2009) but also have to form an OI which is accepted as legitimate in order to be successful (Aldrich & Fiol, 1994) and to keep committed employees (Breugst, Domurath et al., 2012). Thus, founders are pivotal for the development of a new venture.

This dissertation highlights how new organizations can use feedback to become a legitimated player in the market and how founders play a vital role in giving sense through the formulation of identity claims and through sensemaking as guides and role models in the interpretation of feedback. The results emphasize that positive as well as negative feedback are purposeful to strengthen the organization's perceptions about what is central. Depending on the feedback, founders can influence how feedback is perceived and how the organization reacts to feedback. While positive feedback seems to have a direct effect on OI, the effects of negative feedback are heavily influenced by the company characteristics a founding team's start-up experience, organizational vision and environmental hostility. Hence, founders should spread positive stories directly or support its diffusion in the organization through success stories. In addition, they should create environments in which negative feedback is embraced as valuable feedback, which supports the understanding of who the company is because feedback and OI renegotiation processes can be manipulated to lead to positive outputs.

Moreover, the dual role of organizational vision is revealed. If founders are able to establish a clear and strong vision, it supports the formation of a stronger OI besides other advantages. In addition, organizations with strong visions seem to be able to interpret negative external feedback in a positive way and further increase their OI strength. Yet, founders need to be aware of risks associated with a strong vision. Internal misalignments and negative feedback

leads to a substantial weakening of OI as desired future identity and current identity are not aligned anymore.

At last, founders who are required to develop an OI for their organization need to be cautious about the business environment. If the hostility in the industry is high, negative external feedback clarifies the construed external image and has a strengthening effect while in more benign environments negative external feedback weakens the perceived OI. If founders are able to actively manage this reference and establish a link to enhanced strategic options, they might be able to better control the interpretation of feedback. This is different for negative internal feedback. If negative internal feedback occurs in organizations, which operate in highly competitive environments, the perceived strength of OI suffers more severely than for those in benign industries. Therefore, if the failure rates are high in an industry, which is one indicator for a hostile environment founders, should be aware of the negative effect of negative internal feedback and actively address these feedback events to prevent identity ambiguity.

While these implications address entrepreneurs, they are also relevant for company managers. Established organizations are less dependent on legitimization from outsiders due to a large customer base, built trust and in most cases better financial reserves, which reduces the gravity of positive and negative events. For example, a complaint from one customer might be a question of survival for a start-up but in large corporations no member outside customer service would notice. Even though large organizations might only be affected by more extreme feedback like industry disruptions, large scale media coverage or the reception of a renowned award, feedback interpretation and reaction options as well as the identity renegotiation process might also be applicable for large organizations. Hence, the findings about how feedback events affect the OI and which processes take place can be used by managers to better succeed in guiding the organization.

## **5.5 Limitations of this study**

This study aims at investigating the effects of negative and positive feedback on OI strength and analyzed survey data from 98 start-up companies, which have been followed in 4 rounds for 1.3 years. While several relations have been identified, which can be also applied in the broader context of OI change, some limitations exist.

First, this study focuses on quantitative research methods, while most previous research about identity formation and identity change used a grounded theory approach focusing on one specific organization (e.g., Gioia, Price, Hamilton, & Thomas, 2010; Ravasi & Schultz, 2006; Schultz & Hernes, 2013). Past research examined detailed processes and effects in specific situations of organizations through oral and written sources to combine separate theories and to propose generalized models and processes for identity construction or change. Using their work as basis, this study acknowledges the commonalities about the processes involved in OI formation, which have evolved in recent years. The theoretical assumptions of this study build on their frameworks and aim for the identification of more general relationships. Thus, it contains a shift of focus from accurate and detailed descriptions to more general frameworks. Thorngate (1976) claimed that research studies cannot be simple, accurate, and general at the same time. While previous research focused on a most accurate description of past or current organizational processes to deduct simple frameworks appropriate for generalization, this study emphasizes generalizability while building on simple yet accurate frameworks, which have been found before. Therefore, it is assumed that the effects visible in this study can be explained by previously identified processes, which are incorporated in the hypotheses. For example, this study does not separately investigate sensegiving and sensemaking activities in an organization or examines the process of feedback reception and interpretation but it focuses on changes of OI strength as a result of these processes. Yet, drawing on contributions from earlier research, sensemaking and sensegiving processes as well as an adapted process of feedback interpretation from Gioia et al. (2000) are used to derive the hypothesis and to influence the discussions. However, there might be the possibility that other, so far unexplained mechanisms interfere with the feedback interpretation and reaction processes which are not included in this study. This possible limitation is addressed through a longitudinal setup in which the initial perceived strength of OI is used as control variable. Using this approach, unknown fixed effects are analytically eliminated and their relevance is decreased. Moreover, this research follows a process perspective and therefore investigates the perceived strength of identity and not specific identity characteristics which are more appropriately examined through grounded theory (Gioia & Patvardhan, 2012).

The second limitation addresses the generalizability of the results in the entrepreneurship research as well as to other areas of organizational research. In this study, new entrepreneurial ventures are chosen as subject for research. The selected start-ups operate in diverse industries at different stages of their lifecycle. Some have just been founded while others have already existed for five years. This offers several advantages for the examination, e.g., high amount of

feedback events, availability of high number of participating organizations, or strong organizational dynamics. Due to their need for resources, new ventures are specifically in need for legitimization and stakeholder feedback. Ravasi and Schultz (2006) and Gioia et al. (2010) state explicitly that feedback is actively pursued in order to get an enhanced understanding of the external image about the company. However, it has to be acknowledged that the effects might differ for different types of start-ups or in other organizational fields like universities, communities or established companies due to the distinct environments in which they operate. Even though it is outlined in the theoretical section that basic processes like sensemaking and sensegiving activities as well as the need for legitimization are shared among organizations, there might still be differences in how organizations react to feedback. For example, universities, schools or communities might have more time to develop their OIs due to lower environmental dynamics which might lead to more options to guide the renegotiation processes and more elaborated reactions on feedback. In mature organizations the active search for feedback might be less relevant and liminal actions might not be conducted. Thus, the interpretation of feedback might differ even though eventual renegotiation processes are similar. Further research about general reactions to legitimizing or threatening feedback for specific types of start-ups or in other organizational fields is encouraged.

Third, the study is conducted in Germany while controlling for founding team internationality. It has been intentionally decided to focus on one country to avoid influences of national culture differences (House, Hanges, Javidan, Dorfman, & Gupta, 2004). House et al. (2004) found some values in one society can be relatively high while others are comparatively low with respect to other societies. For example, power distance reflects people's attitudes towards how equally distributed power should be (Waldman et al., 2006). A high power distance means a strong hierarchy with power concentrated at a few leaders. A low power distance culture values empowerment of all members of a society. Similarly, the level of collectivism differs between societies (Waldman et al., 2006). In-group collectivism describes the extent to which an individual should contribute to a collective or should be loyal to a collective. Institutional collectivism reflects the belief that resources and rewards should be distributed to the collective instead of individuals. While the chosen approach of focusing on one country increases the validity of the results because it eliminates a possible source of error, it might also reduce the generalizability of the results. Both exemplary values, which differ between societies, might also influence the relationship between feedback, organizational characteristics, and OI strength. The power distance might affect how much

influence founders have to give sense in case of feedback. For example, an organization in a low power distance culture might set more emphasis on the sensemaking processes including all organizational members which might reduce the influence of a founding team's start-up experience. Similarly, members of organizations in societies with high levels of collectivism might attribute feedback to a much higher extent to the organization which would increase the effects of feedback as well as the influence of organizational characteristics like the organizational vision. However, while the national culture characteristics might affect the effect size of feedback and organizational parameters on OI strength, it is unlikely that they will invert the identified relationships. Therefore, to investigate the effects of national culture, future research is encouraged to test the results of this study in different cultural settings.

A fourth possible limitation is the research period. While this study follows the call for more longitudinal research in organizational studies (Davidsson & Gordon, 2012), four rounds of survey is still relatively short. Due to the applied statistical method, the number of rounds is further reduced to three as the effects between two rounds are analyzed. The amount of observations at level 1 (within-firm) is influencing the statistical power and thus the quality of the results (Maas & Hox, 2005). A low statistical power might lead to underestimation of effects and thus to results which are too conservative (Hofmann et al., 2000). As has been shown in chapter 3.1.1, statistical power is sufficient due to a compensation of the low number of rounds (level 1) by a high amount of participating start-ups (level 2). Still, future research might examine even longer periods to further increase the statistical power.

Fifth, common method bias possibly limits the validity of the results through inflated correlations (e.g., Podsakoff et al., 2003). All variables except some controls are assessed through self-assessment methods, which might be a source of common method variance. Despite controversial debates about the extent to which common method variance negatively influences outcomes (Spector, 2006), several measures have been implemented in the research design to mitigate this bias. As described in chapter 3.3.3.1, variables have been measured in different rounds of the survey and partially from different sources. Still, it cannot be concluded that common method variance biases the results.

Lastly, even though a longitudinal study setting increases the explanatory power for directional relationships, causality might be assumed wrongly. Especially for internal feedback, it could be assumed that an increase in OI strength would lead to positive internal feedback and not vice versa, which is hypothesized and discussed in this study. This issue is addressed in several ways. First, the longitudinal setting greatly improves causal assumptions.

Moreover, internal and external events are used as independent variables which are – especially in the case of external events – outside the control of the organization and thus independent in their existence from possible changes of the OI strength. While events can happen or not and influence how strong OI is perceived, it is not reasonable to hypothetically assume that changes in the perception of OI strength might sometimes lead to different types of feedback and sometimes not. Finally, effects of internal and external feedback events show similar characteristics and are supported by theory. Thus, despite the missing ability to prove causality statistically, it can be assumed that causal relations are correctly implied.



## **6 Conclusion and outlook for future research**

This dissertation aims at investigating how OI forms in new ventures through a quantitative approach following the call from Gioia and Patvardhan (2012). The results of the study show how OI strength is affected by different feedback events and how organizational parameters like founding team's start-up experience, organizational vision, and environmental hostility support the formation of a strong OI and contribute to increase the understanding about OI formation and legitimization of new ventures. In addition, the study highlights how processes of feedback interpretation and in some cases identity renegotiation are influenced by organizational parameters in case of feedback events. Hence, organizational parameters are not only essential for a preliminary OI formulation but also for interpretation and renegotiation processes in the OI legitimization. The hypothesized relations are found to influence feedback heavily. Through this relationship, founders are not only altering how organizations are formed but, due to the influence of OI in legitimization of new ventures and strategic decision making, they are also shifting chances of success or failure.

Moreover, the outcomes of this study emphasize that grounded theory approaches need to be carefully conducted as important company characteristics, which might not be described in the study context, are determining how feedback is received and incorporated in the organization. Neglecting these circumstances might diminish the generalizability of findings. This is specifically important because most theory is based on findings from single observed cases. Therefore, the quantitative approach of observing 98 start-ups longitudinally and analyzing their developments simultaneously to their occurring events allowed the team to deepen the understanding of reactions to feedback under different conditions. The outcomes highlight the importance of organizational context especially in the case of negative feedback.

Besides contributing to existing OI and entrepreneurship literature, this study opens up new avenues for future research. On the one hand, the results indicate that future research is needed to unveil effects which remained ambiguous and to further increase our understanding of described effects. Future research can focus on testing and extending the outlined framework in different settings, countries, types of start-ups, or with different constructs.

A first avenue would be to extend the organizational parameters to other dimensions. What other factors contribute to a strong OI and which factors are most important for an organization? Dutton and Dukerich (1991), Hatch and Schultz (2002), and Ravasi and Schultz (2006) emphasize the general role of organizational culture in identity (re-)construction.

While organizational vision is one aspect of culture (Denison et al., 2006), it can be extended to more than that. Ravasi and Schultz (2006) outlined the role of artifacts, practices and organizational history as guides in identity reconstruction processes. Members of Bang & Olufsen compared their actual decisions with what they did before and made sense of their history to propose similar decisions to past ones. Further, Dutton and Dukerich (1991) and Dutton et al. (1994) underscore the power of rituals, symbols and stories in the peoples' needs to act in consistence to the past. Similarly, Hatch and Schultz (2002) note that the context, in which organizational members take decisions or take actions, is set by aspects of organizational culture. Therefore, future research might investigate the role of involvement, adaptability, consistency (Denison et al., 2006) or other cultural traits, history, rituals or symbols on OI strength during the formation and legitimization of a new venture.

Moreover, results about the moderating effects shed light on unresolved questions. Which attributes of a founding team's start-up experience influence the OI strength and the effects of feedback on OI strength? Is it the experience about what worked well or is it the learning from previous failure and mistakes which supports founders in the formation of the OI of a new venture? Similarly, what attributes of vision or which content of vision is responsible for the effects on OI or on the effects of feedback on OI? The study is set up to investigate OI formation building on a process approach (Gioia & Patvardhan, 2012). This allows the research team to focus on OI formation and its reasons as well as influencing factors of OI formation instead of explicitly describing the gestalt of the OI. Valuable insights are gained into how OI legitimization and renegotiation processes take place. In line with the approach to find general and simple relationships, experience is not further refined (Toft-Kehler et al., 2014) and vision not specified (Baum et al., 1998). Yet, both context variables show more differentiated effects.

Start-up experience seems to work only under certain conditions, which is in contrast to some learning theories (Delmar & Shane, 2006) while others are supporting this finding (Westhead & Wright, 1998). Toft-Kehler et al. (2014) remind researchers not to put experience on the same level as expertise. They propose to have a more differentiated view about prior entrepreneurial or start-up experience by qualifying it in terms of industry, geography and temporal aspects. Consequently, Ucbasaran et al. (2010) propose to also investigate the nature of experience. Moreover, individuals show different abilities to learn from failure (Shepherd, Patzelt, & Wolfe, 2011). Based on learning studies, a higher experience does not necessarily lead to better outcomes because wrong conclusions might be drawn from wrong inferences

and learning barriers (e.g., Levitt & March, 1988). Czarniawska and Wolff (1998) noticed that prior experience prevented university leaders from making the right decisions in newly founded universities. Thus, the relevance of prior experience (e.g., industry, geographic and temporal similarities) needs to be further examined in future research.

Vision exhibits diverse effects on how feedback is handled in an organization. Yet as outlined above, the specific vision content is not subject of examination in this research. Moreover, effects might differ also for various vision attributes (Locke & Kirkpatrick, 1999). It might be abstract or specific, brief or complex, realistic or unrealistic, stable or unstable, embedded in the organizational culture or superficial, known to outsiders or only to insiders. Each parameter might influence how this important variable influences the formation of OI. To understand more thoroughly how vision acts as a moderator in cases of positive and negative feedback, a more detailed investigation of the vision itself needs to take place.

Effects for both, a founding team's start-up experience and organizational vision, as well as those of environmental hostility indicate that the actual processes and mechanisms are more complex than previously assumed. The outlined model of identity interpretation and renegotiation is developed based on previous theoretical research. However, the effects of the context variables cannot be precisely assigned to the outlined relationships of Table 35. Thus, an extension of this study, which focuses on events as causes and changes in OI strength as effects in the quantitative part instead of the processes involved, is required to investigate exactly how feedback is received, processed and actions are derived in organizations. Hence, a split into interpretation as well as sensemaking and sensegiving components of the OI renegotiation process is recommended to investigate exactly how context variables alter the way feedback is incorporated in an organization in the future. Figure 57 shows an updated model of the interactions with separated functions for the feedback interpretation and renegotiation process.

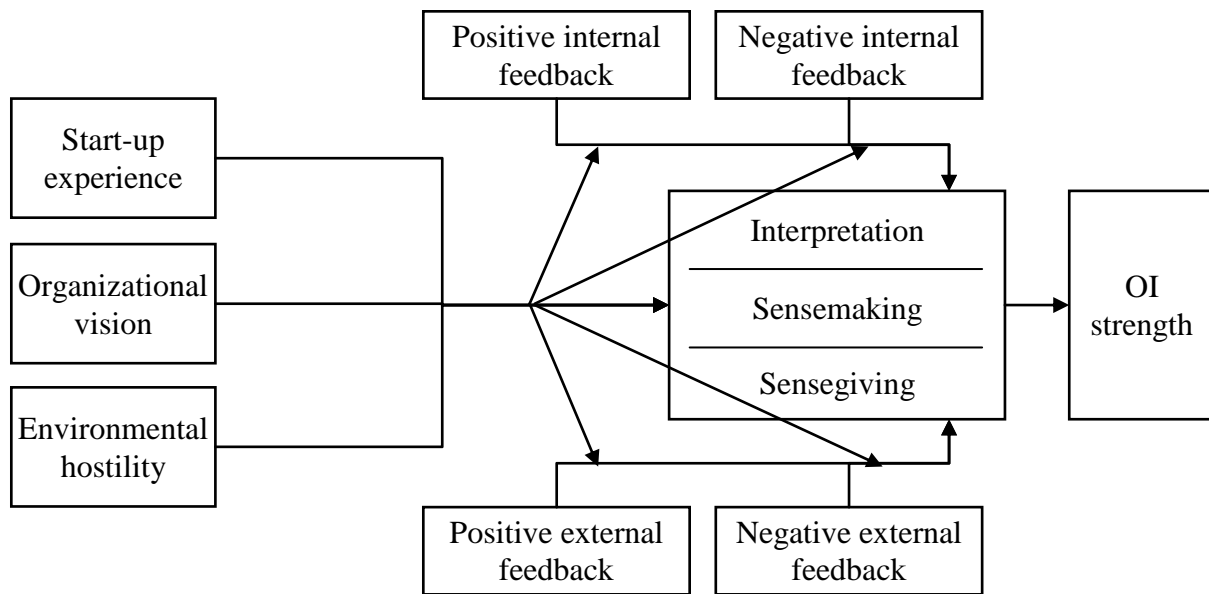


Figure 57: Interaction model with separation of feedback reception functions

In addition to the extensions of the model above, the results of this study and more explicitly the ICC calculations of OI strength show a significant proportion of variance on the individual level. It seems that individuals and their roles in the organization play a more relevant role than influencing the sensemaking processes in OI formation and change. Yet, if individuals, their values and the interrelations of individuals are influencing the OI formation, how are they affecting sensegiving and sensemaking? What should be the best setup of founding teams or of other team members to create a strong OI? Thus, future research might focus on individual processes involved in interpretation of feedback and renegotiation of OI (Chan, 1998; Costa et al., 2013).

On the other hand, this dissertation raises new questions in a broader context which might be addressed by future research.

A new avenue for future research is the investigation of the consequences of OI for a new venture. If new ventures require legitimization (Navis & Glynn, 2011) and expectations of stakeholders change during the growth of a new ventures in order to get legitimization (Fisher et al., 2015), how does a strong OI contribute to the legitimization of an emerging organization? How stable and strong does an OI need to be for a successful growth of a new venture? How does OI develop over time? While this research examined the strengthening of an OI as supporting the legitimization process of new ventures, Fisher et al. (2015) outlined

that the level of legitimacy can change independently from OI as ventures develop and relevant stakeholders change from e.g., business angels to venture capitalists to shareholders. Moreover, He and Baruch (2010) examined how OI and legitimacy are interlinked in established companies and how OI is affected by changes in organizational legitimacy. Therefore, future research might further elaborate what effects OI has exactly on legitimacy for new ventures and how changes in legitimacy affect the OI strength or stability.

In addition, the research of He and Baruch (2010) and Fisher et al. (2015) emphasize that OI strength is not constant and in times of change, a weaker OI might not only be the effect of external or internal disruptions but it might even be necessary and helpful for the development of an organization. Hence, an investigation about the optimal level of strength and stability similarly to the concept of optimal distinctiveness is encouraged.

The interplay of legitimacy and OI might also be visible if OI strength is analyzed with growth modeling. Wry et al. (2011) noted that the common understanding of an identity is challenged by new members and thus through growth, which is a common component of the strategy of entrepreneurial ventures. This leads to the assumption that OI is not continuously strengthening or growing over time but rather that OI is more erratically strengthening and weakening as the venture grows. Extending this study, which analyzed the change of OI strength caused by feedback events through comparing two different points in time, with a long-term analysis of the formation of OI strength levels over time would highlight more general effects of OI formation. Hence, future research is encouraged to analyze OI formation via growth modeling to examine effects of e.g., amount and speed of growth, the initial level of OI strength, or heterogeneity of additional employees.

A second opportunity for future research to build on findings from this study evolves from the results for direct effects of feedback. If feedback has the outlined varying and significant effects on OI strength, do the effects change for recurring feedback? How important is the source of feedback? What are the interdependencies of different types of feedback? Theory as well as results support that not only the feedback itself but also the context of it affect how it influences the organization: source, magnitude and occurrence. While only the type of feedback is subject of this research, future studies might investigate how all three dimensions influence how feedback is perceived and incorporated in the organization. The source of feedback and thus its legitimizing power is a core element for explaining the differences between the effects of internal and external feedback. In line with this, Dutton and Dukerich (1991) mention the emotional aspect of feedback from close friends or family compared to

more distant media coverage. Therefore, it needs to be considered that there exist different levels of legitimacy also within internal or external sources, which alter the way feedback is incorporated. Moreover, Fisher et al. (2015) describe how sources of legitimacy and their expectations change over the lifecycle of a start-up. While their focus is more on how expectations from external stakeholders change as a venture grows and how this impacts the new venture's need to adapt their OI claims over time, this dissertation investigates among others how the feedback from external stakeholders influence the OI formation internally. Future research can combine findings of this dissertation with the staged legitimacy concept to investigate how feedback sources affect the OI differently at different stages in an organizations lifecycle.

In addition to the source of feedback, Schultz and Hernes (2013) described different magnitudes of feedback. Lego reacted differently on the extent to how similar or dissimilar the feedback was to the existing OI. Thus, negative feedback might be more critical if it is severe in contrast to negative feedback about some unimportant part of the organization even though considered as significant by the majority of the organization's members.

Lastly, Kjaergaard et al. (2011, p. 514) investigated the effect of continuing positive feedback and found that members can become "*captivated*" by positive feedback. They stop interpreting positive feedback and do not assess if it fits to the existing OI. It seems that recurring feedback diminishes the effect on OI by considering it solely as necessary input for the self-esteem. Therefore, while this study investigates general effects of feedback, there is still more investigation needed to obtain a more complete understanding about the effects of feedback on the OI. While this is an opportunity, it is also a challenge for future research. Even with 98 start-ups and 138 significant events, thorough investigations are challenging and statistical power decreases with growing numbers of variables. In most cases, the results are in line with the hypothesized relations, yet statistical power does not allow for significant effects. Thus, future research must include large numbers of new ventures and follow them for a substantial amount of time.

The direct effects of context variables on OI formation open up a third avenue for future research. The results show how the level of these context variables at the previous round influence the OI at the following round and it displays that direct effects on how OI develops exist. However, context variables might be subject to change itself which might influence the OI formation in parallel. Thus, how do shifts in the competitive environment or a redefinition of a vision affect the OI? What happens to the OI if one founder leaves a new venture or

someone joins the entrepreneurial founding team? As Ravasi and Schultz (2006) mention, previous studies indicate that the OI is affected in case of substantial changes of the environment (e.g., Bouchikhi & Kimberly, 2003). Similarly, cases, in which organizational vision changes drastically, are easy to imagine in start-up ventures, e.g., when new investors require changes in the organization's strategy (Gomez-Mejia, Balkin, & Welbourne, 1990; Sapienza, 1992). Lastly, Ucbasaran et al. (2003) note that entry and exit of founders significantly affects the organization because skills of the founding team change. Therefore, further research is needed which investigates changes of context variables and its effects on OI and on OI formation.

Finally, the results of this study add to other researched phenomena. Business planning has been discussed controversially in past research (Brinckmann, Grichnik, & Kapsa, 2010; Honig & Samuelsson, 2012). While some studies emphasize the positive effects of spending significant amounts of time to develop a single documents, which reflects the core of the business idea (Delmar & Shane, 2003; Gartner, Carter, & Reynolds, 2010; Gruber, 2007) others dismiss it as wasting time better spent for business development (Bhidé, 2000). This research highlights the importance of a clear understanding of an initial vision and identity, which is one part of the business plan (see also Navis & Glynn, 2011). Hence, it indicates that a business plan is not only valuable for developing a business and external stakeholder but it may play a vital role in initially identifying who the organization is. Therefore, the findings of this study establish ties between OI research and organizational development in entrepreneurship domain and may motivate future research to further investigate the effects of business planning on OI formation.

Moreover, the lean start-up approach mentioned in the introduction of this dissertation is considered as a modern and agile way of creating businesses (Blank, 2013). The findings of this study extend the current understanding by connecting feedback and OI formation. The emphasis on start-up pitches in front of investors or customers in the lean start-up theory allows young ventures to receive much valuable feedback and to improve their products. It is a valuable input for the future success of the organization. However, – as outlined by the results of this study – it also helps to build a strong OI which again helps in strategic decision making (e.g., Ashforth et al., 2011) and legitimization (e.g., He & Baruch, 2010). Thus, focusing on rapid iterations with numerous opportunities for events of feedback is supporting the development of an organization in more than just one dimension. Asking questions about customers, offerings or the business model as proposed by the lean start-up process (Blank,

2013) helps to receive feedback. It supports the legitimization of a distinctive, central and continuous OI which ultimately answers the core question for emerging ventures of who the company is.

In summary, this study extends the understanding about organizations by combining different streams of research (OI change and OI formation, social constructionist and social actor perspectives, and entrepreneurship) to build theoretical frameworks for feedback interpretation and OI renegotiation. Further, it analyzes context variables systematically for the first time in OI research. This allows for gaining a more differentiated perspective about how organizations react to different feedback events under varying contextual conditions. By doing so, the described approach supports not only the integration of organizational research theories in the entrepreneurship research domain and builds a basis for future research in various aspects of the described relationships, but it opens up completely new perspectives on phenomena which are so far not in focus (like optimal strength and optimal stability, or feedback attributes), which are controversially discussed in research (like the effect of experience or the value of business planning), or which are not relevant in OI research yet (like the lean start-up approach).



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## 8 Appendix

### 8.1 Participating start-ups

Due to reasons of confidentiality, the start-up descriptions are separated from this dissertation in an electronic file.

### 8.2 List of incubation centers

The incubation centers or technology hubs include all centers from Munich universities

*Strascheg Center for Entrepreneurship, UnternehmerTUM of TU München, LMU-Entrepreneurship Center, Center for Digital Technology and Management (CDTM)*

Other technology centers or institutions from the Munich region were

*Münchner Technologiezentrum, Gate - Garching Technologie- und Gründerzentrum, Umwelt- Technologisches Gründerzentrum, Munich Network – Netzwerk für Entrepreneurship und Technologie-Innovation, Innovations- und Gründerzentrum Biotechnologie (IZB) Martinsried, High-Tech Gründerfonds, ESA Business Incubation Centres (BICs), Bayerisches Filmzentrum Geiseltal Wirtschaftsförderungs GmbH, aiti-Portal IT-Gründerzentrum*

Berlin incubation hubs and technology centers were

*You-is-now, M-Cube, Gründerwerkstatt, Rocket Internet, Innovations-Zentrum Berlin Management, Found Fair, hub:raum, Technologie und Gründerzentrum Spree Knie, Innovationspark Wuhlheide Berlin, Phönix Gründerzentrum, Humboldt Innovation, Technische Universität Berlin – Zentrum für Entrepreneurship, Gründungszentrum der HWR Berlin, Startupbootcamp*

Other incubators, VCs and business angels from Berlin and Munich included

*Venture Stars, Wayra and Axel Springer Plug & Play Accelerator, Team Europe, Project A Ventures, Rheingau Founders, Möller Ventures, Springstar, MAS Angel Fund, BBB Management GmbH, Profund*

### 8.3 Start-up information and recruiting

The start-ups received upfront information about the study as an electronic or printed flyer. It focused on the benefits each organization is having from a benchmark study about organizational culture. Figure 58 and Figure 59 show the pages from the flyer in the English version.

#### We support your success!

- We strive to contribute to strengthen the heart of your organization, leveraging on our long standing experience in research and consulting
- Cooperate with an interdisciplinary team of researchers at the TUM Entrepreneurship Research Institute

#### You want to participate or have questions?

Contact us to create the foundation of a promising Organizational Culture

Andreas Liebl  
Tel.: 0175 3189142  
Email: [Andreas.Liebl@tum.de](mailto:Andreas.Liebl@tum.de)

Stefan Drüssler  
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Technische Universität München  
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Arcisstr. 21  
80333 München  
<http://www.ent.wi.tum.de/research/startup-ekg/>



Andreas Liebl  
Dipl.-Ing.



Stefan Drüssler  
Dipl.-Kfm.



Dr. Anne Domarath  
Dipl.-Kfzr.



Prof. Dr. Dr. Holger Patzelt  
Dipl.-Chemiker



Create a sustainable Organizational Culture  
in startups

*"Your corporate culture is probably the single most important thing you ought to invest your time in."*

*Jensen Huang, President & CEO NVIDIA,  
about CEOs and Entrepreneurs*

Figure 58: Front and back pages of the Startup-EKG flyer

**What significance does Organizational Culture have for young startups?**

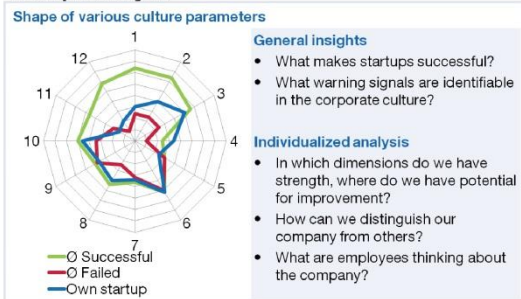
**Organizational Culture ...**

- ... includes all areas of an organization
- ... goes from a vision to internal organizational values
- ... should be established and strengthened during founding and financing phases

**Why do we investigate Organizational Culture in startups?**

- Organizational Culture is the foundation of **sustainable success**
- **Influence** of Organizational Culture in startups yet **unexplored**
- We close this gap and offer you **access to newest results**

**Example analysis**



**Improve team interaction and leadership**

How do new employees change your organizational culture – improve employee satisfaction and motivation

**Optimize critical success factors**

What are the differences between successful and failed companies? What is your performance?

**Get in contact with investors**

We help you to build up valuable relationships to VC-companies in our network

**Find innovative and motivated employees**

Present yourself as an attractive employer for full-time and internship positions via our website and network

**your benefits**

**your investments**

**Answer quantitative questionnaires**

4 questionnaires of ~15 min each (distributed over 1 year) for you and your employees

**Qualitative discussion**

Common kickoff together with your employees (~30 min)

**You receive ...**

- ➔ ... an individual summary of our results with comparisons between successful and failed companies
- ➔ ... an individual feedback in a personal discussion with us

**Figure 59: Inner pages of the Startup-EKG flyer**

## 8.4 Start-up invitations and reminders

Several emails to founders and employees have been sent out. Two exemplary versions are attached here:

### **Email to founders, invitation to fourth round:**

Dear Ms.{else}Dear Mr.{/if} #u\_title# #u\_name#,

We look forward to your participation in the final round of our study "Startup EKG" to research the evolution of organizational culture and the special characteristics of successful startups including ~500 founders and employees. First analysis show a great potential and hint on important connections already.

To save your time, we shortened the survey by ~1/3 compared to the previous round.

Of course, the analyses will be anonymized in a way that noone can draw any conclusions about individuals and their answers.

You can find the final round questionnaire here #code\_complete#

Please keep the following notes in mind:

The best way to complete the survey in with a computer (it is not optimized for mobile phone or tablet)

The approximate time needed for the completion is ~ 12min.

Your current status in the questionnaire will be saved automatically every time you continue to a next page. You can resume at a later point simply by clicking the link in the email again.

Please try to take time for the survey within the next 5 days

Each participant, who completed the 2nd round, will receive the final survey 4 months after completion. New participants receive it with the start of the 4th round.

We look forward to receiving your honest opinion.

Best regards

If you have any questions, feel free to contact us:

Andreas Liebl

Tel.: 0175 318 9142

Email: Andreas.Liebl@tum.de

Stefan Drüssler

Tel.: 0170 3344691

Email: Stefan.Druessler@tum.de

**Thank you / reminder email to all participants:**

Dear Ms.{else}Dear Mr.{/if} #u\_title# #u\_name#,

the 3rd round of our project Startup EKG ends on sunday evening and already today we as a research team can draw again a very positive balance.

So far, 409 founders and employees of 92 startups from Munich and Berlin participated in the survey. Moreover, we currently speak with some of you about best practices of startup culture in order to share it with all once the study has ended.

Thanks to your help we can draw an comprehensive picture about

- which dimensions of organisational culture influences satisfaction of all stakeholders and the success of a startup
- what is important for You in Your workand
- what changes during the development of startups

We hope to contribute with our conclusions to a successful increasing startup community. Stay tuned for the results.

For the last round, we will try our best to shorten the survey as much as possible.

If you did not participate yet and take the last chance, here is your link to the survey. The survey is open until this evening, 30th of June, 23.00 pm.

#code\_complete#

Best regards

For the team

Andreas Liebl and Stefan Drüssler

Andreas Liebl

Tel.: 0175 318 9142

Email: Andreas.Liebl@tum.de

Stefan Drüssler

Tel.: 0170 3344691

Email: Stefan.Druessler@tum.de

## 8.5 Start-up assessments and feedback

The start-ups have been benchmarked against each other and icons for best participants have been created based on results of round 3. No start-up has been informed before the end of round 3 about this. It served, however, as incentive to complete the participation in round 4. Moreover, a comprehensive set of individual analyses has been compiled for each participating start-up, which included the most important results of the study. Due to the sensitive data, the feedback booklets are not included in the dissertation. A dummy version of it as well as the icons can be found below.



Figure 60: Icon as award for participation



Figure 61: Awards for start-ups with best job satisfaction of employees



## Vielen Dank für Ihre Kooperation!

*"Wenn ich jetzt noch einmal ein Unternehmen gründen würde, würde ich die Unternehmenskultur gleich zu Beginn aufbauen, weil ich das für einen wichtigen Aspekt halte."*  
Teilnehmendes Startup



Wir hoffen, Sie konnten durch unsere Studienergebnisse ein differenziertes Bild der Unternehmenskultur Ihres Startups erhalten und Rückschlüsse aus Stärken und Schwächen für die Zukunft ziehen. Wir können auf eine erfolgreiche Studie mit neuen Erkenntnissen zum Thema Unternehmenskultur und eine erfolgreiche Zusammenarbeit mit den teilnehmenden Startups zurückblicken.

Vielen Dank für die Teilnahme an der Studie „Startup EKG“ und viel Erfolg für die Zukunft Ihres Unternehmens! Kontaktieren Sie uns gerne bei weiteren Fragen zur Evaluation der Unternehmenskultur Ihres Startups!



Andreas Liebl  
Dipl.-Ing.



Stefan Drüssler  
Dipl.-Kfm.



Dr. Anne Domurath  
Dipl.-Kfm.



Prof. Dr. Dr. Holger Patzelt  
Dipl.-Chemiker

### Studienergebnisse für

Stefan Drüssler

stefan.druessler@tum.de

Andreas Liebl

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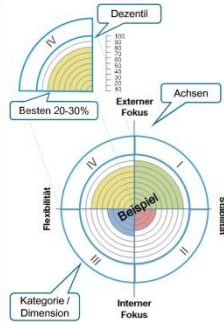
*"Unternehmenskultur hat bei uns den größten Stellenwert, weil du alleine nie so viel schaffen kannst, wie in einer Gruppe"*  
Teilnehmendes Startup



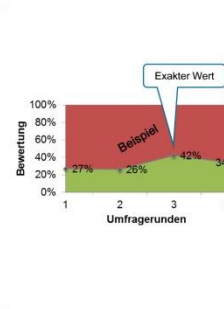
Figure 62: Front and back page of start-up assessment and feedback

### So interpretieren Sie Ihre Ergebnisse

**Circumplex Modell**  
Das Circumplex Modell stellt Ihre Ergebnisse in den vier Kategorien (Seite 6) und in den zwölf Dimensionen (Seite 7) der Unternehmenskultur dar.  
Ihre aktuellen Werte aus der 4. Umfragerunde werden denen aller teilgenommenen Startups gleicher Größe in Dezentilen gegenübergestellt. Die Dezentile zerlegen eine Verteilung in zehn gleich große Bereiche (je 10%). Das Circumplex Modell zeigt, an welcher Stelle sich Ihr Messwert befindet, indem es die darunter liegenden Abschnitte farblich markiert. Im Beispiel auf der rechten Seite bedeutet dies, dass das eigene Unternehmen in Kategorie IV besser als 70 - 80% aller Firmen abschneidet.



**Entwicklung der Kulturdimensionen**  
Die Entwicklung der Kultur Ihres Unternehmens wird durch ein Liniendiagramm mit Datenpunkten dargestellt. (Seite 8 - 11)  
Wie bei dem Circumplex Modell sehen Sie die Werte im Vergleich mit der Benchmarkgruppe. In dieser Grafik sehen Sie darüber hinaus die Entwicklung über alle vier Umfragerunden. Der Wert der abschließenden Runde ist dabei gleichzeitig der im Circumplex verwendete.  
Beispielsweise bedeutet der erzielte Wert von 42% nun, dass Sie bei der betrachteten Kulturdimension in der 3. Runde besser als 42% der Teilnehmer und schlechter als 58% der Teilnehmer sind.



### So lesen Sie diese Studie

**Teil 1: Wie ist diese Studie aufgebaut und was ist die Vergleichsgrundlage?**

In diesem Abschnitt erfahren Sie mehr über die Ziele und Struktur dieser Studie. Sie erhalten einen Einblick in die Teilnehmerentwicklung sowie Industrieverteilung und lernen dadurch die Vergleichsgrundlage Ihrer Ergebnisse kennen. Seite 4

**Teil 2: Was verstehen wir unter Unternehmenskultur und wie stehen Sie im Benchmark mit anderen Unternehmen da?**

In diesem Teil möchten wir Ihnen aufzeigen, was wir unter Unternehmenskultur verstehen und aus welchen Faktoren sie sich entwickelt. Erfahren Sie zudem, welche Dimensionen der Unternehmenskultur relevant sind und wie Ihr Unternehmen im Vergleich zu anderen Startups Ihrer Größe abschneidet. Seite 6

**Teil 3: Wie hat sich die Unternehmenskultur Ihres Unternehmens über die 4 Runden im Vergleich zu anderen Teilnehmern entwickelt?**

Sehen Sie, wie sich Ihr Unternehmen über den gesamten Zeitraum der Studie in den zwölf Dimensionen der Unternehmenskultur im Vergleich zu anderen Unternehmen ihrer Firmengröße entwickelt hat. Seite 8

**Teil 4: Wie schneidet Ihr Unternehmen in den einzelnen Dimensionen konkret ab?**

Erfahren Sie, wie die Teilnehmer die einzelnen Fragen in der finalen Umfragerunde bewertet haben, die zu ihrem Abschneiden im Benchmark führen. Dadurch erhalten Sie konkrete Hinweise, welche Aspekte der Unternehmenskultur besonders gut bzw. verbesserungswürdig sind. Seite 12

**Teil 5: Welche Stellung bei den internen Erfolgskriterien hat Ihr Unternehmen im Vergleich und wie haben sich diese entwickelt?**

Unternehmenskultur hat einen enormen Einfluss auf die interne und externe Performance eines Unternehmens. Lernen Sie die vier untersuchten Erfolgskriterien kennen, vergleichen Sie Ihr Startup mit dem Benchmark und erfahren Sie, wie sich diese im Laufe der Studie entwickelt haben. Seite 14



2



3

Figure 63: Pages 2 and 3 of start-up assessment and feedback

Ziele und Struktur der Studie

Unternehmenskultur macht einen Unterschied - nicht nur für das Wohlbefinden der Mitarbeiter, sondern auch für den langfristigen Erfolg von Unternehmen. Sie bestimmt wie schnell ein Unternehmen auf heutige und zukünftige Bedürfnisse des Marktes reagieren kann, ob es pragmatisch ist oder bürokratisch, ob alle an einem Strang ziehen oder ob man gegeneinander arbeitet.



"Our number one priority is company culture. Our whole believe is that if you get the culture right, most of the other stuff [...] will just happen naturally on its own."  
 Tony Hsieh, Founder of LinkExchange and Zappos

Das Thema Unternehmenskultur steht derzeit international im Fokus des Managements. Warum, ist offensichtlich: Unternehmenskultur ist das Herz eines Unternehmens. Sie ist durch Misserfolge, Erfolge, Erfahrungen und Persönlichkeiten gewachsen und durch Werte in der gesamten Organisation verankert. Sie durchströmt jede Abteilung, beeinflusst jede Entscheidung und dient als Rückhalt in schwierigen Phasen. Ist sie einmal tief in den Verhaltensweisen der Mitarbeiter verwurzelt, lässt sie sich nur mit hohem Aufwand verändern. Das Fundament wird bereits in der Startup Phase gelegt. Gerade diese Zeit sollte deshalb genutzt werden um den Erfolg des eigenen Unternehmens zu sichern. Doch wie lässt sich die Unternehmenskultur positiv steuern? Welchen Einfluss haben die Gründer überhaupt? Welche Werte sind besonders wichtig?

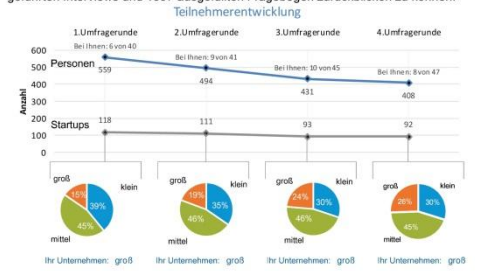
Die interdisziplinäre Startup-EKG Studie erforscht erstmalig systematisch die Entstehung der Unternehmenskultur und die Auswirkung dieser auf die Performance von Startups. Über ein Jahr verteilt haben Sie und ausgewählte Mitarbeiter deshalb vier gleichbleibende Fragebögen erhalten.



Dadurch sind nicht nur zielgerichtet Vergleiche unter mehreren Startups Ihrer Größe möglich, sondern auch die individuelle Entwicklung Ihres Unternehmens ersichtlich. Wir freuen uns, Sie durch den Zugang zu den Studienergebnissen bei der Entwicklung der Unternehmenskultur als Grundlage für Ihren Erfolg zu unterstützen.

Teilnehmerentwicklung und Industrien

Wir sind stolz, auf eine Zahl von 120 Startups mit insgesamt 726 Teilnehmern, 36 geführten Interviews und 1897 ausgefüllten Fragebögen zurückblicken zu können.



Die teilgenommenen Startups wurden anhand der Mitarbeiterzahl in die Gruppen groß (>15 MA), mittel (5-15 MA) und klein (<5 MA) eingeteilt. Innerhalb dieser Gruppen wurden die Unternehmen miteinander verglichen.



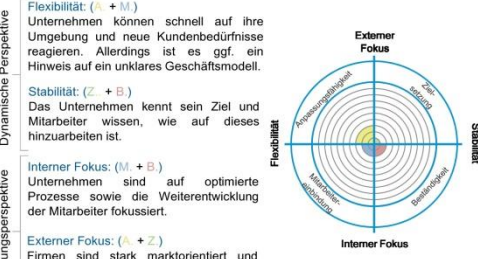
Im Benchmark wurde Ihr Unternehmen mit Startups aus 12 unterschiedlichen Industrien gegenüber gestellt. 85 Startups kommen aus München, 34 aus Berlin und 1 aus Frankfurt.

Figure 64: Pages 4 and 5 of start-up assessment and feedback

Was ist Unternehmenskultur?

Unternehmenskultur (auch Organisationskultur) ist das gemeinsame Wertesystem einer Organisation, welches die Handlungen, die Entscheidungen und das Verhalten der Mitglieder charakterisiert. Nach Edgar Schein, einem der maßgeblichen Kulturforscher, kann Kultur auf unterschiedlichen Ebenen analysiert werden, wobei "Ebene" den Grad der Sichtbarkeit bezeichnet.<sup>1</sup> Die Oberfläche beinhaltet alle für Dritte sichtbaren Verhaltensweisen einer Gruppe; dies kann etwa das Kommunikationsverhalten der Personen oder veröffentlichte Werte, wie das Unternehmensleitbild, sein. Auf der zweiten Ebene liegen die geltenden Vorschriften und Werte. Dies sind kollektive Einstellungen, die das Verhalten von Mitarbeitern bestimmen. Auf der untersten Ebene befinden sich die innersten Grundsätze eines Unternehmens. Diese sind so tief im Denken verwurzelt, dass sie nicht einmal von den Organisationsteilnehmern bewusst wahrgenommen werden. In dieser Studie fokussieren wir uns auf die erste Ebene, also die Ausprägungen, und schließen daraus auf Werte. Basis unserer Studie ist das Denison Modell.<sup>2</sup> Mit Hilfe dieses Modells ist es möglich Kultur zu messen, zu vergleichen und auf dieser Grundlage zu verbessern. Denison teilt hierfür die Kultur in die vier Kategorien Anpassungsfähigkeit, Zielsezung, Beständigkeit und Mitarbeiterbindung ein. Diese werden wiederum in je drei Dimensionen unterteilt. Die Kategorie Beständigkeit besteht zum Beispiel aus den Dimensionen Koordination & Integration, Einigkeit und Gemeinsames Wertesystem.

Denisons Kategorien der Unternehmenskultur werden durch zwei Achsen getrennt. Ihr Unternehmen schneidet wie folgt ab (Finale Umfragerunde)

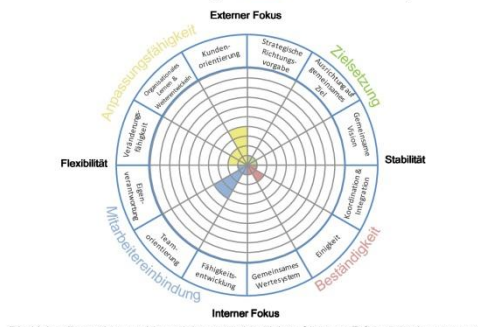


**Dynamische Perspektive**  
 Flexibilität: (A + M)  
 Unternehmen können schnell auf ihre Umgebung und neue Kundenbedürfnisse reagieren. Allerdings ist es ggf. ein Hinweis auf ein unklares Geschäftsmodell.  
 Stabilität: (Z + B)  
 Das Unternehmen kennt sein Ziel und Mitarbeiter wissen, wie auf dieses hinzuarbeiten ist.

**Umgebungsperspektive**  
 Interner Fokus: (M + B)  
 Unternehmen sind auf optimierte Prozesse sowie die Weiterentwicklung der Mitarbeiter fokussiert.  
 Externer Fokus: (A + Z)  
 Firmen sind stark marktorientiert und haben die Fähigkeit auf Änderungen zu reagieren und heutige sowie zukünftige Bedürfnisse des Marktes zu erfüllen.

Evaluation der zwölf Dimensionen der Kultur (4. Umfragerunde)

Das folgende Circumplex Modell stellt Ihre Ergebnisse in den zwölf Dimensionen der Unternehmenskultur dar. Die Anleitung auf Seite 2 hilft Ihnen bei der Interpretation.



Die Kulturdimensionen wirken sich unterschiedlich auf interne Erfolgskriterien aus und verändern sich bei Wachstum. Wie stark der Effekt in der Studie ist, zeigt die Tabelle.

Ermittelter Einfluss bei großen Unternehmen				
	Zufriedenheit mit dem Job	Einsatzbereitschaft	Wachstumsabsichten	Identifikation mit der Firma
Veränderungsfähigkeit				
Organisationales Lernen & Weiterentwicklung	+	+	++	+
Kundenorientierung				
Strategische Richtungsvorgabe				
Ausrichtung auf gemeinsames Ziel				
Gemeinsame Vision	+	++	++	+
Koordination & Integration				
Einigkeit	+	+	++	
Gemeinsames Wertesystem				
Fähigkeitsentwicklung				
Teamorientierung	++	+	++	++
Eigenverantwortung				

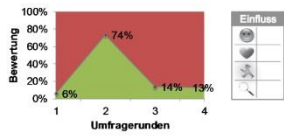
Figure 65: Pages 6 and 7 of start-up assessment and feedback

**Anpassungsfähigkeit**

Die Anpassungsfähigkeit ist die Fähigkeit des Unternehmens Voraussetzungen zu schaffen, um handlungsfähig zu bleiben und sich an veränderte Umweltsituationen anzupassen. Um die Anpassungsfähigkeit zu stärken, kann es hilfreich sein, sich stets der Zielgruppen bewusst zu sein, die Sie mit Ihrem Produkt ansprechen möchten. Veränderungen und Verbesserungen in Ihrem Startup sind notwendig, um sich an veränderte Kundenwünsche und Marktsituationen anzupassen und auch bei negativen Entwicklungen dynamisch zu bleiben. Allerdings besteht die Gefahr durch häufige Anpassungen die eigene Organisationale Identität zu verwässern.

**Veränderungsfähigkeit**

Diese Fähigkeit gibt Auskunft darüber, wie gut Ihr Unternehmen auf Wettbewerber und andere Einflüsse aus dem geschäftlichen Umfeld reagiert. Sie zeigt, wie stark versucht wird Veränderungen herbeizuführen, die die Prozesse und Strategie Ihres Startups verbessern.



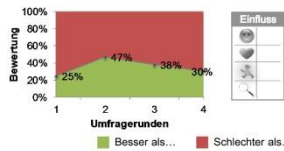
**Organisationales Lernen & Weiterentwickeln**

Dieser Punkt beschreibt, inwieweit Ihr Unternehmen begangene Fehler als Lern- und Verbesserungsmöglichkeit wahrnimmt. Werden Mitarbeiter ermutigt Risiken einzugehen, oder werden Fehler um jeden Preis verhindert?



**Kundenorientierung**

Sie ist ein Maß dafür, wie ernst Sie die Wünsche und Bedürfnisse Ihrer Kunden und Endkunden nehmen. Es zeigt an, wie stark deren Anregungen und Interessen Ihre Entscheidungen beeinflussen und zu Veränderungen im Unternehmen führen.

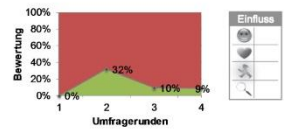


**Zielsetzung**

Die Zielsetzung beschreibt, welche Schwerpunkte das Unternehmen setzt, und schafft Identifikationsfläche für Kunden und Mitarbeiter. Klare Ziele vor Augen zu haben und eine genau definierte Richtung zu verfolgen, sowie Zukunftspläne festzusetzen sind für eine klare Zielsetzung von hoher Bedeutung. Die Zielsetzung wird bereits im Business Plan festgelegt und muss neben der inhaltlichen Überarbeitung auch den Erfordernissen der Organisation entsprechend laufend kommuniziert werden.

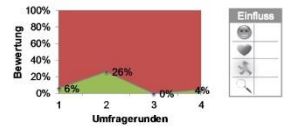
**Strategische Richtungsangabe**

Dieser Punkt beschreibt, inwieweit es eine klare langfristig orientierte Zielsetzung gibt, die der Arbeit ihres Teams eine Bedeutung verleiht und eine Richtung gibt. Je breiter die Zustimmung der Mitarbeiter desto größer die Identifikation.



**Ausrichtung auf gemeinsames Ziel**

Diese Dimension beschreibt, ob die Unternehmensleitung die Ziele sowie die Maßnahmen, die zum Erreichen dieser notwendig sind, eindeutig und klar kommuniziert.



**Gemeinsame Vision**

Haben Sie eine gemeinsame Vision darüber, wie das Unternehmen in der Zukunft aussehen soll? Eine gemeinsame Vision schafft Vertrauen in die Führungskräfte und stärkt das Zugehörigkeitsgefühl der Mitarbeiter.

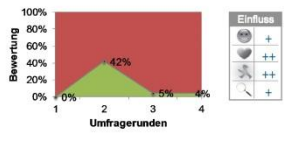


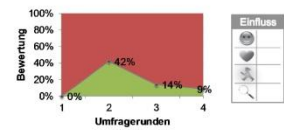
Figure 66: Pages 8 and 9 of start-up assessment and feedback

**Beständigkeit**

Beständigkeit deutet auf Ausgewogenheit und Stabilität hin und verleiht Ihrem Unternehmen durch Kernwerte ein gewisses Maß an Authentizität und Professionalität. Sie erfordert klare Kommunikation zwischen Mitarbeitern und Führungskräften. Zentrale Unternehmenswerte und das Gefühl, Teil einer Einheit zu sein, können z.B. durch gemeinsame Unternehmungen gestärkt werden. Beständige Werte stärken Ihr Unternehmen nach innen und repräsentieren nach außen ein klares Bild.

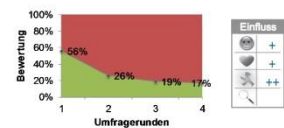
**Koordination und Integration**

Die Integration beschreibt wie gut die Abstimmung zwischen den Unternehmensebenen ist. Eine gute Integration ist Grundvoraussetzung dafür, dass auch größere Projekte ohne viel Aufwand koordiniert werden können.



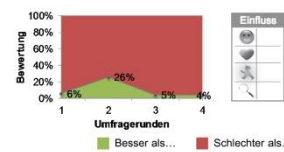
**Einigkeit**

Einigkeit ist ein Maß dafür, in wie weit zentrale Entscheidungen, trotz verschiedener Meinungen und Sichtweisen sowie unterschiedlicher Herangehensweisen an Problemstellungen, einvernehmlich getroffen werden können.



**Gemeinsames Wertesystem**

Ein gemeinsames Wertesystem bestimmt die Intensität in der sich zentrale Unternehmenswerte im Bewusstsein Ihres Teams verankert haben. Es ist eine Art handlungsprägender Rahmen der das Geschäftsgebahren Ihrer Firma bestimmt.



**Mitarbeiterbindung**

Die Mitarbeiterbindung fokussiert sich auf die Einbindung und persönliche Entwicklung der Mitarbeiter in Ihrem Unternehmen und die Fähigkeit, die Basis für den Erfolg des Unternehmens als Team zu legen. Insbesondere diese Kategorie der Unternehmenskultur hat mit einem wachsenden Team unterschiedliche Auswirkungen auf die Erfolgskriterien. Während bei kleinen Unternehmen die Eigenverantwortung einen sehr großen Effekt hat, ist diese Dimension bei mittleren Unternehmen nicht mehr relevant. Bei großen Unternehmen macht besonders die Teamorientierung den Unterschied.

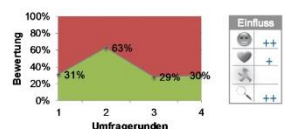
**Fähigkeitsentwicklung**

Sie ist ein Maß, wie stark in die Fähigkeiten der Mitarbeiter investiert wird. Diese werden als wichtige Komponente für den Unternehmenserfolg erkannt und geschätzt.



**Teamorientierung**

Die Teamorientierung beschreibt, wie viel Wert auf die gemeinsame Erarbeitung von Projekten, Plänen und Zielen im Team gelegt wird und wie stark die Zusammenarbeit der Mitarbeiter gefördert wird.



**Eigenverantwortung**

Der Grad, zu dem jedem Mitarbeiter im Unternehmen ein gewisser Teil an Verantwortung übertragen wurde. Inwieweit fühlt sich jeder Mitarbeiter persönlich für den Erfolg des Unternehmens verantwortlich und kann tatsächlich dazu beitragen?

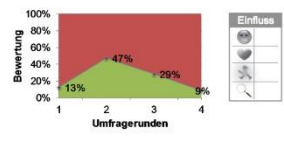
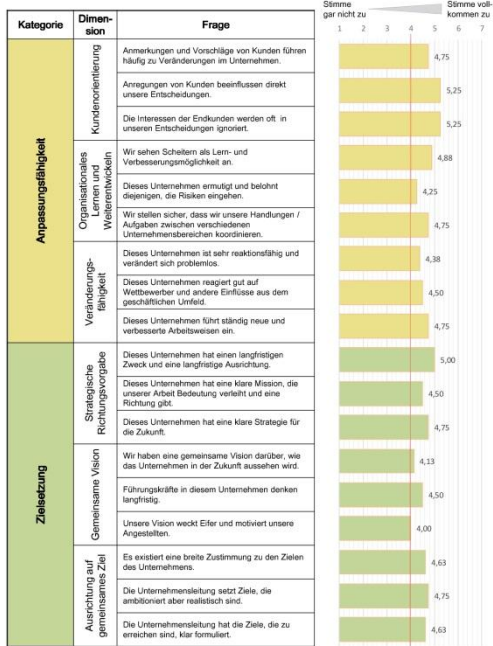


Figure 67: Pages 10 and 11 of start-up assessment and feedback

Auswertung der einzelnen Fragen (Finale Umfragerunde)



Auswertung der einzelnen Fragen (Finale Umfragerunde)

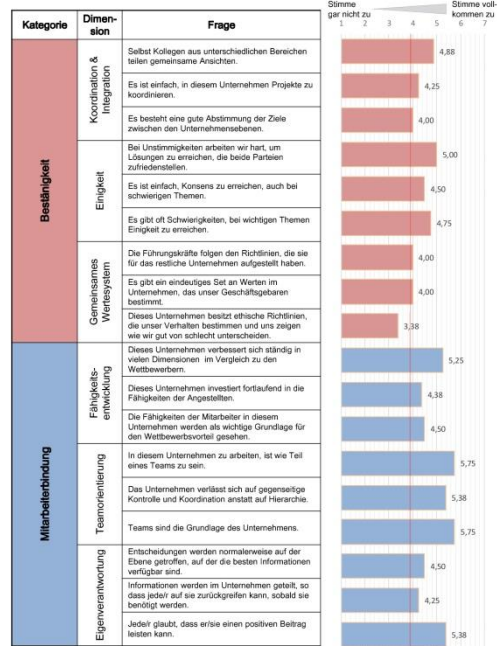


Figure 68: Pages 12 and 13 of start-up assessment and feedback

Erfolgskriterien im Benchmark (Finale Umfragerunde)

In der Studie wurden zudem vier interne, in der Wissenschaft übliche Erfolgskriterien analysiert. Die Histogramme zeigen jeweils die Position Ihres Unternehmens im Vergleich zu allen teilnehmenden Startups und der Vergleichsgruppe

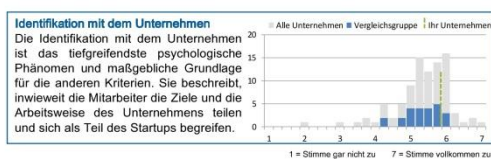
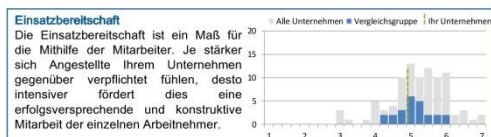
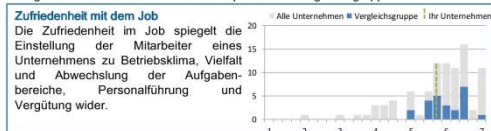


Figure 69: Page 15 of start-up assessment and feedback

## 8.6 Alternative HLM analyses

The HLM analysis has been conducted with robust estimation. In addition, a ML regression has been performed as well. The results are outlined in Table 36 for interactions with external feedback and in Table 37 for interactions with internal feedback.

	Model 1 – Null Model		Model 2 - Controls		Model 3 – Events (Level 1)		Model 4 – Context variables (Level 2)		Model 5 – Interaction effects	
Evaluation Criteria	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Constant	5.367 ***	0.064	5.350 ***	0.181	5.245 ***	0.176	5.032 ***	0.168	5.017 ***	0.163
<b>Controls<sup>a</sup></b>										
OI Strength at t(1)			0.607 ***	0.088	0.599 ***	0.083	0.486 ***	0.081	0.503 ***	0.079
Firm age (Group means, L1)			-0.217 †	0.127	-0.123	0.128	-0.083	0.127	-0.119	0.125
Firm age (Average; L2)			-0.011	0.044	-0.001	0.041	0.013	0.038	0.007	0.037
# Employees (Group means, L1))			0.240	0.160	0.156	0.183	0.074	0.165	0.075	0.156
# Employees (Average; L2)			0.027	0.069	0.033	0.064	0.105 †	0.061	0.114 †	0.060
Founder Team Size			-0.095	0.058	-0.095 †	0.055	-0.078	0.051	-0.082 †	0.049
<b>Independent Variables</b>										
Positive Internal Feedback					0.232 *	0.112	0.223 *	0.109	0.260 *	0.108
Negative Internal Feedback					-0.182	0.182	0.015	0.205	-0.053	0.227
Positive External Feedback					0.144 †	0.080	0.126	0.081	0.164 *	0.081
Negative External Feedback					-0.010	0.170	0.019	0.179	0.022	0.136
Organizational Vision (t-1)							0.205 ***	0.059	0.245 ***	0.069
Environmental Hostility (t-1)							-0.102 *	0.042	-0.097 *	0.048
Founding Team Experience							0.028	0.036	-0.002	0.037
<b>Interactions</b>										
pFB_Ext x Vision(t-1)									-0.183 †	0.106
nFB_Ext x Vision(t-1)									0.446 **	0.171
pFB_Ext x Hostility(t-1)									-0.031	0.084
nFB_Ext x Hostility(t-1)									0.275 *	0.130
pFB_Ext x FT_EXP									0.070	0.061
nFB_Ext x FT_EXP									0.268 *	0.105
<b>Variance components</b>										
L1 Variance $\tau_{ij}$	0.204		0.202	$\Delta 1\%b$	0.175	$\Delta 13\%$	0.173	$\Delta 1\%$	0.165	$\Delta 5\%$
L2 Variance $u_{0j}$	0.319		0.172	$\Delta 46\%c$	0.142	$\Delta 17\%$	0.1	$\Delta 30\%$	0.092	$\Delta 8\%$
<b>Slope variance</b>										
Firm age $u_{5j}$					0.000		0.000		0.000	
# Employees $u_{6j}$					0.196		0.043		0.000	
Positive Internal Feedback $\tau_{10} = \text{var}(u_{1j})$					0.000		0.000		0.000	
Negative Internal Feedback $\tau_{20} = \text{var}(u_{2j})$					0.009		0.070		0.230	
Positive External Feedback $\tau_{30} = \text{var}(u_{3j})$					0.029		0.055		0.066	
Negative External Feedback $\tau_{40} = \text{var}(u_{4j})$					0.226		0.282		0.045	
<b>Model fit and R<sup>2</sup> <sup>d</sup></b>										
-2LL	480.5		433.9		420.5		401.6		381.2	
R <sup>2</sup> Raudenbush Level 1			0.010		0.142		0.152		0.191	
R <sup>2</sup> Raudenbush Level 2			0.461		0.555		0.687		0.712	

S.E. = Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p <.1; \*p<.05; \*\*p<.01, \*\*\*p<.001.

a) Other control variables where highly insignificant in all models and are not shown in this model (Internationality, Startup Experience, Location)

b) This value indicates the proportional additional variance explained by adding level 1 effects to the model. The largest effect is seen as expected when the level 1 feedback events are added followed by the interaction effects.

c) This value shows the proportional additional variance explained by adding the level 2 effects. As most variables and the focus of this study is on level 2, it is not surprising that the large drops in unexplained variance happen when the level 2 controls (especially the initial OI strength) and the level 2 moderators are added.

d) Pseudo R<sup>2</sup>s are calculated as described by Raudenbush and Bryk (2002).

**Table 36: Full HLM model with ML estimation for interactions with external feedback**

	Model 1 – Null Model		Model 2 - Controls		Model 3 – Events (Level 1)		Model 4 – Context variables (Level 2)		Model 5 – Interaction effects	
Evaluation Criteria	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Constant	5.367 ***	0.064	5.350 ***	0.181	5.245 ***	0.176	5.032 ***	0.168	5.059 ***	0.165
<b>Controls*</b>										
OI Strength at (t1)			0.607 ***	0.088	0.599 ***	0.083	0.486 ***	0.081	0.478 ***	0.079
Firm age (Group means, L1)			-0.217 †	0.127	-0.123	0.128	-0.083	0.127	-0.089	0.127
Firm age (Average; L2)			-0.011	0.044	-0.001	0.041	0.013	0.038	0.012	0.037
# Employees (Group means, L1))			0.240	0.160	0.156	0.183	0.074	0.165	0.081	0.166
# Employees (Average; L2)			0.027	0.069	0.033	0.064	0.105 †	0.061	0.102 †	0.06
Founder Team Size			-0.095	0.058	-0.095 †	0.055	-0.078	0.051	-0.072	0.05
<b>Independent Variables</b>										
Positive Internal Feedback					0.232 *	0.112	0.223 *	0.109	0.235 *	0.108
Negative Internal Feedback					-0.182	0.182	0.015	0.205	-0.221	0.307
Positive External Feedback					0.144 †	0.080	0.126	0.081	0.105	0.081
Negative External Feedback					-0.010	0.170	0.019	0.179	0.019	0.174
Organizational Vision (t-1)							0.205 ***	0.059	0.255 ***	0.062
Environmental Hostility (t-1)							-0.102 *	0.042	-0.095 *	0.043
Founding Team Experience							0.028	0.036	0.025	0.036
<b>Interactions</b>										
pFB_Int x Vision(t-1)									-0.117	0.161
nFB_Int x Vision(t-1)									-0.404 *	0.199
pFB_Int x Hostility(t-1)									0.13	0.145
nFB_Int x Hostility(t-1)									-0.266	0.182
pFB_Int x FT_EXP									-0.037	0.101
nFB_Int x FT_EXP									0.137	0.137
<b>Variance components</b>										
L1 Variance $\tau_{ij}$	0.204		0.202	$\Delta 1\%^b$	0.175	$\Delta 13\%$	0.173	$\Delta 1\%$	0.174	$-\Delta 1\%$
L2 Variance $u_{0j}$	0.329		0.172	$\Delta 48\%^c$	0.142	$\Delta 17\%$	0.100	$\Delta 30\%$	0.092	$\Delta 8\%$
<b>Slope variance</b>										
Firm age $u_{5j}$					0.000		0.000		0.000	
# Employees $u_{6j}$					0.196		0.043		0.046	
Positive Internal Feedback $\tau_{10} = \text{var}(u_{1j})$					0.000		0.000		0.000	
Negative Internal Feedback $\tau_{20} = \text{var}(u_{2j})$					0.009		0.070		0.000	
Positive External Feedback $\tau_{30} = \text{var}(u_{3j})$					0.029		0.055		0.046	
Negative External Feedback $\tau_{40} = \text{var}(u_{4j})$					0.226		0.282		0.236	
<b>Model fit and <math>R^2</math> <sup>d</sup></b>										
-2LL	480.5		433.9		420.5		401.6		392.2	
$R^2$ Raudenbush Level 1			0.010		0.142		0.152		0.147	
$R^2$ Raudenbush Level 2			0.477		0.568		0.696		0.720	

S.E. = Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p < .1; \*p < .05; \*\*p < .01, \*\*\*p < .001.

a) Other control variables where highly insignificant in all models and are not shown in this model (Internationality, Startup Experience, Location)

b) This value indicates the proportional additional variance explained by adding level 1 effects to the model. The largest effect is seen as expected when the level 1 feedback events are added followed by the interaction effects.

c) This value shows the proportional additional variance explained by adding the level 2 effects. As most variables and the focus of this study is on level 2, it is not surprising that the large drops in unexplained variance happen when the level 2 controls (especially the initial OI strength) and the level 2 moderators are added.

d) Pseudo  $R^2$ 's are calculated as described by Raudenbush and Bryk (2002).

**Table 37: Full HLM model with ML estimation for interactions with internal feedback**

Moreover, while typically within-firm variables are added before between-firm variables, an analysis which conforms to the outlined theoretical model is performed. The results do not change for feedback events or context variables being added first. The table including the alternative approach is depicted in Table 38.

	Model 1 – Null Model		Model 2 - Controls		Model 3 – Context variables (Level 2)		Model 4 – Events (Level 1)		Model 5 – Interaction effects	
Evaluation Criteria	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Constant	5.367 ***	0.065	5.350 ***	0.158	5.166 ***	0.179	5.032 ***	0.197	5.018 ***	0.190
<b>Controls<sup>a</sup></b>										
OI Strength at t(1)			0.607 ***	0.090	0.489 ***	0.090	0.486 ***	0.087	0.503 ***	0.086
Firm age (Group means, L1)			-0.217	0.140	-0.169	0.124	-0.083	0.122	-0.119	0.119
Firm age (Average; L2)			-0.011	0.038	0.002	0.037	0.013	0.036	0.007	0.035
# Employees (Group means, L1)			0.240	0.190	0.176	0.171	0.074	0.172	0.076	0.162
# Employees (Average; L2)			0.027	0.059	0.093	0.061	0.105 †	0.060	0.114 †	0.061
Founder Team Size			-0.095 †	0.054	-0.077	0.053	-0.078	0.048	-0.082 †	0.047
<b>Independent Variables</b>										
Positive Internal Feedback							0.223 *	0.095	0.260 **	0.099
Negative Internal Feedback							0.015	0.196	-0.053	0.222
Positive External Feedback							0.126	0.089	0.164 †	0.089
Negative External Feedback							0.019	0.171	0.022	0.125
Organizational Vision (t-1)					0.194 *	0.087	0.205 **	0.077	0.245 **	0.089
Environmental Hostility (t-1)					-0.092 *	0.040	-0.102 **	0.039	-0.097 *	0.040
Founding Team Experience					0.044	0.039	0.028	0.036	-0.002	0.036
<b>Interactions</b>										
pFB_Ext x Vision(t-1)									-0.183	0.131
nFB_Ext x Vision(t-1)									0.446 *	0.191
pFB_Ext x Hostility(t-1)									-0.031	0.064
nFB_Ext x Hostility(t-1)									0.275 †	0.163
pFB_Ext x FT_EXP									0.070	0.049
nFB_Ext x FT_EXP									0.268 **	0.092
<b>Variance components</b>										
L1 Variance $\sigma^2 = \text{var}(\tau_{1j})$	0.204		0.202	$\Delta 1\%^b$	0.199	$\Delta 1\%$	0.173	$\Delta 10\%$	0.165	$\Delta 5\%$
L2 Variance $\tau_{00} = \text{var}(u_{0j})$	0.319		0.172	$\Delta 46\%^c$	0.133	$\Delta 23\%$	0.100	$\Delta 24\%$	0.092	$\Delta 8\%$
<b>Slope variance</b>										
Firm age $\tau_{50} = \text{var}(u_{5j})$					0.000		0.000		0.000	
# Employees $\tau_{60} = \text{var}(u_{6j})$					0.030		0.043		0.000	
Positive Internal Feedback $\tau_{10} = \text{var}(u_{1j})$							0.000		0.000	
Negative Internal Feedback $\tau_{20} = \text{var}(u_{2j})$							0.070		0.230	
Positive External Feedback $\tau_{30} = \text{var}(u_{3j})$							0.055		0.066	
Negative External Feedback $\tau_{40} = \text{var}(u_{4j})$							0.282		0.045	
<b>Model fit and R<sup>2</sup> <sup>d</sup></b>										
-2LL	480.5		433.9		416.0		401.6		381.2	
R <sup>2</sup> Raudenbush Level 1			0.010		0.025		0.152		0.191	
R <sup>2</sup> Raudenbush Level 2			0.461		0.583		0.687		0.712	
R <sup>2</sup> Raudenbush Level 2 based on Model 2					0.174		0.419		0.465	

S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p < .1; \*p < .05; \*\*p < .01; \*\*\*p < .001.

a) Other control variables were highly insignificant in all models and are not shown in this model (Internationality, Startup Experience, Location)

b) This value indicates the proportional additional variance explained by adding level 1 effects to the model. The largest effect is seen as expected when the level 1 feedback events are added followed by the interaction effects.

c) This value shows the proportional additional variance explained by adding the level 2 effects. As most variables and the focus of this study is on level 2, it is not surprising that the large drops in unexplained variance happen when the level 2 controls (especially the initial OI strength) and the level 2 moderators are added.

d) Pseudo R<sup>2</sup>s are calculated as described by Raudenbush and Bryk (2002).

**Table 38: Full HLM model with context variables added before feedback events**

In addition, several further tests with focus on external events have been conducted. The models of Table 39 focus on external events only (Model 2, Model 3 with interactions) or they include all events but investigate only interactions with negative external events (Model 4). Model 5 is included as reference.

Evaluation Criteria	Model 1 – Null Model		Model 2 - Main effects without internal events		Model 3 – Interactions with external only, no internal events		Model 4 – Interactions with neg. events only		Model 5 – Interaction effects as in dissertation	
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Constant	5.367 ***	0.065	5.085 ***	0.192	5.093 ***	0.189	5.035 ***	0.196	5.018 ***	0.190
<b>Controls<sup>a</sup></b>										
OI Strength at t(1)			0.484 ***	0.089	0.505 ***	0.088	0.513 ***	0.086	0.503 ***	0.086
<b>Independent Variables</b>										
Positive Internal Feedback							0.244 *	0.100	0.260 **	0.099
Negative Internal Feedback							-0.008	0.201	-0.053	0.222
Positive External Feedback			0.120	0.089	0.140	0.087	0.155 †	0.087	0.164 †	0.089
Negative External Feedback			0.005	0.176	0.013	0.133	0.051	0.122	0.022	0.125
Organizational Vision (t-1)			0.194 *	0.079	0.165 *	0.076	0.170 *	0.075	0.245 **	0.089
Environmental Hostility (t-1)			-0.109 **	0.039	-0.128 ***	0.036	-0.120 ***	0.035	-0.097 *	0.040
Founding Team Experience			0.034	0.037	0.026	0.036	0.02	0.036	-0.002	0.036
<b>Interactions</b>										
pFB_Ext x Vision(t-1)									-0.183	0.131
nFB_Ext x Vision(t-1)					0.430 **	0.171	0.488 **	0.183	0.446 *	0.191
pFB_Ext x Hostility(t-1)									-0.031	0.064
nFB_Ext x Hostility(t-1)					0.197	0.17	0.241	0.151	0.275 †	0.163
pFB_Ext x FT_EXP									0.070	0.049
nFB_Ext x FT_EXP					0.350 ***	0.106	0.305 ***	0.096	0.268 **	0.092
<b>Variance components</b>										
L1 Variance $\sigma^2 = \text{var}(r_{1j})$	0.204		0.178		0.172		0.163		0.165	
L2 Variance $\tau_{00} = \text{var}(u_{0j})$	0.319		0.108		0.110		0.105		0.092	
<b>Slope variance</b>										
Firm age $\tau_{50} = \text{var}(u_{5j})$			0.000		0.000		0.000		0.000	
# Employees $\tau_{60} = \text{var}(u_{6j})$			0.023		0.021		0.063		0.000	
Positive Internal Feedback $\tau_{10} = \text{var}(u_{1j})$							0.000		0.000	
Negative Internal Feedback $\tau_{20} = \text{var}(u_{2j})$							0.186		0.230	
Positive External Feedback $\tau_{30} = \text{var}(u_{3j})$			0.046		0.049		0.059		0.066	
Negative External Feedback $\tau_{40} = \text{var}(u_{4j})$			0.300		0.086		0.028		0.045	
<b>Model fit</b>										
-2LL	480.5		406.0		391.9		385.6		381.2	

S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p < .1; \*p < .05; \*\*p < .01, \*\*\*p < .001.

a) Other control variables where highly insignificant in all models and are not shown in this model (Internationality, Startup Experience, Location, Firma Age, Firm Size, Founding Team Size, )

**Table 39: Additional analyses with focus on external events, robustness checks**



Finally, a full HLM analysis has been performed to investigate effects of negative events only, which is depicted in Table 40. In this model, no positive events are included, except in model 4b, in which the positive feedback events are incorporated as control variables.

	Model 1 – Null Model		Model 2 - Negative events		Model 3 - Context variables		Model 4 – Interactions with neg. events only, no positive events		Model 4b – Interactions with neg. events only, positive events as control	
Evaluation Criteria	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Constant	5.367 ***	0.065	5.360 ***	0.158	5.145 ***	0.182	5.189 ***	0.180	5.066 ***	0.194
<b>Controls<sup>a</sup></b>										
OI Strength at t(1)			0.606 ***	0.090	0.498 ***	0.089	0.517 ***	0.087	0.509 ***	0.085
Positive Internal Feedback									0.247 *	0.101
Positive External Feedback									0.138	0.087
<b>Independent Variables</b>										
Negative Internal Feedback			-0.156	0.179	0.046	0.191	-0.069	0.219	-0.148	0.208
Negative External Feedback			-0.042	0.165	-0.019	0.177	-0.041	0.139	0.017	0.130
Organizational Vision (t-1)					0.197 *	0.078	0.188 *	0.078	0.184 *	0.075
Environmental Hostility (t-1)					-0.109 **	0.040	-0.113 ***	0.036	-0.110 **	0.035
Founding Team Experience					0.032	0.037	0.018	0.036	0.017	0.036
<b>Interactions</b>										
nFB_Int x Vision(t-1)							-0.295 *	0.143	-0.340 **	0.136
nFB_Ext x Vision(t-1)							0.508 **	0.197	0.573 ***	0.178
nFB_Int x Hostility(t-1)							-0.435 ***	0.11	-0.393 ***	0.112
nFB_Ext x Hostility(t-1)							0.267 *	0.133	0.270 *	0.132
nFB_Int x FT_EXP							0.257 ***	0.061	0.214 ***	0.062
nFB_Ext x FT_EXP							0.303 ***	0.092	0.266 ***	0.079
<b>Variance components</b>										
L1 Variance $\sigma^2 = \text{var}(r_{ij})$	0.204		0.185	$\Delta 9\%$ <sup>b</sup>	0.183	$\Delta 1\%$	0.177	$\Delta 3\%$	0.163	$\Delta 8\%$
L2 Variance $\tau_{00} = \text{var}(u_{0j})$	0.319		0.153	$\Delta 52\%$ <sup>c</sup>	0.117	$\Delta 24\%$	0.111	$\Delta 5\%$	0.101	$\Delta 9\%$
<b>Slope variance</b>										
Firm age $\tau_{50} = \text{var}(u_{5j})$			0.000		0.000		0.000		0.000	
# Employees $\tau_{60} = \text{var}(u_{6j})$			0.143		0.033		0.025		0.049	
Positive Internal Feedback $\tau_{10} = \text{var}(u_{1j})$									0.000	
Negative Internal Feedback $\tau_{20} = \text{var}(u_{2j})$			0.005		0.042		0.000		0.000	
Positive External Feedback $\tau_{30} = \text{var}(u_{3j})$									0.056	
Negative External Feedback $\tau_{40} = \text{var}(u_{4j})$			0.260		0.324		0.034		0.006	
<b>Model fit and R<sup>2</sup> <sup>d</sup></b>										
-2LL	480.5		427.9		409.0		384.1		375.0	
R <sup>2</sup> Raudenbush Level 1			0.093		0.103		0.132		0.201	
R <sup>2</sup> Raudenbush Level 2			0.520		0.633		0.652		0.683	

S.E. = Robust Standard Error; N = 259 at the within-firm level; N = 98 at the firm level; †p < .1; \*p < .05; \*\*p < .01, \*\*\*p < .001.

a) Other control variables where highly insignificant in all models and are not shown in this model (Internationality, Startup Experience, Location, Firma Age, Firm Size, Founding Team Size, )

b) This value indicates the proportional additional variance explained by adding level 1 effects to the model. The largest effect is seen as expected when the level 1 feedback events are added followed by the interaction effects.

c) This value shows the proportional additional variance explained by adding the level 2 effects. As most variables and the focus of this study is on level 2, it is not surprising that the large drops in unexplained variance happen when the level 2 controls (especially the initial OI strength) and the level 2 moderators are added.

d) Pseudo R2s are calculated as described by Raudenbush and Bryk (2002).

**Table 40: Additional full HLM model for focus on negative events only; interactions with negative internal and external feedback**

## **8.7 Incorporation of firm performance as robustness check**

The effects of performance on the final model have been examined as a robustness check extending the examinations in chapter 4.2.7. Even though firm performance at time t-1 has an effect on OI, it does not change the results of the study in a critical way. Only for external events, the marginal significant effect of environmental hostility on the influence of negative external events on OI strength is lost. The results for internal feedback are almost unaffected. The results are depicted in Figure 70 for the full model with interactions with external events and in Figure 71 for internal events. In the direct STATA extract, different codes are used: UV\_FL2 is environmental hostility, UV\_FL12 is organizational vision and UV\_FL4 is the founding team's start-up experience. Perf2\_bef is used to describe the firm performance at time t-1.

Mixed-effects regression  
 Group variable: Firma

Number of obs = 251  
 Number of groups = 98

Obs per group: min = 1  
 avg = 2.6  
 max = 3

Log pseudolikelihood = -184.75966

Wald chi2(23) = 203.37  
 Prob > chi2 = 0.0000

(Std. Err. adjusted for 98 clusters in Firma)

OI2_FL	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
cOI_beg	.4788535	.0838001	5.71	0.000	.3146083	.6430987
gmclogAnz_MA_bef	.0776392	.1621041	0.48	0.632	-.2400791	.3953575
mean_logAnz_MA_bef	.0779309	.0622838	1.25	0.211	-.0441431	.200005
Stadt01	.0973528	.1089106	0.89	0.371	-.1161081	.3108136
mean_Alter_all_Firma	.0118427	.0342937	0.35	0.730	-.0553717	.079057
gmcAlter_all_Firma	-.1662017	.1197128	-1.39	0.165	-.4008344	.068431
GT_International_AllD	.024279	.1263965	0.19	0.848	-.2234535	.2720116
cGT_Groesse	-.0715395	.045108	-1.59	0.113	-.1599495	.0168705
cGT_EXP_Startup_b	-.0100969	.0067577	-1.49	0.135	-.0233418	.0031479
Perf2_bef	.0822482	.0263756	3.12	0.002	.0305531	.1339434
pFB_Ext2_FLD	.1567418	.088831	1.76	0.078	-.0173638	.3308474
nFB_Ext2_FLD	.0353906	.1331634	0.27	0.790	-.2256048	.296386
nFB_Int2_FLD	-.1056037	.2238271	-0.47	0.637	-.5442968	.3330893
pFB_Int2_FLD	.2493064	.1043637	2.39	0.017	.0447574	.4538554
UV_FL2	-.0850579	.0419096	-2.03	0.042	-.1671993	-.0029165
pFB_Ext2_FLD	0	(omitted)				
c.UV_FL2#c.pFB_Ext2_FLD	-.070893	.0644003	-1.10	0.271	-.1971152	.0553293
c.UV_FL2#c.nFB_Ext2_FLD	.276857	.1791512	1.55	0.122	-.0742729	.627987
UV_FL12	.2010645	.095799	2.10	0.036	.013302	.388827
pFB_Ext2_FLD	0	(omitted)				
c.UV_FL12#c.pFB_Ext2_FLD	-.1629487	.129116	-1.26	0.207	-.4160114	.0901141
c.UV_FL12#c.nFB_Ext2_FLD	.4571231	.1857776	2.46	0.014	.0930058	.8212404
UV_FL4	.0094725	.0361598	0.26	0.793	-.0613995	.0803444
pFB_Ext2_FLD	0	(omitted)				
c.UV_FL4#c.pFB_Ext2_FLD	.0768534	.0481161	1.60	0.110	-.0174524	.1711593
c.UV_FL4#c.nFB_Ext2_FLD	.2418025	.0893774	2.71	0.007	.0666261	.4169789
_cons	4.743664	.1984626	23.90	0.000	4.354684	5.132643

**Figure 70: Extract from STATA highlighting the effects of firm performance on the proposed model on external events**

```

Mixed-effects regression                Number of obs    =    251
Group variable: Firma                  Number of groups =    98

                                        Obs per group: min =    1
                                        avg =    2.6
                                        max =    3

                                        Wald chi2(23)    =    205.64
                                        Prob > chi2     =    0.0000
Log pseudolikelihood = -188.86749

```

(Std. Err. adjusted for 98 clusters in Firma)

OI2_FL	Coef.	Robust Std. Err.	z	P> z	[95% Conf. Interval]	
cOI_beg	.4540846	.0825409	5.50	0.000	.2923074	.6158619
gmclogAnz_MA_bef	.0781487	.1729604	0.45	0.651	-.2608474	.4171449
mean_logAnz_MA_bef	.0594593	.0604288	0.98	0.325	-.0589791	.1778976
Stadt01	.0515582	.1091374	0.47	0.637	-.1623471	.2654635
mean_Alter_all_Firma	.0155178	.0344422	0.45	0.652	-.0519878	.0830234
gmcAlter_all_Firma	-.1328965	.1241401	-1.07	0.284	-.3762066	.1104136
GT_International_AllD	-.0102116	.1212672	-0.08	0.933	-.247891	.2274678
cGT_Groesse	-.0674556	.0460252	-1.47	0.143	-.1576633	.022752
cGT_EXP_Startup_b	-.010082	.0068697	-1.47	0.142	-.0235463	.0033823
Perf2_bef	.0900197	.0286142	3.15	0.002	.0339368	.1461025
pFB_Ext2_FLD	.1064401	.0921206	1.16	0.248	-.074113	.2869931
nFB_Ext2_FLD	-.0614971	.1815126	-0.34	0.735	-.4172554	.2942611
nFB_Int2_FLD	-.2306063	.2247931	-1.03	0.305	-.6711926	.20998
pFB_Int2_FLD	.2481655	.0999617	2.48	0.013	.0522442	.4440868
UV_FL2	-.0945858	.0431134	-2.19	0.028	-.1790866	-.0100851
pFB_Int2_FLD	0	(omitted)				
c.UV_FL2#c.pFB_Int2_FLD	.1776364	.1075476	1.65	0.099	-.033153	.3884259
c.UV_FL2#c.nFB_Int2_FLD	-.2872985	.1095081	-2.62	0.009	-.5019305	-.0726665
UV_FL12	.2024431	.0882551	2.29	0.022	.0294664	.3754199
pFB_Int2_FLD	0	(omitted)				
c.UV_FL12#c.pFB_Int2_FLD	-.1218538	.1566744	-0.78	0.437	-.4289301	.1852225
c.UV_FL12#c.nFB_Int2_FLD	-.3737529	.144753	-2.58	0.010	-.6574636	-.0900422
UV_FL4	.0395026	.0349982	1.13	0.259	-.0290926	.1080979
pFB_Int2_FLD	0	(omitted)				
c.UV_FL4#c.pFB_Int2_FLD	-.058129	.1109409	-0.52	0.600	-.2755692	.1593113
c.UV_FL4#c.nFB_Int2_FLD	.1524597	.0752129	2.03	0.043	.0050451	.2998744
_cons	4.769455	.201386	23.68	0.000	4.374746	5.164164

**Figure 71: Extract from STATA highlighting the effects of firm performance on the proposed model on internal events**

## 8.8 Additional results of robustness checks

In Table 12 of chapter 3.3.3.4, a summary of tests for possible non-response bias is shown. Below all tests are depicted in detail. They show the exact details of each test. As written in the dissertation, those participants, who answered in round 1 but did not continue to participate in round 2 because they left their organizations, are defined as group 1. Group 2 consists of participants who did not answer in round 2 but did continue with the participation in later rounds. People who stopped participation completely are clustered in group 3. Group 4 consists of participants who continued with their participation in round 2. Two-tailed t-tests on OI strength show no significant differences for each of the 6 combinations.

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1	30	5.526667	.1784952	.9776585	5.161603	5.89173
2	24	5.308333	.1641752	.804291	4.968711	5.647956
combined	54	5.42963	.1229054	.9031663	5.183113	5.676147
diff		.2183334	.2478669		-.2790478	.7157146

diff = mean(1) - mean(2) t = 0.8808  
 Ho: diff = 0 degrees of freedom = 52

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
 Pr(T < t) = 0.8088 Pr(|T| > |t|) = 0.3825 Pr(T > t) = 0.1912

**Figure 72: Test for non-response bias, groups 1 and 2**

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1	30	5.526667	.1784952	.9776585	5.161603	5.89173
3	57	5.445614	.1369208	1.033729	5.171329	5.719899
combined	87	5.473563	.108259	1.009773	5.258351	5.688775
diff		.0810526	.2289313		-.3741241	.5362294

diff = mean(1) - mean(3) t = 0.3540  
 Ho: diff = 0 degrees of freedom = 85

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
 Pr(T < t) = 0.6379 Pr(|T| > |t|) = 0.7242 Pr(T > t) = 0.3621

**Figure 73: Test for non-response bias, groups 1 and 3**

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1	30	5.526667	.1784952	.9776585	5.161603	5.89173
4	448	5.413393	.0429423	.9089164	5.328999	5.497787
combined	478	5.420502	.0417463	.9127091	5.338473	5.502532
diff		.1132738	.1722286		-.2251485	.4516961

diff = mean(1) - mean(4) t = 0.6577  
 Ho: diff = 0 degrees of freedom = 476

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
 Pr(T < t) = 0.7445 Pr(|T| > |t|) = 0.5111 Pr(T > t) = 0.2555

**Figure 74: Test for non-response bias, groups 1 and 4**

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
2	24	5.308333	.1641752	.804291	4.968711	5.647956
3	57	5.445614	.1369208	1.033729	5.171329	5.719899
combined	81	5.404938	.1076101	.9684913	5.190787	5.619089
diff		-.1372808	.2366484		-.6083176	.3337561

diff = mean(2) - mean(3) t = -0.5801  
 Ho: diff = 0 degrees of freedom = 79

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
 Pr(T < t) = 0.2817 Pr(|T| > |t|) = 0.5635 Pr(T > t) = 0.7183

**Figure 75: Test for non-response bias, groups 2 and 3**

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
2	24	5.308333	.1641752	.804291	4.968711	5.647956
4	448	5.413393	.0429423	.9089164	5.328999	5.497787
combined	472	5.408051	.041583	.9034134	5.32634	5.489762
diff		-.1050596	.1894229		-.4772801	.2671609

diff = mean(2) - mean(4) t = -0.5546  
 Ho: diff = 0 degrees of freedom = 470

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
 Pr(T < t) = 0.2897 Pr(|T| > |t|) = 0.5794 Pr(T > t) = 0.7103

**Figure 76: Test for non-response bias, groups 2 and 4**

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
3	57	5.445614	.1369208	1.033729	5.171329	5.719899
4	448	5.413393	.0429423	.9089164	5.328999	5.497787
combined	505	5.41703	.0410635	.9227864	5.336353	5.497706
diff		.0322212	.1298898		-.2229723	.2874146

diff = mean(3) - mean(4) t = 0.2481  
 Ho: diff = 0 degrees of freedom = 503

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0  
 Pr(T < t) = 0.5979 Pr(|T| > |t|) = 0.8042 Pr(T > t) = 0.4021

**Figure 77: Test for non-response bias, groups 3 and 4**