



Three Essays on Corporate Restructuring: How to effectively reverse declining firm performance

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TABLE OF CONTENT

- 1. GENERAL INTRODUCTION 1
- 2. UNPACKING ORGANIZATIONAL RESILIENCE: A THEORETICAL AND EMPIRICAL EXPLORATION OF THE LINKAGE BETWEEN VOLATILITY ABSORPTION AND PERFORMANCE RECOVERY 7
 - 2.1. Introduction 7
 - 2.2. Background: Prior conceptualizations of resilience 10
 - 2.3. Theory and hypotheses 15
 - 2.3.1. Moderating influences on the volatility absorption-performance recovery relationship 19
 - 2.4. Methods 24
 - 2.4.1. Dependent variable: Firm performance recovery..... 24
 - 2.4.2. Key predictor variable: Volatility absorption..... 25
 - 2.4.3. Moderator variables..... 25
 - 2.4.4. Control variables 26
 - 2.4.5. Data Analysis 26
 - 2.5. Results 27
 - 2.6. Discussion and implications 32
 - 2.6.1. Theoretical and practical implications 34
 - 2.6.2. Limitations and conclusion 35
- 3. HOW ORGANIZATIONAL NETWORKS AND EMPLOYEE TURNOVER AFFECT ORGANIZATIONAL LEARNING IN THE AFTERMATH OF WORKFORCE DOWNSIZING 37
 - 3.1. Introduction 37
 - 3.2. Background: Workforce downsizing and organizational learning 41
 - 3.3. The model 46
 - 3.3.1. Organizational architecture: Formal (advice) & informal (friendship) network 47
 - 3.3.2. Organizational processes 51
 - 3.4. Experimental design 54
 - 3.5. Results and analysis 56
 - 3.5.1. Downsizing strategies 56
 - 3.5.2. The influence of the informal network..... 60
 - 3.5.3. The influence of increased employee turnover 67
 - 3.6. Discussion and conclusion..... 69

3.6.1.	Theoretical implications	74
3.6.2.	Practical implications	75
3.6.3.	Limitations and suggestions for future research	76
4.	DETERMINANTS AND PERFORMANCE IMPLICATIONS OF TURNAROUND DURATION	78
4.1.	Introduction	78
4.2.	Background and hypotheses	84
4.2.1.	Managerial cognition and turnaround duration	88
4.2.2.	Turnaround actions and turnaround duration	89
4.2.3.	Turnaround duration and turnaround performance	94
4.2.4.	The mediating role of turnaround duration	96
4.3.	Methods	97
4.3.1.	Dependent variables	97
4.3.2.	Independent variables	98
4.3.3.	Control variables	100
4.3.4.	Data analysis	100
4.4.	Results	101
4.4.1.	Supplementary analyses	105
4.5.	Discussion and implications	106
4.5.1.	Practical implications	110
4.5.2.	Limitations and future research avenues	111
5.	GENERAL CONCLUSION	112
	REFERENCES	114
	CURRICULUM VITAE	136

LIST OF FIGURES

Figure 1: Conceptual model of organizational resilience.....	17
Figure 2: Moderating effect of asset retrenchment on the relationship between volatility absorption and performance recovery	30
Figure 3: Moderating effect of financial slack on the relationship between volatility absorption and performance recovery	31
Figure 4: Moderating effect of CEO tenure on the relationship between volatility absorption and performance recovery	31
Figure 5: The formal network of a firm	48
Figure 6: Five informal network configurations with varying degrees of status homophily ...	50
Figure 7: The formal networks in the aftermath of both downsizing strategies	53
Figure 8: Time series plot showing the effects in the formal network.....	58
Figure 9: Boxplots of hitting times showing the effects in the formal network.....	59
Figure 10: Boxplots of hitting times showing the influence of five informal network configurations given a moderate survivor syndrome	62
Figure 11: Boxplots of hitting times showing the influence of five informal network configurations given a strong survivor syndrome	63
Figure 12: Time series plot showing the influence of network configuration 5 given a strong survivor syndrome and low turnover	65
Figure 13: Boxplots of hitting times showing the influence of increased turnover	68
Figure 14: Research model.....	81
Figure 15: Visualization of turnaround duration and turnaround performance	99
Figure 16: Summary of main findings	108

LIST OF TABLES

Table 1: Key characteristics of the single studies	3
Table 2: Conceptualizations of resilience across disciplines	14
Table 3: Descriptive statistics and correlations ^a	28
Table 4: Results of random-effects regression analysis predicting firm performance recovery ^b	29
Table 5: Performance outcomes for given downsizing strategy and informal network configuration	72
Table 6: Descriptive statistics and correlations ^c	102
Table 7: Results of regression analysis predicting turnaround duration and performance ^d ...	103
Table 8: Sobel test for indirect effects ^e	105

1. GENERAL INTRODUCTION

Reversing organizational declines which are commonly defined as “conditions in which a substantial, absolute decrease in an organization’s resource base occurs over a specified period of time” is a specifically challenging task that has aroused interest of both academic scholars and business practitioners to the same extent (Cameron, Kim, & Whetten, 1987, p. 224). The relevance of this task within today’s business landscape seems intuitive as the frequency and intensity of political and economic shocks significantly increased and major technological advancements (e.g., automation and digitalization) fundamentally disrupt existing business models with the effect of an increasing threat of experiencing organizational declines. But not only today, organizational decline has ever been a specifically threatening episode of a firm’s lifetime explaining why this phenomenon and, in particular, the question on what happens after organizational declines has early attracted organization theorists.

Beginning with Whetten (1980) and his call for more research on this topic, there still is an ongoing debate among organization theorists whether organizational decline fuels innovation or rigidity (e.g., Audia & Greve, 2006; McKinley, Latham, & Braun, 2014; Mone, McKinley, & Barker, 1998). Innovation might open up new revenue streams helping improve performance while it can also drain very important resources and further destabilize performance (McKinley, 1993; McKinley et al., 2014). In the same vein, rigidity and its underlying risk avoidance might help reversing organizational declines while its clear focus on efficiency improvements can also hinder firms from introducing new profitable products and services (e.g., Staw, Sandelands, & Dutton, 1981). Together, this debate is rather conceptual, still inconclusive and primarily focuses on the mentioned dichotomy. However, it is also the theoretical root of many recently discussed topics within the literature of turnaround management which primarily focuses on *why and how some firms are more effective in reversing organizational declines than others*.

Though there is a number of seminal studies in the field of research on organizational decline and turnaround management research (e.g., Arogyaswamy, Barker, & Yasai-Ardekani, 1995; Barker & Mone, 1994; Pearce & Robbins, 1993), the most recent review of prior work on organizational decline and turnaround management research shows that conceptual and empirical findings are largely consistent in showing that response factors (e.g., the interpretation and perception of organizational declines) and turnaround actions (e.g., workforce downsizing as a means to shrink the scope of a firm or product diversification as a means to expand the scope of a firm) seem main building blocks of effectively reversing organizational declines (Trahms, Ndofofor, & Sirmon, 2013).

Extant research on response factors of organizational decline has largely focused on the role of managerial cognition and particularly underpins that managers' ability to identify the true causes of decline as well as their ability to accurately assess its severity are important preconditions to effectively manage a firm's turnaround (e.g., Arogyaswamy et al., 1995; Barker & Patterson, 1996; Ford, 1985; Pearce & Robbins, 1993; Trahms et al., 2013). However, there is no consensus about the exact role of managerial cognition in achieving turnarounds as, in particular, the perception and interpretation of the severity of declines is argued to determine either turnaround outcomes directly (e.g., Francis & Desai, 2005) or the choice of turnaround actions (e.g., Musteen, Liang, & Barker, 2011). Further, a detailed analysis of extant research on turnaround actions specifically underpins why Trahms, Ndofofor, and Sirmon postulate that "much of the turnaround domain remains uninvestigated" (2013, p. 1303). In essence, there is a remarkable ambiguity of findings regarding the effectiveness of turnaround actions and multiple important contingencies remain unexplored (e.g., Barker & Mone, 1994; Bruton, Ahlstrom, & Wan, 2003; Morrow, Johnson, & Busenitz, 2004; Ndofofor, Vanevenhoven, & Barker, 2013; Pennings, Lee, & Van Witteloostuijn, 1998). Consequently,

a profound and reliable answer to the question on *how to effectively reverse declining firm performance* is still missing.

To help resolve this shortcoming, Trahms et al. (2013) call for intensifying research on the effectiveness of different turnaround actions. However, this call is by far not enough to appropriately answer the question and this is exactly where this dissertation project starts. The dissertation provides three single studies which not only identify and rigorously investigate unexplored contingencies governing the effectiveness of turnaround actions but also break with the established research approaches both conceptually as well as methodologically in order to properly answer the research question. As an overview, Table 1 highlights the aim and scope as well as key methodological characteristics of each study.

Table 1: Key characteristics of the single studies

	1st study: <i>Organizational resilience</i>	2nd study: <i>Workforce downsizing</i>	3rd study: <i>Turnaround duration</i>
Aim and scope	Apply the concept of resilience in an organizational context and empirically test its inherent relationship between the absorption of volatility in organizational declines and subsequent performance recovery.	Understand the relevance of organizational networks of a firm in the context of performance outcomes of workforce downsizing as an important turnaround action and identify potential remedies (e.g., employee turnover) for negative individual outcomes of workforce downsizing.	Extend the established research logic of investigating direct performance effects of managerial cognition as well as turnaround actions and thus empirically test the mediating role of turnaround duration regarding the relationships between managerial cognition as well as turnaround actions and turnaround performance in the aftermath of organizational declines.
Methods	Empirical investigation of all North American pharmaceutical firms experiencing organizational declines between 1988 and 2015.	Simulation approach adopting and extending the original organizational learning model by March (1991).	Empirical investigation of all North American single business firms experiencing organizational declines between 1988 and 2015.

The following section briefly summarizes each study and points out the contribution to the overarching research question of this dissertation project. The first study introduces the concept of resilience originating from psychology and applies it to an organizational context. Organizational resilience describes a firm's ability to absorb volatility caused by discrete shocks or continuous declines and its ability to achieve strong performance recovery following these shocks. Applying an organizational routine and dynamic capability perspective, this study develops a theoretical underpinning for the assumed linkage. Based on a large-scale empirical investigation, the findings support the notion of a positive relationship and highlight that asset retrenchment, financial slack, and CEO tenure determine its strength. Together, this study shows that also the manner in which firms undergo organizational declines (i.e., by absorbing performance volatility) explains subsequent firm performance increases while specific turnaround actions such as asset retrenchment merely strengthen this effect. Though extant research has primarily focused on better understanding turnaround actions, the organizational resilience perspective suggests that not only organizational behavior in the aftermath of declines but also during organizational declines (i.e., the buffering of performance volatility) seems, at least, equally important in order to reverse declining firm performance.

The second study sheds light on performance outcomes of workforce downsizing as one of the most prominent turnaround actions. This study adopts a simulation approach to rigorously examine how workforce downsizing affects organizational learning via a firm's formal (advice) and informal (friendship) network. We therefore compare performance outcomes of two structurally different downsizing strategies (i.e., different formal network positions of downsized employees) and investigate the influence of five different informal network configurations. The downsizing strategies are delayering (i.e., the layoff of middle managers) and thinning (i.e., the layoff of blue-collar workers). The informal network

configurations differ in terms of status homophily (i.e., the extent to which friendship ties are limited to employees at the same hierarchical level). Without considering informal network effects, we find that thinning consistently outperforms delayering. By incorporating the influence of a firm's informal network, we find that high levels of status homophily render the organization immune to adverse consequences of the survivor syndrome while low and/or medium status homophily configurations might even amplify negative effects. Lastly, we identify a potential remedy to negative performance outcomes in the form of increased levels of post-downsizing employee turnover. Together, this study demonstrates that intra-organizational networks (i.e., the configuration of formal and informal networks of employees) and the extent of employee turnaround in the aftermath of workforce downsizing significantly influence the effectiveness of workforce downsizing as one of the most prominent turnaround actions. While extant research has consistently underrepresented these two contingencies, their explicit consideration might help resolve parts of the ambiguity of findings on the effectiveness of turnaround actions.

The third study applies a temporal perspective to research on turnaround management and specifically draws attention to turnaround duration as an important contingency. Empirical findings on the exact role of managerial cognition and direct effects of retrenchment and recovery actions on turnaround outcomes, however, have remained highly ambiguous. To help resolve this ambiguity, our study applies a temporal perspective and draws attention to turnaround duration as an important contingency in turnaround processes. In this study, we thus first analyze how managerial cognition (i.e., the severity of decline) and turnaround actions (i.e., retrenchment and recovery) relate to turnaround duration. In a subsequent step, we then examine how turnaround duration links with turnaround performance and whether turnaround duration mediates the relationship between managerial cognition as well as turnaround actions and turnaround performance. Our empirical findings

evidence that turnaround duration is an important process characteristic that directly affects turnaround performance as well as fully mediates the influence of recovery actions (i.e., expansions of diversification scope and CEO replacement) on turnaround performance. In contrast, the influence of asset retrenchment on performance is neither associated nor mediated by turnaround duration. Further, we find an inconsistent mediation regarding the severity of decline suggesting that, in some cases, specifically severe performance declines are associated with short turnaround duration and hence lower turnaround performance. On average and independent from turnaround duration, specifically severe declines are directly associated with greater turnaround performance though. Together, this study shows that the consideration of a temporal perspective contributes to an advanced understanding of what determines performance outcomes in the aftermath of organizational declines.

The following three chapters each represent one of the above summarized studies starting with empirically testing the concept of organizational resilience and closing with explaining the importance of a temporal perspective in order to reverse organizational declines.

2. UNPACKING ORGANIZATIONAL RESILIENCE: A THEORETICAL AND EMPIRICAL EXPLORATION OF THE LINKAGE BETWEEN VOLATILITY ABSORPTION AND PERFORMANCE RECOVERY

(This chapter is based on a paper co-authored by Matthias Brauer)

2.1. Introduction

A cross-disciplinary review of psychology, ecology and management science literatures suggests that resilient organizations are characterized by their ability to absorb volatility caused by discrete or continuous internal or external shocks and their ability to achieve strong performance recovery following these shocks (e.g., APA, 2015; Holling, 1973; Lengnick-Hall, Beck, & Lengnick-Hall, 2011; Vogus & Sutcliffe, 2007; Williams, Gruber, Sutcliffe, Shepherd, & Zhao, 2017). The notion of organizational resilience has regained considerable prominence in public and scholarly debates in the wake of more frequently occurring economic, political and societal crises that have majorly affected organizations' performance and survival (Annarelli & Nonino, 2016; Ortiz-De-Mandojana & Bansal, 2016; van der Vegt, Essens, Wahlström, & George, 2015; Williams et al., 2017; Williams & Shepherd, 2016). For instance, in the opening paragraph of his letter to shareholders Bob Dudley, CEO of BP, stated: "The work we have done to reshape and strengthen BP after 2010 stood us in good stead to withstand these conditions and last year we took further action to make the business more resilient in the short term" (BP, 2015, p. 8). Similarly, General Electric's (GE) top level management has highlighted to its shareholders and employees that "[...] as the world is increasingly volatile, our ability to anticipate, respond to and recover from events is critical" (GE, 2016).

But despite the concept's imminent importance in today's economic environment, a critical review of extant organizational resilience literature shows that our conceptual understanding of organizational resilience and empirical work in this domain are

underdeveloped (Anand & Singh, 1997; Cameron et al., 1987; Marcus & Nichols, 1999; Ortiz-De-Mandojana & Bansal, 2016; van der Vegt et al., 2015; Williams et al., 2017). Essentially, troubles start with the fundamental assumption that a firm's general ability to absorb (performance) volatility is positively associated with strong performance recovery in the aftermath of a major industry downturn or exogenous shock. Though this link might be intuitively appealing, it is neither theoretically nor practically self-evident. For instance, prior work in organization theory on so-called high-reliability organizations (HROs; e.g., nuclear power plants, traffic control centers, hospitals) has shown that a firm's ability to absorb volatility caused by discrete or continuous shocks may actually come at the expense of lower efficiency levels (Weick, Sutcliffe, & Obstfeld, 1999). This is because the ability to absorb volatility often requires the build-up of organizational slack and redundancies so that, for example, process efficiencies and capacity utilizations are not optimized. While high reliability organizations usually operate in industry settings in which efficiency objectives are secondary, in highly competitive, profit-seeking industry settings the potential inefficiencies associated with building up and preserving the capability of volatility absorption could in fact lead to competitive disadvantages. Further, a critical review of extant contributions on organizational resilience shows that a theoretically sound explanation of why volatility absorption should be positively associated with performance recovery is largely amiss. Similarly, systematic empirical evidence on the true nature and strength of this relationship is found to be sparse, if not non-existent. As a result, we hold very little knowledge on the factors that condition the relationship between volatility absorption and performance recovery.

To address these salient issues, our study's first research objective is to develop a theoretical rationale for the assumed positive relationship between volatility absorption and performance recovery, as suggested by the concept of organizational resilience. In order to do

so, we draw on the organizational routine and dynamic capability perspectives. Our second major research objective that directly builds on the above is to empirically investigate the actual nature and strength of the relationship between a firm's ability to absorb volatility and subsequent performance recovery. Additionally, we aim to further our understanding about organizational contingencies that strengthen or weaken the proposed positive relationship between volatility absorption and performance recovery. Specifically, we study the moderating influences of asset retrenchment, financial slack and CEO tenure on the main relationship. Building on the organizational routine and dynamic capability perspectives, we propose that these factors influence the set of key routines and major organizational capabilities (i.e., mindfulness, effective resource configuration) through which volatility absorption is positively linked with performance recovery.

Based on our sample of all US pharmaceutical companies over a time period of 28 years (1988-2015), we find evidence for a positive relationship between volatility absorption and performance recovery, supporting the fundamental proposition of organizational resilience literature. Our empirical results further show that asset retrenchment and financial slack amplify the positive relationship between volatility absorption and performance recovery. In contrast, we further find that CEO tenure dampens the positive relationship between volatility absorption and firm performance recovery.

Collectively, our study thus contributes to organization theory in several ways. First, by reviewing prior work on organizational resilience across different literature streams and disciplines, we generate an improved understanding of the conceptual building blocks of organizational resilience. Aside from identifying the major conceptual building blocks of organizational resilience (i.e., volatility absorption and performance recovery), we further extend organizational resilience literature by developing a theoretical rationale for a positive linkage between volatility absorption and performance recovery. To do so, we are first to

incorporate the organizational routine and dynamic capability perspectives into the study of organizational resilience. Second, we make an empirical contribution to organizational resilience literature by examining the relationship between a firm's ability to absorb volatility and firm performance recovery across time, and by showing that the strength of this key relationship is contingent on managerial and organizational practices and characteristics. Third, we demonstrate the relevance of organizational resilience in industry downturns and thereby apply the concept to a "[...] more prosaic organizational setting" (Williams et al., 2017), whereas extant research on organizational resilience has predominantly focused on very rare and discrete shocks (e.g., Alexander, 2013).

The remainder of the paper is structured as follows. As a background for our theorizing and empirical analysis, we first present and discuss extant conceptualizations of organizational resilience. Drawing on an organizational routine and dynamic capability perspective, we then develop a theoretical underpinning for the positive relationship between volatility absorption and performance recovery. Subsequently, we theorize on selected managerial and organizational factors conditioning our main relationship. Next, we present our empirical design and the results of our empirical analysis. We conclude with a discussion of our findings and their implications.

2.2. Background: Prior conceptualizations of resilience

The concept of organizational resilience has developed from work on resilience in a wide variety of research fields such as psychology (Werner, Bierman, & French, 1971) and ecology (Holling, 1973). The following discussion of established definitions and conceptualizations of resilience across disciplines serves to identify the construct's main building blocks. Based on these insights, we then highlight major unresolved issues and shortcomings in the extant body of knowledge on organizational resilience.

In individual psychology, the notion of resilience goes back to a set of studies by Werner et al. (1971) who investigated the coping behavior of children growing up under detrimental conditions such as abusive or drug-addicted parents (Masten, Best, & Garmezy, 1990; Werner, 1997; Werner et al., 1971; Werner & Smith, 2001). The main finding was that some of these children mimicked the behavior of their parents in their further course of life whereas others did not adopt such a way of life. Hence, Werner et al. (1971) called the children of the latter group resilient children and thereby started off an ongoing discussion about resilience and specifically its predictors within individual psychology literature. The American Psychological Association (APA) nowadays defines resilience as a specific capability allowing individuals to withstand adversity and properly recover from traumatic incidents. Recent research on resilience in the field of (individual) psychology which has largely focused on predictors of resilience indicates that individuals demonstrating resilience embody optimism as well as positivity and are particularly able to find a balance between negative and positive emotions (Bonanno, 2004; Bonanno, Romero, & Klein, 2015). From a conceptual point of view, there is an ongoing debate whether individual resilience is a personal trait, a process or a capacity (Luthar, Cicchetti, & Becker, 2000). To further this discussion, the recent review by Kossek and Perrigino (2016) discusses literature on individual resilience in organizational behavior and management literature, specifically drawing on individual careers (London, 1983) and positive psychology (Fredrickson, 2001). Kossek and Perrigino (2016) conclude that resilience can be understood as the synthesis of individual traits (e.g., hardiness), processes (e.g., coping and appraisal) and capacities (e.g., sufficient resources) for positively adapting to adversity.

In ecology, resilience was first discussed by Holling (1973) who introduced the concept of resilience to describe and measure the ability of ecological systems (e.g., fish populations) to absorb change and still persist. Holling's work (1973) has been constitutive of

the emergence of the concepts of ecological resilience and engineering resilience. The main distinction between these two types of resilience lies in the specificity of their respective measurements. Ecological resilience describes the magnitude of disturbance caused by internal and external shocks which an ecological system can absorb before the system changes its structure (Cumming et al., 2005; Holling, 1996). Engineering resilience is measured by the magnitude of resistance (e.g., the resistance of specific materials) to disturbance and subsequent speed of recovery (O'Neill, 1986; Pimm, 1984; Tilman & Downing, 1994). Specifically, material sciences nowadays use the concept of engineering resilience to indicate the extent to which a certain material bends (i.e., absorbs energy) and bounces back or breaks when stressed (Askeland & Wright, 2013). Thus, both conceptualizations, ecological and engineering resilience, have in common that they emphasize the ability to recover from internal or external disturbances (Dinh, Pasma, Gao, & Mannan, 2012).

Consistent with the original works in psychology, ecology and engineering, extant conceptualizations of organizational resilience in organization and management science emphasize the ability of resilient organizations to absorb or deal with adversary developments and to recover from these (see Annarelli & Nonino, 2016; Linnenluecke, 2017; Williams et al., 2017 for a review and discussion). However, the understanding of organizational resilience in organization and management science has evolved over time. Initially, organizational resilience was merely seen as the capability to rebound from adverse situations and to sustain performance levels rather than to improve them (Gittell, Cameron, Lim, & Rivas, 2006; Mallak, 1998). Over time, management scholars, however, have increasingly described organizational resilience as the ability to buffer disruptive events coupled with the explicit notion of performance recovery (Lengnick-Hall et al., 2011; Vogus & Sutcliffe, 2007). Based on this understanding, both components (i.e., absorption and recovery) have been refined even further (e.g., Annarelli & Nonino, 2016; Carvalho, Barroso, Machado,

Azevedo, & Cruz-Machado, 2012; Vogus & Sutcliffe, 2007). For instance, more recent work has stressed that not simply performance persistence but performance improvement characterizes organizational resilience (Carvalho et al., 2012; Vogus & Sutcliffe, 2007). Consequently, Vogus and Sutcliffe (2007) define organizational resilience as “[...] the maintenance of positive adjustment under challenging conditions such that the organization emerges from those conditions strengthened [...]” (Vogus & Sutcliffe, 2007, p. 3418).

In summary, the review of resilience literature across disciplines shows that there is consensus on organizational resilience constituting of two main components: a.) the ability to absorb volatility caused by either discrete shocks or continuous strains and b.) subsequent performance recovery. Table 2 summarizes main definitions and highlights the most prominent building blocks of the organizational resilience construct in organization and management science research.

While organization science research has converged to a fairly unanimous understanding of organizational resilience, a critical review of organizational resilience literature reveals a set of unresolved issues and shortcomings. First, the theoretical explanation for why a positive relationship between volatility absorption and firm performance recovery should be expected has remained largely underdeveloped. Second, the positive relationship between volatility absorption and firm performance recovery has not been subject to systematic, rigorous empirical examination. Third, we lack a general understanding of the managerial and organizational contingencies that condition the relationship between volatility absorption and performance recovery.

Table 2: Conceptualizations of resilience across disciplines

Definitions of resilience	Author(s) (Year)	Discipline
The measurement of (ecological) resilience is the magnitude of disturbance that can be absorbed before the system changes its structure by changing the variables and processes that control behavior. Engineering resilience: [...] where resistance to disturbance and speed of return to equilibrium are used to measure the property.	Holling (1996), O'Neil et al. (1986), Pimm (1984), Tilman & Downing (1994)	Ecology/ Engineering
Resilience is the process of adapting well in the face of adversity , trauma, tragedy, threats or significant sources of stress — such as family and relationship problems, serious health problems or workplace and financial stressors. It means “ bouncing back ” from difficult experiences.	American Psychological Association (APA)	Psychology
Organizational resilience is defined here as a firm's ability to effectively absorb , develop situation-specific responses to, and ultimately engage in transformative activities to capitalize on disruptive surprises that potentially threaten organization survival.	Lengnick et al. (2012)	HR Management
Supply chain resilience is concerned with the system's ability to return to its original state or to a new, more desirable , one after experiencing a disturbance , and avoiding the occurrence of failure modes.	Carvalho et al. (2012)	Operations Management
[...] the maintenance of positive adjustment under challenging conditions such that the organization emerges from those conditions strengthened [...].	Vogus & Sutcliffe (2007)	Management
Organizational resilience is the organization's capability to face disruptions and unexpected events in advance thanks to the strategic awareness and a linked operational management of internal and external shocks. The resilience is static, when founded on preparedness and preventive measures to minimize threats probability and to reduce any impact that may occur, and dynamic, when founded on the ability of managing disruptions and unexpected events to shorten unfavorable aftermaths and maximize the organization's speed of recovery to the original or to a new more desirable state .	Annarelli & Nonino (2015)	Management

Though the assumption about a positive relationship between volatility absorption and performance recovery is prevalent in organizational resilience literature (Gittell et al., 2006;

Ortiz-De-Mandojana & Bansal, 2016), an explicit theoretical underpinning and empirical evidence are widely amiss. Although the assumption about a positive relationship might seem intuitively appealing, research findings on high reliability organizations (HROs; e.g., nuclear power plants, traffic control centers, hospitals) challenge its general validity.

HROs have usually perfected the ability to absorb volatility as the failure to do so in most cases has disastrous consequences (Weick et al., 1999). In order to succeed in absorbing volatility, HROs however build up and deliberately maintain slack as well as redundancies. These precautions come at the expense of lower efficiency. Similarly, research on global institutions (i.e., intergovernmental and non-governmental organizations) considers resilience and performance as two contradicting concepts implying that these organizations might focus on either the absorption of volatility or the maximization of performance because the perfection of both abilities seems simply not possible (Schemeil, 2013). Collectively, the findings on HROs and global institutions thus illustrate that volatility absorption and strong financial performance (recovery) are often difficult to align.

In absence of an existing theoretical underpinning for the assumed positive linkage between volatility absorption and performance recovery in organizational resilience literature and in light of seemingly contradictory empirical evidence, we next turn our attention towards developing such a theoretical rationale. To do so, we draw on the organizational routine and dynamic capability perspectives. We further derive predictions about critical contingencies conditioning the assumed positive relationship between a firm's ability to absorb volatility and to generate above-average financial returns.

2.3. Theory and hypotheses

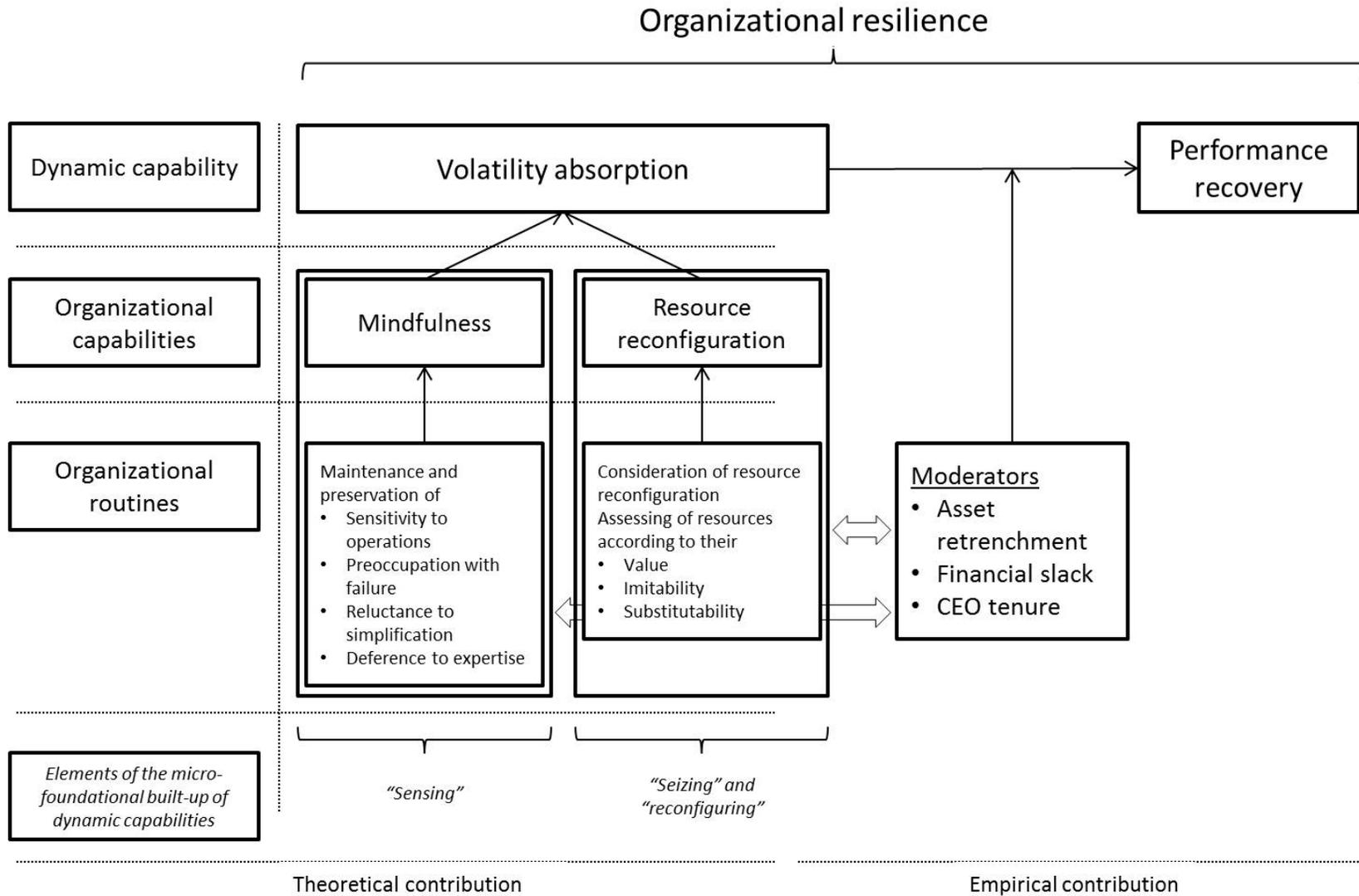
As pointed out above, the inherently assumed positive relationship between volatility absorption and performance recovery that is foundational to the conceptualization of organizational resilience is both theoretically as well as empirically non-obvious. In order to

establish a theoretical rationale for why previous organizational resilience literature has inherently assumed a positive relationship between volatility absorption and performance recovery, we draw on an organizational routine and dynamic capability perspective. Specifically, we propose in the following that a firm's ability to absorb volatility constitutes a dynamic capability. Dynamic capabilities have been argued to be the sources of enterprise-level competitive advantage (Schreyögg & Kliesch-Eberl, 2007; Teece, 2007, 2014; Teece, Pisano, & Shuen, 1997; Zollo & Winter, 2002). In keeping with prior theorizing on dynamic capabilities and their microfoundations (Helfat & Peteraf, 2015; Kleinbaum & Stuart, 2014; Teece, 2007, 2014), we propose that volatility absorption, as a type of dynamic firm capability, rests on two major organizational capabilities (i.e., organizational mindfulness, effective resource configuration) that are themselves originating from the applications and ongoing refinement of a set of organizational routines (e.g., reluctance to simplify interpretations, sensitivity to operations, preoccupation with failure) (see Figure 1).¹

As proposed by Teece (2007), dynamic capabilities can be disaggregated into three capacities 1) sensing of opportunities and threats, 2) seizing of opportunities and threats and 3) reconfiguring. "Sensing" refers to continuous scanning activities in order to detect and better understand ongoing and looming environmental changes. "Seizing" refers to the evaluation and selection of organizational responses to these changes, while "reconfiguring" describes the actual "implementation" of these responses in form of resource deployment, recombination or renewal.

¹ The foundational build-up which we describe in Figure 1 is not only in keeping with Teece's (2007) conceptualization but also in accordance with prior research that has reasoned that dynamic capabilities require specific and difficult-to-replicate organizational capabilities through which they are eventually transmitted (Eisenhardt & Martin, 2000; Teece, 2007).

Figure 1: Conceptual model of organizational resilience



For an organization to be effective in volatility absorption, all these three capacities are essentially required (Vogus & Sutcliffe, 2007). Sensing is in essence a function of organizational mindfulness. Organizational mindfulness describes an organization's state of active awareness characterized by the continual creation and refinement of categories, openness to new information and willingness to incorporate various perspectives (Fiol & O'Connor, 2003; Langer, 1989; Levinthal & Rerup, 2006; Weick & Sutcliffe, 2006; Weick et al., 1999). The major organizational routines that have been argued to create organizational mindfulness are the following: an organization's general reluctance to simplify interpretations, sensitivity to operations, deference to expertise and preoccupation with failure (Fiol & O'Connor, 2003; Weick et al., 1999).

Similarly, seizing and reconfiguring are essential for volatility absorption. These microfoundations ensure, for instance, that resources are allocated to business areas and operations that face immediate threats, and that valuable resources are protected from threats and leveraged to avert threats (Ortiz-De-Mandojana & Bansal, 2016). In accordance with the fundamental conceptualization by Teece (2007), the dynamic capability of volatility absorption can thus be understood to rest on two major organizational capabilities: organizational mindfulness and resource configuration.

Important for our purposes, conceptualizing volatility absorption as a dynamic capability that builds on organizational mindfulness and a firm's resource configuration ability allows to rationalize and to explain why volatility absorption is assumed to be positively linked with performance recovery in organizational resilience literature. Mindfulness has been argued and found to be positively associated with increased chances for organizational survival (Weick et al., 1999) and superior individual task performance (Dane, 2011; Dane & Brummel, 2014; Reb, Narayanan, & Ho, 2015; Shonin, Van Gordon, Dunn, Singh, & Griffiths, 2014). Further, the recurrent, collective processes that help build

organizational mindfulness (i.e., reluctance to simplify interpretations, sensitivity to operations, deference to expertise and preoccupation with failure) help an organization to respond more rapidly and more accurately to change, considerably raising chances for above-average performance improvements (Ciravegna & Brenes, 2016; Vogus & Welbourne, 2003; Weick et al., 1999). Further, a firm's ability to flexibly reconfigure its resource base has also been widely found to be positively associated with firm performance (Amit & Schoemaker, 1993; Barney, 1991; Bloodgood & Morrow, 2003; Capron & Mitchell, 2009; Karim, 2006; Newbert, 2008; Powell, 2001; Priem & Butler, 2001).

Viewing volatility absorption as a dynamic capability that rests on the two organizational capabilities of organizational mindfulness and effective resource (re)configuration, and the empirical evidence on the positive influence of these two organizational capabilities on firm performance leads to the following baseline hypothesis that is fundamental to organizational resilience literature:

Baseline hypothesis: A firm's ability to absorb volatility in industry downturns is positively associated with subsequent firm performance recovery.

2.3.1. Moderating influences on the volatility absorption-performance recovery relationship

Building on the outlined theoretical rationale for a positive relationship between volatility absorption and performance recovery, we next turn to explore three factors that are likely to condition this relationship: the extent of asset retrenchment, the extent of financial slack and CEO tenure. Our choice of moderating factors is guided by two major aspects: First, all of these three contingencies are managerial practices that have been found to be widely applied to facilitate corporate turnarounds (e.g., Barker, Patterson, & Mueller, 2001; Chen & Hambrick, 2012; Morrow et al., 2004; Pearce & Robbins, 1994; Robbins & Pearce, 1992; Tangpong, Abebe, & Li, 2015; Trahms et al., 2013). Second, we focus on these factors

because they are likely to influence the microfoundations of organizational mindfulness as well as a firm's organizational capability of effective and efficient (re)configuration.

Moderating influence of asset retrenchment. Within the organizational decline and turnaround literature, there is strong consensus and empirical evidence that asset retrenchment which is defined as a reduction in assets (long-term and short-term) is a frequently used response to deteriorating firm and industry performance (e.g., Dewitt, 1998; Hoskisson, Johnson, & Moesel, 1994; Morrow et al., 2004; Pearce & Robbins, 1994). Importantly for our theorizing, asset retrenchment is likely to positively affect the effectiveness of organizational routines (i.e., sensitivity to operations and reluctance to simplification etc.) which have been argued to establish a positive link between industry volatility absorption and performance recovery.

Asset retrenchment that typically results from different forms of restructuring (e.g., plant closures, divestitures) specifically demonstrates a heightened sensitivity to operations and a particularly strong deference to expertise. This is because managers need to carefully consider which organizational processes and relations might be disrupted by the retrenchment and how related processes can be stabilized or mended (e.g., Feldman, 2014). Such analyses and processes particularly require a profound understanding of operational processes as well as high levels of managerial attention. Further, asset retrenchment also requires and fosters a greater reluctance to simplification as managers thereby accept and bring about a shift in the dominant logic of the company (Prahalad & Bettis, 1986). This is because revising a company's dominant logic is particularly challenging and complicated when environmental complexity is high such as in industry downturns (Bettis & Prahalad, 1995). More generally, asset retrenchment inherently requires a rethinking of multiple organizational routines and fuels the inclination to break with conventional wisdom (Bowman & Singh, 1993; Hoskisson

et al., 1994). Following our micro-foundational built-up, all this is required not only to sense but also to seize opportunities as well as avert threats.

Further, the decision to retrench assets indicates that managers make resource (value) assessments and are motivated to improve resource allocation efficiency (Karim & Mitchell, 2000; Vidal & Mitchell, 2015). Consequently, organizational routines that underlie the ability of effective resource configuration, and thus help absorb volatility, are likely to receive even greater levels of managerial attention in the process of asset retrenchment. This is also because asset retrenchment might lower strategic flexibility (e.g., lower level of diversification) which specifically underpins that, for example, assessing the remaining resources is of utmost importance. In total, it can thus be concluded that the managerial mindset, motivation and mechanisms that are required for asset retrenchment are well aligned with and supportive of the organizational capabilities (i.e., mindfulness, resource configuration) that are constitutive of a firm's ability to absorb volatility. The positive relationship between volatility absorption and firm performance recovery is thus likely to be strengthened by asset retrenchment.

Hypothesis 1: Asset retrenchment amplifies the positive relationship between a firm's ability to absorb volatility in industry downturns and subsequent firm performance recovery.

Moderating influence of financial slack. Financial slack provides a buffer in the face of environmental changes (e.g., Hambrick & Snow, 1977) and allows firms to more swiftly respond to performance downturns. This is because financial slack provides the capacity to redirect existing resources or to deploy new resources to stabilize core activities (Cyert & March, 1963; Thompson, 1967).

Though high levels of financial slack might also breed managerial inertia (Davis & Stout, 1992; Leonard-Barton, 1992), this negative side effect is not likely to materialize as strongly in the face of high performance volatility, and more likely to be overpowered by the

urge to take action. In fact, it can be expected that abundant financial slack has numerous positive effects on the organizational routines that underlie organizational mindfulness. For instance, slack allows managers to dedicate more time and resources to decisions that impact firm survival (e.g., Bradley, Shepherd, & Wiklund, 2011). Specifically, the higher level of detail that managers can incorporate in their decision-making, even during performance downturns (Sharfman, Wolf, Chase, & Tansik, 1988), supports a rigorous deference to expertise. Further, the buffering effects of abundant slack allow managers to engage in more comprehensive analysis of the reasons for and sources of the downturn which might reside at an operational level. In general, slack thus allows for much greater sensitivity to operations that has been found to foster organizational mindfulness.

On top of these effects that abundant financial slack might have on the effectiveness of routines fostering greater organizational mindfulness, high levels of slack also positively affect routines that enable effective and efficient resource reconfiguration. Abundant slack not only facilitates resource reconfiguration but is a necessary pre-condition that allows for and supports the rigorous assessment of resources according to their value, imitability, and substitutability. The quality of such resource assessments has been found to substantially determine the likelihood of effective performance recovery (Morrow et al., 2004; Trahms et al., 2013).

Together, we thus propose that financial slack positively moderates the relationship between a firm's ability to absorb volatility and subsequent firm performance recovery as abundant financial slack increases the effectiveness of routines underlying mindfulness and effective resource reconfiguration.

Hypothesis 2: Financial slack amplifies the positive relationship between a firm's ability to absorb volatility in industry downturns and subsequent firm performance recovery.

Moderating influence of CEO position tenure. Both corporate governance and corporate turnaround research show that CEO changes frequently occur during downturns (Chen & Hambrick, 2012; Fredrickson, Hambrick, & Baumrin, 1988; Jenter & Kanaan, 2015; Kesner & Dalton, 1994; Puffer & Weintrop, 1991). A key explanation for frequent CEO changes during industry downturns, and crisis situations more generally, is that these specific circumstances require different skill sets which current CEOs often do not hold in the eyes of investors. Further, investors believe in a positive new CEO effect because CEOs with shorter position tenure are more willing to challenge taken for granted knowledge on products, internal processes and industry characteristics than long-tenured CEOs (Henderson, Miller, & Hambrick, 2006). In doing so, new CEOs are not only likely to ask employees to question accepted truths and standards (Chen, 2015; Miller, 1993) but also to accept and appreciate complexity in decision-making processes even if this might contradict with practices or structures which have been in place for a long time. As a result, short-tenured CEOs tend to break existing mental frames and to overcome a general reluctance to change (Miller, 1993; Simon, 1987; Westphal & Fredrickson, 2001). In the same vein, newly appointed CEOs have been found to be highly likely to transform strategies, key organizational structures and processes shortly after taking office (Chen, 2015; Gordon, Stewart, Sweo, & Luker, 2000; Romanelli & Tushman, 1994). These changes reflect and fuel the willingness to dissociate from structures and processes that may no longer fit practical reality. Initiation of these fundamental changes, however, also requires detailed and profound knowledge about structures and operational processes. Thus, the sensitivity to operations and the deference to expertise thus appear as key requirements for successfully initiating these changes. Collectively, these findings in prior upper echelons research clearly indicate that CEOs with shorter position tenure are likely to be more attentive to and appreciative of the major practices and processes that help maintain and raise organizational mindfulness.

In addition, CEO position tenure is also likely to impact the effectiveness of routines underlying resource reconfiguration. As outlined above, new CEOs direct a lot of attention and substantial effort to assess the firm's resource base (Chen, 2015; Miller, 1993). Among others, this is reflected in greater changes to a firm's business portfolio (Chiu, Johnson, Hoskisson, & Pathak, 2016; Feldman, 2014) and more frequent adjustments to organizational structures and processes following CEO replacements (Chen, 2015; Kang, 2016; Westphal & Fredrickson, 2001). Thus, the establishment and refinement of processes for resource assessment is also a necessity for CEOs with relatively short position tenure in order to build their legacy (Hayward, Rindova, & Pollock, 2004; Matta & Beamish, 2008).

For all these reasons, we hypothesize that the positive relationship between a firm's ability to absorb volatility and performance recovery is more pronounced for CEOs with short tenures and less pronounced for longer tenured CEOs.

Hypothesis 3: CEO position tenure dampens the positive relationship between a firm's ability to absorb volatility in industry downturns and subsequent firm performance recovery.

2.4. Methods

As an empirical setting for our study, we selected the US pharmaceutical industry (SIC 283) from 1988 and 2015. The US pharmaceutical industry provides for a suitable and interesting empirical setting to study the relationship between volatility absorption and performance recovery because the industry is historically characterized by considerable volatility. Moreover, studying the resilience of pharmaceutical firms seems relevant as the industry is one of the most important contributors to the US economy.

2.4.1. Dependent variable: Firm performance recovery

To assess a firm's extent of performance recovery subsequent to crisis, we first needed to identify periods of industry downturns. Following prior work on industry munificence (Dess & Beard, 1984), we marked periods as industry downturns when average industry

performance (i.e., mean industry ROA weighted by asset size) declined over three consecutive years. We then assessed the extent of firm performance recovery as a firm's increase in industry-adjusted return on assets in the three years following an industry downturn (t+1 to t+3) relative to the year prior to the industry downturn (t-1):²

$$\frac{\text{Focal firm } [\text{mean}(\text{ind. adj. ROA}_{(t+1;t+3)}) - \text{ind. adj. ROA}_{(t-1)}]}{\text{Focal firm } [\text{abs}(\text{ind. adj. ROA}_{(t-1)})]}$$

2.4.2. Key predictor variable: Volatility absorption

To assess a firm's ability to absorb volatility, we calculate the extent to which focal firm performance volatility is lower/higher than industry performance volatility during the downturns. To do so, we first calculate industry performance volatility as the median volatility using the performance volatilities (i.e., standard deviation) of all firms that experience a performance decline during an industry downturn. To assess the actual volatility absorption by firms that experience performance declines during industry downturns, we then finally created a ratio of the industry performance volatility divided by firm performance volatility. Thus, the greater the score the stronger is a firm's ability for volatility absorption. For instance, a score of 3 implies that a focal firm absorbs three times as much performance volatility compared to the industry.

2.4.3. Moderator variables

Asset retrenchment. In line with prior research on organizational decline, we operationalize asset retrenchment as the change of firm size over the course of the industry downturn (Morrow et al., 2004). We then reverse-coded the variable with the effect that larger values indicate greater asset retrenchment.

$$\log(\text{total assets}_{(t+3)}) - \log(\text{total assets}_{(t+1)})$$

² Return on assets was measured as operating income before depreciation divided by the book value of total assets. As for other firm-levels variables, the data was obtained from Compustat and Datastream.

Financial slack. Financial slack was measured as the ratio of current assets to current liabilities (i.e., the current ratio) (Bromiley, 1991). For our specific context, the current ratio seems most suitable since it represents both available slack and unabsorbed slack which are most likely to influence a firm's ability to react to volatile conditions.

CEO tenure. CEO tenure was measured by counting his/her years in office (Henderson et al., 2006).

2.4.4. Control variables

We further included a number of control variables that are likely to influence firms' performance development. We assessed *product diversification* using the entropy measure by Jacquemin and Berry (1979). We also controlled for firm *geographic diversification* as the ratio of foreign sales to total sales (Kang, 2013; Tallman & Li, 1996). *Firm size* was measured as the natural logarithm of total assets (Laamanen & Keil, 2008). *Firm leverage* was measured as the ratio of total liabilities to shareholder equity (Bromiley, 1991). Further, we controlled for firm portfolio *restructuring activity* which was measured as the number of divestitures and acquisitions during the three-year industry downturn period (Haunschild, 1993; Haunschild & Beckman, 1998; Hoskisson et al., 1994; Vidal & Mitchell, 2015). Acquisition and divestiture data was retrieved from SDC Platinum. Further, we controlled for the severity of downturn by assessing the difference between the extent of the firm performance downturn and the industry downturn divided by the extent of the industry downturn. Lastly, we included year dummies in our analysis to account for temporal effects.

2.4.5. Data Analysis

For our empirical analyses, we applied random effects modeling since the results of the Hausman test (Greene, 2003; Hausman, 1978) did not reject the randomness of residuals hypothesis. Subsequent collinearity diagnostics using the variance inflation factors (VIFs) indicated no multicollinearity problems, as none of the VIFs approached the threshold of 10

(Cohen, Cohen, West, & Aiken, 2013; Neter, Kutner, Nachtsheim, & Wasserman, 1996). The mean variance inflation for the variables in our regression models ranged from 1.09 to 5.47.

2.5. Results

Table 3 depicts means, standard deviations, and bivariate correlations for all variables included in our study.

Table 4 presents the results of estimating the effects of our explanatory and control variables on performance recovery using random-effects estimation. As indicated by the *F*-test statistics, all models are highly significant. Further, we conducted Wald tests on the significance of the inclusion of both the independent variable (i.e., volatility absorption) and each moderating term. As shown in the Wald chi-square statistics, the inclusion of volatility absorption and all three moderations terms significantly improves model fit.

Table 3: Descriptive statistics and correlations^a

	Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10
1	Firm performance recovery	-0.49	0.88	1.00									
2	Volatility absorption	3.00	5.08	0.17	1.00								
3	Asset retrenchment	0.06	0.66	-0.01	-0.21	1.00							
4	Financial slack	8.57	8.98	-0.08	-0.15	0.09	1.00						
5	CEO tenure	6.93	5.38	-0.02	0.14	0.13	-0.17	1.00					
6	Firm size	4.39	2.40	0.06	0.48	-0.19	-0.14	0.15	1.00				
7	Firm leverage	0.15	0.35	0.09	0.03	0.05	-0.18	0.15	0.04	1.00			
8	Product diversification	0.12	0.33	0.06	0.33	-0.12	-0.22	0.08	0.47	0.04	1.00		
9	Geographic diversification	0.14	0.27	0.11	0.34	-0.17	-0.25	0.17	0.38	0.09	0.30	1.00	
10	Restructuring activity	1.09	3.47	0.08	0.35	-0.16	-0.19	0.07	0.60	0.04	0.49	0.34	1.00
11	Severity of downturn	-0.16	0.34	0.10	0.22	-0.46	0.02	-0.09	0.25	-0.18	0.10	0.15	0.10

^a $N = 1498$. Correlations greater than 0.05 are significant at $p < .05$.

Table 4: Results of random-effects regression analysis predicting firm performance recovery^b

Explanatory Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Volatility absorption		0.03*** (0.006)	0.03*** (0.007)	0.02*** (0.007)	0.05*** (0.01)	0.05*** (0.01)
Volatility absorption × Asset retrenchment			0.03** (0.01)			0.03* (0.01)
Volatility absorption × Financial slack				0.002*** (0.001)		0.002*** (0.001)
Volatility absorption × CEO tenure					-0.002** (0.001)	-0.002*** (0.001)
Asset retrenchment	0.15*** (0.05)	0.17*** (0.04)	0.12** (0.06)	0.17*** (0.04)	0.17*** (0.04)	0.13** (0.05)
Financial slack	-0.008*** (0.002)	-0.008*** (0.002)	-0.008*** (0.003)	-0.01*** (0.003)	-0.007** (0.003)	-0.01*** (0.003)
CEO tenure	-0.003 (0.006)	-0.004 (0.006)	-0.005 (0.006)	-0.005 (0.006)	0.002 (0.006)	0.001 (0.006)
Firm size	-0.02 (0.02)	-0.04** (0.02)	-0.04** (0.02)	-0.04** (0.02)	-0.05** (0.02)	-0.05** (0.02)
Firm leverage	0.28*** (0.07)	0.28*** (0.08)	0.27*** (0.08)	0.28*** (0.08)	0.27*** (0.07)	0.26*** (0.07)
Product diversification	-0.002 (0.09)	-0.04 (0.08)	-0.04 (0.08)	-0.02 (0.08)	-0.06 (0.08)	-0.06 (0.08)
Geographic diversification	0.25** (0.11)	0.19* (0.11)	0.19* (0.11)	0.20* (0.11)	0.20* (0.11)	0.21* (0.11)
Restructuring activity	0.01 (0.01)	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)	0.02* (0.01)
Severity of downturn	0.34** (0.17)	0.32* (0.17)	0.28* (0.17)	0.31* (0.17)	0.32* (0.17)	0.28* (0.17)
Constant	-0.39*** (0.11)	-0.36*** (0.11)	-0.36*** (0.11)	-0.34*** (0.11)	-0.40*** (0.11)	-0.38*** (0.11)
<i>F</i> -value	4.28***	5.59***	5.45***	5.57***	5.59***	5.48***
<i>Adjusted R</i> ²	0.052	0.069	0.071	0.072	0.072	0.078
<i>Wald test</i> χ^2 (1)		19.43***	22.73***	27.91***	25.05***	48.69***
<i>Wald test</i> χ^2 (2)			4.06**	8.74***	4.48**	19.15***

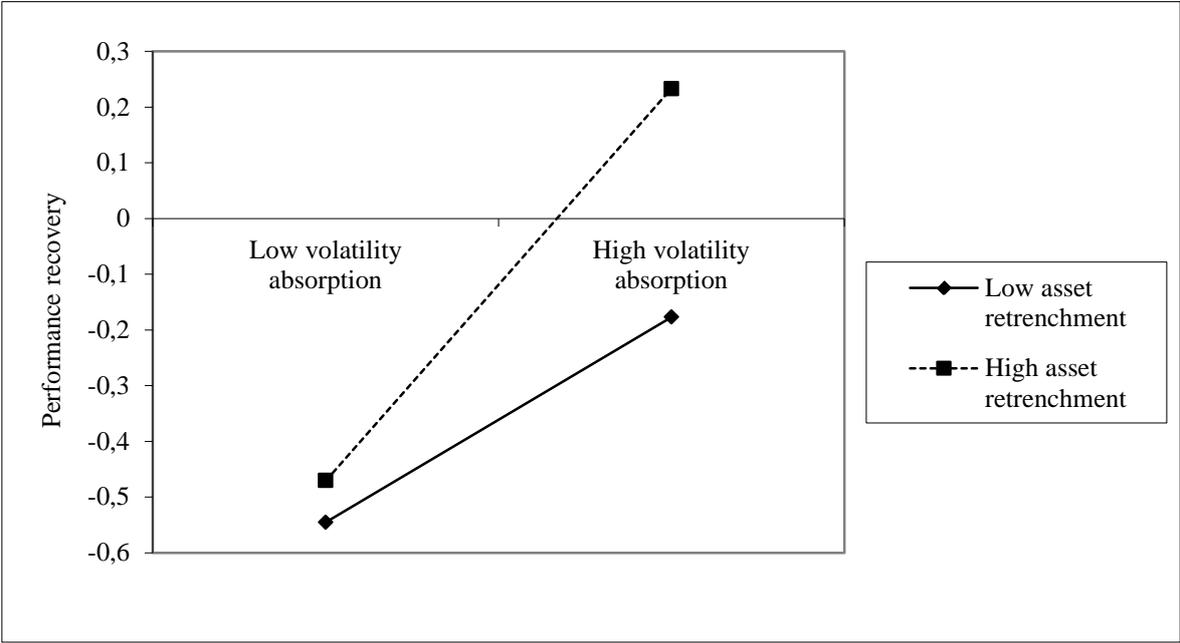
^b $N = 1498$; Unstandardized regression coefficients are shown with Huber-White standard errors in parentheses; year dummies included.

*** $p < 0.01$. ** $p < 0.05$. * $p < 0.1$

Our baseline hypothesis tests the inherent assumption in organizational resilience literature that a firm’s ability to absorb volatility is positively associated with firm performance recovery. As shown in Model 2 of Table 4, volatility absorption is found to be significantly positive ($b = 0.03, p < 0.01$) related to firm performance recovery. The empirical results thus support our baseline hypothesis.

Hypothesis 1 predicted that asset retrenchment amplifies the positive relationship between volatility absorption and performance recovery. Model 3 of Table 4 shows that the interaction between asset retrenchment and volatility absorption is positive and statistically significant ($b = 0.03, p < 0.05$). Hypothesis 1 thus finds support. Figure 2 demonstrates the moderating effect of asset retrenchment on the relationship between volatility absorption and firm performance recovery.

Figure 2: Moderating effect of asset retrenchment on the relationship between volatility absorption and performance recovery



Hypothesis 2 proposed that financial slack positively moderates the relationship between volatility absorption and firm performance recovery. As shown in Model 4 of Table 4, the interaction term between financial slack and volatility absorption is positive and

statistically significant ($b = 0.002, p < 0.01$). Hypothesis 2 is thus also supported by our empirical results. Figure 3 visualizes the moderating effect.

Figure 3: Moderating effect of financial slack on the relationship between volatility absorption and performance recovery

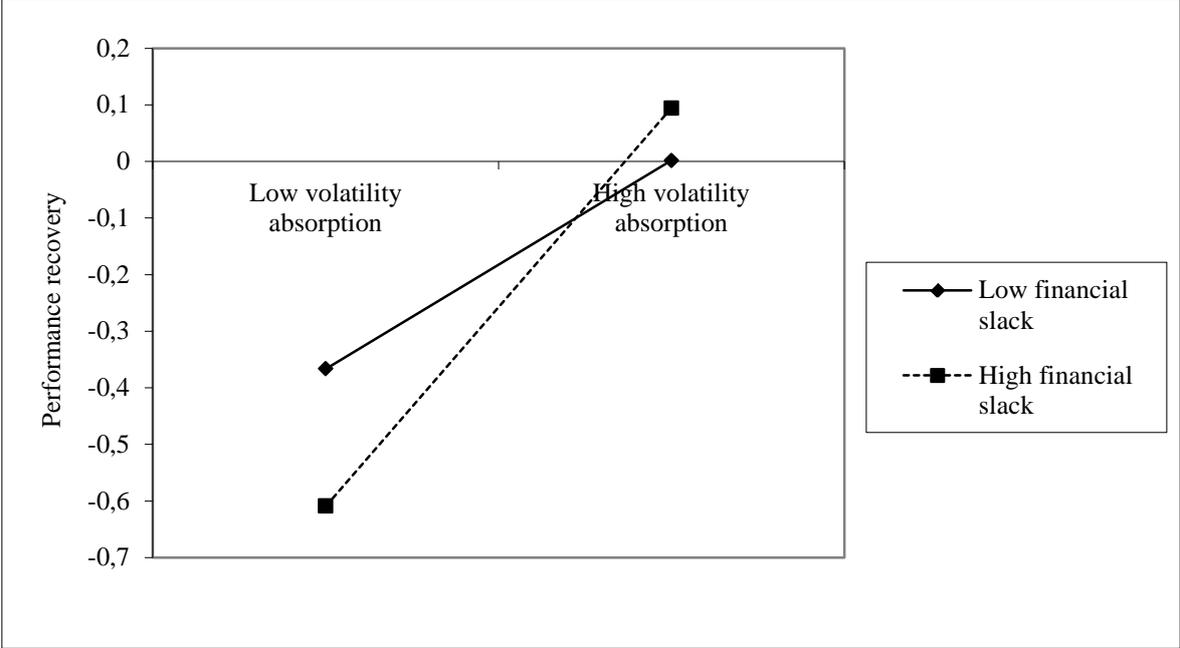
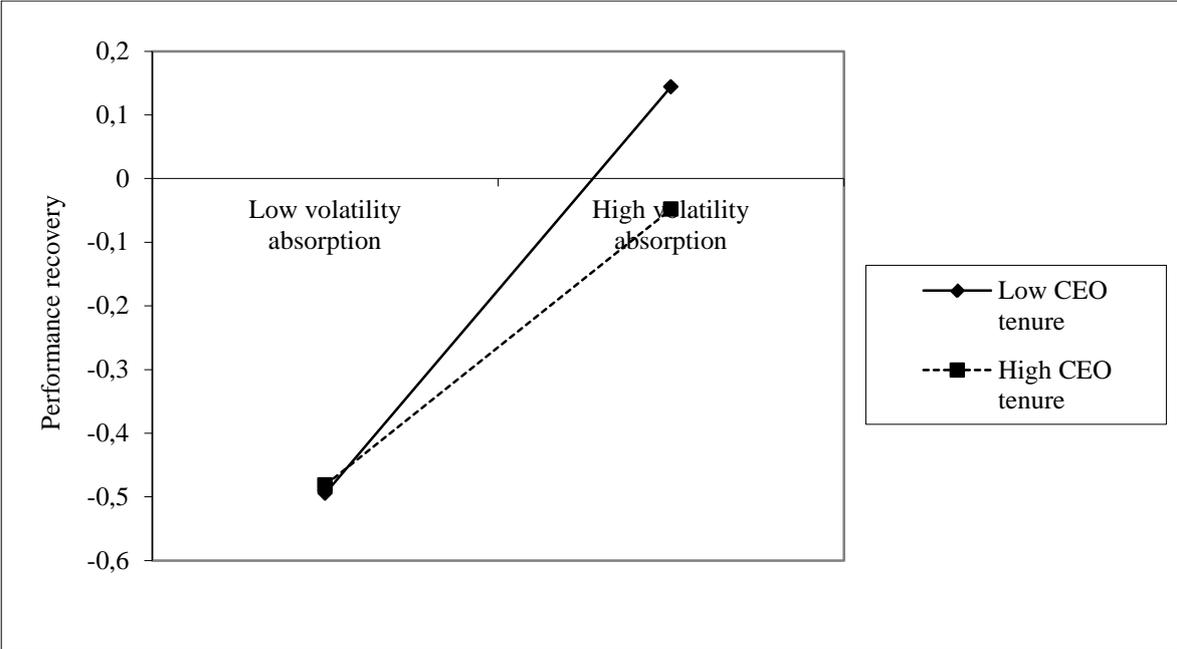


Figure 4: Moderating effect of CEO tenure on the relationship between volatility absorption and performance recovery



Hypothesis 3 predicted that CEO tenure negatively moderates the relationship between volatility absorption and firm performance recovery. Model 5 of Table 4 indicates that the interaction term is negative and significant ($b = -0.002, p < 0.05$). Hypothesis 3 thus also finds support. Figure 4 illustrates the moderating effect of CEO tenure on the relationship between volatility absorption and firm performance recovery.

Finally, Model 6 displays results for the full model. When including all moderating effects in one model, we see that the direction and significance of effects remain highly consistent. This underscores the robustness of our individual findings.

2.6. Discussion and implications

Against the backdrop of more frequently occurring economic downturns, organizational resilience has become a major strategic agenda item. Despite the concept's great practical relevance, a critical review of organizational resilience literature reveals, however, that a theoretically sound explanation of why volatility absorption should be positively associated with performance recovery is largely amiss. Similarly, systematic empirical research on the nature and strength of this relationship is found to be sparse, if not non-existent. As a result, we also hold very little knowledge on the factors that condition the relationship between volatility absorption and performance recovery.

To address these issues, this study set out to develop a theoretical argument for the proposed relationship between volatility absorption and performance recovery and to test the strength of this relationship, as well as the factors conditioning it. Drawing on the organizational routine and dynamic capability perspectives, we conceptualize volatility absorption as a dynamic capability that builds on two major organizational capabilities: organizational mindfulness and a firm's ability of resource configuration. The proposed conceptualization ties in with foundational work on the microfoundations of dynamic capabilities and explicates that volatility absorption is a product of organizational capabilities

and their underlying routines (Teece, 2007). In essence, we argue that these underlying routines, which we identify and elaborate on, constitute the quality of two major organizational capabilities which essentially allow for performance volatility absorption in industry downturns. We therefore provide a theoretical underpinning for how and why volatility absorption should be expected to be positively associated with performance recovery.

Building on our theoretical model of organizational resilience (illustrated in Figure 1), our empirical analysis then provides evidence for a positive relationship between a firm's ability to absorb volatility and subsequent performance recovery. In terms of specific effect sizes, our results suggest that a one unit increase in volatility absorption leads to an additional absolute increase in industry-adjusted firm performance by 3 %. Aside from statistical significance, this finding is materially significant, suggesting that a firm's ability to absorb volatility is indeed a major success factor for effectively navigating through and emerging from downturns. Consequently, our results suggest that building up and preserving organizational capabilities that support organizational resilience is economically valid.

Moreover, we examined the moderating influences of three organizational contingencies (i.e., asset retrenchment, financial slack and CEO tenure) that are likely to influence the organizational routines that help nurture the ability of volatility absorption. In particular, our empirical results suggest that asset retrenchment and financial slack strengthen the positive relationship between volatility absorption and performance recovery. Regarding the moderation of financial slack, the graphical illustration of the effect (see Figure 3) further reveals an interesting cross-over effect. For a firm with low capabilities for volatility absorption, performance recovery is more significant under conditions of low financial slack than under conditions of high financial slack. A potential explanation for this finding is that managers might demonstrate even greater mindfulness and prepare decisions even more

carefully under conditions of low financial slack as the consequences of erroneous decisions are more survival-threatening. In contrast, firms with high capabilities for volatility absorption seem to benefit above average from high levels of slack. Essentially, this finding can be explained by insights from turnaround research that has found that once a firm has stabilized its position, the capacity to engage in new expansionary activities is particularly crucial for subsequent firm success (Ndofor et al., 2013; Robbins & Pearce, 1992).

Further, we find that CEO position tenure dampens the positive relationship between volatility absorption and firm performance recovery. This finding essentially underpins the proposition that longer-tenured CEOs grow “stale in the saddle” and thereby are less suited to manage industry downturns (Hambrick & Fukutomi, 1991). In other words, it might not be the longstanding experience of CEOs that helps being resilient. On the contrary, shorter-tenured CEOs seem to more effectively contribute by addressing managerial issues with new ideas and unconventional approaches as they typically demonstrate a greater inclination to break with existing structures and processes (Henderson et al., 2006).

2.6.1. Theoretical and practical implications

Collectively, our findings contribute to extant research on organizational resilience in several ways. First, by synthesizing prior work on organizational resilience across different literature streams and disciplines, we generate an improved conceptual understanding of the “DNA” of organizational resilience. Aside from identifying the major building blocks of organizational resilience (i.e., volatility absorption and performance recovery) based on prior literature, we extend organizational resilience literature by developing a theoretical rationale and model that justifies the assumed positive linkage between volatility absorption and performance recovery in organization resilience literature. To do so, we are first to incorporate the organizational routine and dynamic capability perspective into the study of organizational resilience. Second, we make an empirical contribution to organizational resilience literature by examining the relationship between a firm’s ability to absorb volatility

and firm performance recovery. We further show that a firm's ability to absorb volatility seems to be susceptible to organizational and CEO characteristics that affect both organizational mindfulness and the effectiveness in resource configuration. Our nuanced findings highlight that the positive linkage between volatility absorption and performance recovery is sensitive to several organizational contingencies. This is best reflected in our findings on the conditioning effect of organizational slack.

Our findings also have practical implications for managers. Our empirical results show that the capability of volatility absorption greatly facilitates performance recovery following crisis. Against the backdrop of increasing volatility and more frequently occurring economic downturns, top management teams should thus invest into building up and honing their organization's capability to absorb volatility. Our conceptual model provides detailed insights into which processes and routines should be at the heart of this capability building process. For instance, fostering sensitivity to operations and/or increasing the reluctance to simplification seem critical for both organizational mindfulness and effective and efficient resource reconfiguration, which essentially enable improved volatility absorption. While we acknowledge that building this capability is challenging, we strongly believe that this is the only effective response strategy in times of increasing volatility.

2.6.2. Limitations and conclusion

Lastly, we would like to acknowledge that, like any study, our work leaves some important questions unanswered. A follow-up question that arises from our research findings is, for instance, whether firms that are characterized by specific ownership structures specifically focus on absorbing performance volatility. For instance, family firms that have been argued to put greater focus on long-term planning and sustainable value creation might be more likely to appreciate volatility absorption. Future research might thus examine the question on whether family firms demonstrate superior organizational resilience. Further, research on individual resilience suggests that teams might only be resilient if all or at least

key team members demonstrate individual resilience. Thus, another interesting question is whether CEO resilience facilitates the process of building up organizational resilience. In doing so, future work could connect individual and organizational dimensions of resilience, and investigate the importance of resilience as a CEO characteristic. Finally, it should be noted that we use a capital intensive, manufacturing industry as our empirical setting. Thus, there seems a need to assess the applicability of our findings in other industry contexts. Specifically, industries that are characterized by rather low levels of average performance volatility seem interesting in order to compare these findings with our study. This would enrich the discussion on the question whether it is still worth investing in organizational resilience even though lower levels of industry performance volatility implicitly restrict the absorption of volatility. Still, we hope that our study lends helpful conceptual and empirical guidance to future research on this theoretically and practically highly relevant issue.

3. HOW ORGANIZATIONAL NETWORKS AND EMPLOYEE TURNOVER AFFECT ORGANIZATIONAL LEARNING IN THE AFTERMATH OF WORKFORCE DOWNSIZING

(This chapter is based on a paper co-authored by Nicolas Jonard and Matthias Brauer)

3.1. Introduction

From an organizational learning perspective, there are three major implications of workforce downsizing that explain negative performance outcomes. First, employees leaving the firm inevitably cause knowledge losses (e.g., Fisher & White, 2000; Massingham, 2008; Schmitt, Borzillo, & Probst, 2012; Starke, Dyck, & Mauws, 2003). Second, workforce downsizing disrupts organizational networks which might lead to fundamental disruptions of intra-organizational knowledge flows (e.g., Shah, 2000). Third, layoff survivors tend to show lower levels of loyalty, motivation, and commitment towards the organization (Brockner et al., 1994; Brockner et al., 2004; Cascio, 1993; Luthans & Sommer, 1999; Mellor, 1992), while this so-called survivor syndrome might negatively affect their individual knowledge processing capacity (i.e., the quality of acquiring and disseminating accurate knowledge). Though there is consensus that the extent of direct knowledge losses depends on the quality of the knowledge held by the employees leaving the firm (e.g., Massingham, 2008; Starke et al., 2003), identifying and investigating other factors that determine the strength of negative effects resulting from disrupted knowledge flows and/or reduced knowledge processing capacities is more much complex and specifically underexplored.

In order to address this shortcoming, we theoretically derive these factors and subsequently investigate their strength using a simulation approach. We argue that the question on who is downsized essentially explains the nature and severity of disruptions of organizational networks (i.e., of both a firm's formal (advice) and informal (friendship) network). The intuitive rationale for different formal network disruption is that job cuts can be

done at different hierarchical levels and therefore different knowledge flows might be disrupted depending on who is downsized. Informal network disruptions also vary as the distribution of friendship relationships among employees is firm specific. Moreover, the informal network position of downsized employees (i.e., who is friends with whom) is of utmost importance as the survivor syndrome (i.e., reduced knowledge processing capacities) is found to be particularly strong when survivors were friends of downsized employees (Shah, 2000). Lastly, we argue that the extent to which firms manage to acquire and internalize novel knowledge by bringing new employees into the organization allows compensating for potential knowledge losses, disrupted knowledge flows and reduced knowledge processing capacities of survivors. We therefore draw on the seminal finding by Trevor and Nyberg (2008) on increased levels of employee turnover subsequent to workforce downsizing and view this finding as a potential means not only to mitigate negative performance outcomes but also to improve organizational performance in the aftermath of downsizing.

In this paper, we therefore investigate how organizational learning evolves subsequent to workforce downsizing by distinguishing between different network disruptions, the strength of the survivor syndrome and varying levels of post-downsizing employee turnover. In order to do this, we use a simulation approach as it allows for precisely isolating effects from both a firm's formal (advice) and informal (friendship) network. Further, the simulation approach allows modelling the strength of reduced individual knowledge processing capacities for survivors (i.e., the strength of the survivor syndrome) and gives the opportunity to rigorously examine performance outcomes of the interplay of workforce downsizing and employee turnover which both seems impossible in an empirical setting.

In our computational model, we distinguish between different network disruptions by considering two downsizing strategies that differently restructure the formal network of a firm (i.e., a firm's hierarchical structure in which organizational learning takes place). The two

downsizing strategies are delayering (i.e., the layoff of an entire layer of middle managers) and thinning (i.e., the layoff of workers located on the lowest hierarchical level). Following Cameron, Freeman, and Mishra (1991) and DeRue, Hollenbeck, Johnson, Ilgen, and Jundt (2008), we thereby contrast a redesign strategy that eliminates hierarchy and thus requires substantial structural restructuring (i.e., delayering) with a traditional workforce reduction strategy (i.e., thinning) maintaining hierarchy and implying fewer structural adaptation to a firm's formal network. Further, we model five informal network configurations that are characterized by different levels of status homophily describing the extent to which friendship ties are limited to groups of employees at the same hierarchical level. We thereby draw on seminal findings from sociology research suggesting that employees tend to engage in friendship relationships with employees at the same hierarchical level (e.g., Carley, 1991; Lazarsfeld & Merton, 1954; McPherson & Smith-Lovin, 1987; Verbrugge, 1977) while the mobility of employees through internal promotion and targeted human resource policies (i.e., job rotation, training and coaching) also generate friendship relationships that potentially go beyond the same hierarchical level. Lastly, we model different levels of post-downsizing employee turnover and investigate how performance outcomes evolve depending on the choice of the downsizing strategy, the strength of the survivor syndrome and the informal network configuration.

Our results indicate that the two downsizing strategies lead to significantly different performance outcomes. As could be expected, workforce downsizing negatively affects organizational performance while thinning is consistently preferable to delayering. In other words, downsizing middle managers has significantly more harmful effects than downsizing blue-collar workers. This finding specifically emphasizes the capability of middle managers to effectively process knowledge between the lower and upper parts of the organization (e.g., Dutton & Ashford, 1993; Wooldridge & Floyd, 1990) while it might also contradict with the

prominence of this downsizing strategy (Friedman, Scullion, & Hill, 2006; Littler & Innes, 2004; Littler, Wiesner, & Dunford, 2003; Shaw & Schneier, 1993; Wulf, 2012). Further, we demonstrate that specific informal network configurations (such as high status homophily) can protect firms from negative performance effects induced by the survivor syndrome. However, we also find that low and/or medium levels of status homophily can significantly lower organizational performance in the aftermath of workforce downsizing. Finally, we demonstrate that increased levels of employee turnover which extant literature almost always perceives as an additional cost of downsizing (e.g., Cascio, 2000; Sturman, Trevor, Boudreau, & Gerhart, 2003) can help mitigate and sometimes overcome negative performance effects.

Our study contributes to organizational learning theory and research on the interplay as well as the outcomes of workforce downsizing and employee turnover. First, we specifically enrich the organizational learning perspective in explaining performance outcomes of workforce downsizing. We can demonstrate that, in particular, disrupted knowledge flows resulting from network disruptions and reduced individual knowledge processing capacities of survivors can significantly lower organizational performance in the aftermath of workforce downsizing. Applying learning-based explanations, our simulation results thereby provide a sound underpinning for the existence of negative performance outcomes of workforce downsizing. However, our study goes beyond this as we also demonstrate how and why workforce downsizing might be also be associated with subsequent performance improvements. We identify increased employee turnover in the aftermath of workforce downsizing as a means to acquire and internalize novel knowledge in order to (over)compensate for negative effects. Thus, our study attests that organizational learning theory specifically contributes to a better understanding on the ambiguity of findings on the performance outcomes of workforce downsizing. Moreover, we enrich research on the interplay of workforce downsizing and employee turnover as well as the performance

outcomes of employee turnover. By finding that the increasing tendency of employees to leave the organization might help improving organizational performance, we relate individual with organizational outcomes of workforce downsizing by demonstrating a specifically strong mediating influence of increased levels of employee turnover in the aftermath of downsizing. Thereby, we contribute to existing research on both the outcomes of workforce downsizing (Datta & Basuil, 2015; Datta, Guthrie, Basuil, & Pandey, 2010) and employee turnover (Hancock, Allen, Bosco, McDaniel, & Pierce, 2013).

In the next section, we briefly review prior literature on performance outcomes of workforce downsizing and specifically discuss learning-based explanations. We then develop our model in greater detail, present our experimental design and computational analysis, and elaborate on our results. We conclude with a discussion of our major findings, and their implications for management research and practice.

3.2. Background: Workforce downsizing and organizational learning

Workforce downsizing describes the intentional reduction of the number of employees aiming at subsequent performance improvements (see Datta et al. (2010); Datta and Basuil (2015) for recent reviews). Findings on the relationship between workforce downsizing and organizational performance are highly ambiguous though. While there are studies suggesting performance improvements subsequent to workforce downsizing (e.g., Kang & Shivdasani, 1997; Palmon & Sun, 1997; Perry & Shivdasani, 2005), many other studies show that there might be a negative relationship between workforce downsizing and organizational performance (e.g., Cascio, Young, & Morris, 1997; Espahbodi, John, & Vasudevan, 2000; Guthrie & Datta, 2008). In line with the general equivocality of findings, Brauer and Laamanen (2014) find an U-shaped relationship between the magnitude of workforce downsizing and organizational performance emphasizing that laying off employees might lead to positive or negative performance outcomes.

The organizational learning perspective provides theoretical explanations for both positive and negative performance effects. Following Shah (2000), performance improving can be that some of those employees who remain within the organization subsequent to workforce downsizing, so-called survivors, potentially see upside potentials for their individual careers. This phenomenon specifically occurs if structurally equivalent employees (i.e., employees that perform the same task) are downsized. In this case, remaining employees gain power and visibility within a firm (Brass, 1984) which they then might use to engage in more accurate processing of knowledge that helps patching knowledge losses due to workforce downsizing. More generally, learning-based explanations for positive performance effects of workforce downsizing refer to individual outcomes for survivors that positively affect their willingness and commitment to contribute to the knowledge acquisition and processing of an organization and thereby enhance the accuracy and effectiveness of their individual knowledge processing capacity (i.e., the quality of acquiring and disseminating accurate knowledge).

The more intuitive learning-based explanations for performance outcomes of workforce downsizing underpin negative effects though. Workforce downsizing inevitably leads to significant losses of knowledge as employees who essentially hold large parts of a firm's knowledge might be downsized (e.g., Fisher & White, 2000; Schmitt et al., 2012). Thus, the extent of knowledge quality held by downsized employees determines how severe the loss of knowledge is. Specifically severe knowledge losses might occur when employees possess rare and difficult-to-imitate knowledge that makes important for the organization (Starke et al., 2003).

Further, workforce downsizing disrupts both a firm's formal (advice) and informal (friendship) network and both network disruptions affect how organizational learning evolves in the aftermath of workforce downsizing (Shah, 2000). The disruption of a firm's formal

(advice) network implies that formerly existing knowledge flows are also disrupted as, for example, employees allowing knowledge flows from lower to upper parts of a firm's and the other way around might also be part of the downsizing strategy. So-called knowledge brokers are typically located between lower and upper parts of a firm's hierarchy and constitute a firm's middle management (Delmestri & Walgenbach, 2005; Dutton & Ashford, 1993; Likert, 1961; Wooldridge & Floyd, 1990).

The disruption of a firm's informal (friendship) network implies that survivors need to accept that some of their former friends were downsized which cognitively impacts themselves (Shah, 2000). Downsizing scholars describe this phenomenon as the survivor syndrome referring to lower levels of trust, commitment and loyalty for remaining employees (Brockner et al., 1994; Brockner et al., 2004; Luthans & Sommer, 1999; Mellor, 1992), with a particularly strong response when these survivors have lost friends through workforce downsizing (Shah, 2000). The survivor syndrome originates from psychological contracts between employees and employers. These psychological contracts are essentially the sum of perceptions by both employees and employers of a number of reciprocal obligations that they expect to be fulfilled (Rousseau & Tijoriwala, 1998). When surviving employees interpret workforce downsizing as a violation of such psychological contracts, the responses of those employees who lose friends often include negative feelings towards the organization, lower levels of trust, commitment and loyalty, and eventually increasing tendencies to voluntary leave the firm (Brockner et al., 1994; Brockner et al., 2004; Luthans & Sommer, 1999; Mellor, 1992; Shah, 2000; Trevor & Nyberg, 2008). From an organizational learning perspective, the lower levels of trust, commitment and loyalty towards the organization translate into reduced individual knowledge processing capacity of those employees who lose friends through workforce downsizing.

Together, we can conclude that there are different mechanisms that explain negative performance outcomes of workforce downsizing applying an organizational learning perspective. While the extent of knowledge losses seem to directly depend on the quality of the knowledge held by downsized employees, we next elaborate on what exactly influences the implications of workforce downsizing via a firm's organizational networks and individual outcomes of survivors in greater detail.

First, disrupted knowledge flows inhibit effective organizational learning in the aftermath of workforce downsizing. In order to find out what kind of knowledge flows are disrupted and hence how detrimental this is can be for the effectiveness of learning, the question on who is downsized becomes of foremost importance. However, no prior study has yet investigated how the position of downsized employees in a firm's formal network affects organizational performance subsequent to workforce downsizing. We therefore investigate this relationship by comparing the performance outcomes of two downsizing strategies that include employees at different formal network positions. Specifically, we investigate delayering (i.e., the layoff of an entire layer of middle managers) and thinning (i.e., the layoff of workers located on the lowest hierarchical level). Following Cameron et al. (1991) and DeRue et al. (2008), we thereby contrast a redesign strategy that eliminates hierarchy and thus requires substantial structural restructuring (i.e., delayering) with a traditional workforce reduction strategy (i.e., thinning) that maintains the former hierarchy and implies fewer structural adaptation to a firm's formal network.

Second, reduced individual knowledge processing capacities of survivors also inhibit effective organizational learning in the aftermath of workforce downsizing. Drawing on Shah (2000), this phenomenon is particularly strong for survivors who lose friends. Consequently, knowing about who is downsized using the information on a firm's formal network is not enough, the information on who is friends with whom (i.e., a firm's informal network) is

another important and specifically underexplored precondition to better understand performance outcomes of workforce downsizing. The distribution of friendship relationships among employees differs though. In order to structurally advance the inconclusive discussion on performance outcomes induced by the survivor syndrome, we model five informal network configurations that are characterized by different levels of status homophily describing the extent to which friendship ties are limited to groups of employees of the same hierarchical level. We thereby draw on seminal findings from sociology research suggesting that there employees tend to engage in friendship relationships with colleagues at the same hierarchical level (e.g., Carley, 1991; Lazarsfeld & Merton, 1954; McPherson & Smith-Lovin, 1987; Verbrugge, 1977) while the mobility of employees through internal promotion and targeted human resource policies (i.e., job rotation, training and coaching) might also lead to friendship relationships across hierarchical levels.

Third, the survivor syndrome can also imply that employees voluntarily leave the organization as a result of their lower levels of trust, commitment and loyalty towards the organization as evidenced by Trevor and Nyberg (2008) finding a positive relationship between workforce downsizing and subsequent employee turnover. Downsizing scholars consider increased levels of employee turnover as an additional indirect cost of workforce downsizing that specifically include employee replacement, training, and outplacement (Cascio, 2000; Sturman et al., 2003) and sometimes even exceed an employee's annual salary (Johnson, 1995). From an organizational learning perspective, high turnover corresponds to extensive inflows of novel knowledge into a system in which novel knowledge can only be internalized up to an amount that corresponds with the individual knowledge processing capacity of employees (March, 1991). Thus, excessive levels of employee turnover might be detrimental while certain levels of novel knowledge can significantly improve performance outcomes though (March, 1991). Whether or not additional levels of employee turnover that

result from workforce downsizing might improve performance outcomes seem to essentially boil down to the question on the extent to which firms manage to acquire and internalize novel knowledge. To date, prior work has not yet rigorously tested performance outcomes of the seminal findings by Trevor and Nyberg (2008) though.

Together, organizational learning theory allows concluding that (negative) performance outcomes of workforce downsizing seem to specifically depend on three factors: the position of downsized employee in the formal network, the distribution of friendship relationships among employees and the level of employee turnover in the aftermath of downsizing. In the following, we explain how these factors and all other relevant components are incorporated in our simulation model.

3.3. The model

We now develop a learning model of the firm which incorporates both formal and informal networks to examine how organizational learning evolves in the aftermath of workforce downsizing. The model explicitly embeds employees in two organizational networks: a formal (advice) relationship network in which organizational learning takes place and an informal (friendship) network which transmits affect. Together, these two networks form the organizational architecture (Nadler, Tushman, & Nadler, 1997). Downsizing impacts both networks and therefore affects organizational performance through two different channels. First, downsizing changes the formal network, essentially creating a novel organization that is both smaller in size and differently organized in terms of existing knowledge flows. Second, downsizing also changes the informal network, which affects surviving employees' cognitive state and thus their capacity to process knowledge effectively. The model we develop aims at properly disentangling these two effects and at understanding how they jointly determine organizational performance in the aftermath of workforce downsizing. Formally, the model draws on March's (1991) model, with the addition of a

sequential learning rule inspired by Padgett's (1980) hierarchical variant of the Garbage Can model and recent contributions on organizational learning (Fang, Lee, & Schilling, 2010; Miller, Meng, & Calantone, 2006; Schilling & Fang, 2014). In the following, we describe the model's components in greater detail.

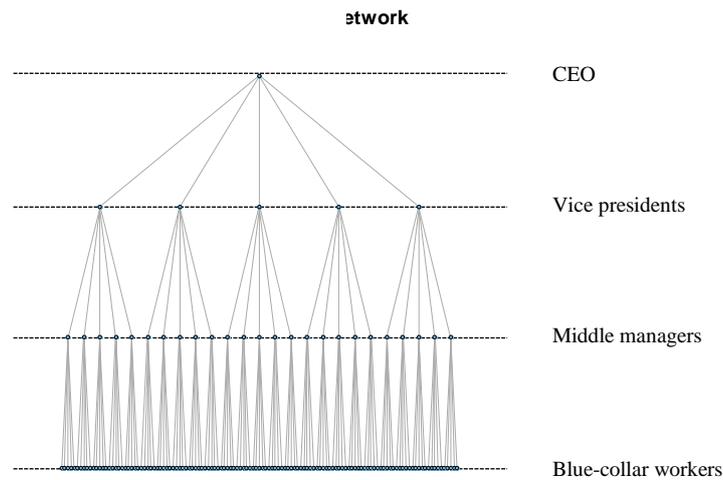
3.3.1. Organizational architecture: Formal (advice) & informal (friendship) network

The organizational architecture consists of both a formal and an informal network of the firm. We conceive the formal network as the outcome of an intentional design logic aimed at coordinating individual actions towards organizational objectives (i.e., hierarchical relationships), whereas the informal structure is interpreted as an emerging arrangement that is formed spontaneously from the interactions among employees (i.e., friendship relationships).

Formal (advice) network. The formal network resembles a firm's organigram that represents hierarchical work relationships. Each node in this network represents an employee who belongs to a unique hierarchical level and each edge represents a supervisor-subordinate relationship. We focus on the simplest hierarchical structure, a tree with an identical number of children for each parent node, which represents a pyramidal organization in which each supervisor is responsible for the same number of subordinates (the span of control is uniform). Figure 5 depicts an illustrative formal network.

The president or CEO oversees 5 vice-presidents, each of them supervises 5 middle managers who themselves supervise 5 blue-collar workers each. For the sake of simplicity, the top management team includes the CEO and all vice-presidents. Blue-collar workers are located at the bottom of the organizational pyramid while middle managers are located between the lower and upper levels of the hierarchy (Dutton & Ashford, 1993; Wooldridge & Floyd, 1990).

Figure 5: The formal network of a firm



Informal (friendship) network. The informal network represents friendship relationships. We entirely abstract from the advice and information-seeking functions that informal networks might also perform and deliberately focus on affect. In order to better understand how the configuration of the informal network impacts post-downsizing organizational performance, we assume that the hierarchical level allocates organizational status to employees, and that employees might form friendship relationships based on the hierarchical level. We therefore consider different configurations corresponding to different levels of status homophily (i.e., the extent to which friendship ties are limited to groups of employees of the same hierarchical level).

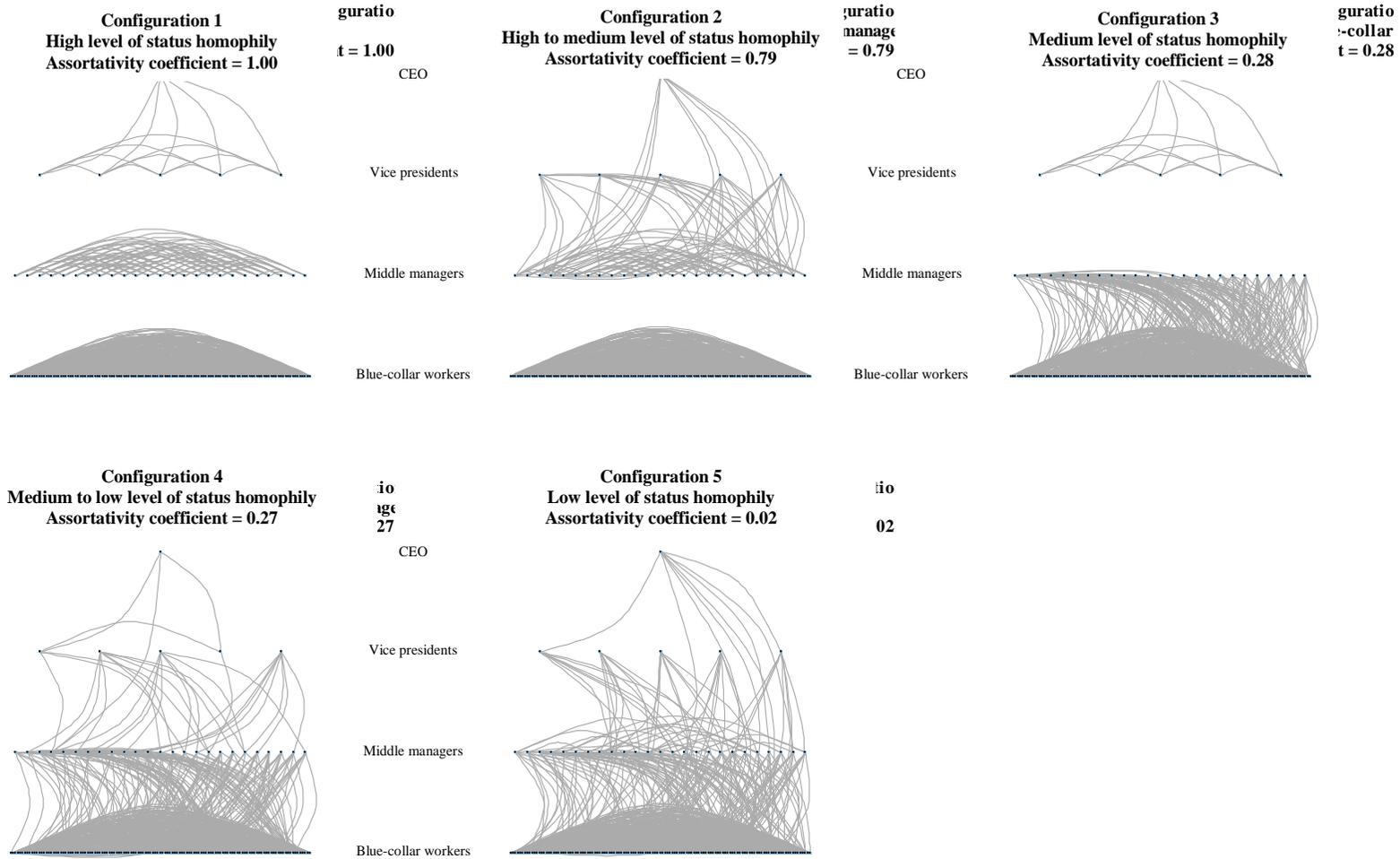
When status homophily is high, friendship relationships are restricted to the same hierarchical level and the friendship network consists of isolated clusters. Specifically, maximum status homophily means that middle managers only hold friendship relationships among each other. At the other extreme, when status homophily is minimal, friendship relationships are homogeneously distributed across all hierarchical levels and the friendship network is a uniform random graph spanning the entire organization. Between these two extremes, any intermediate situation can exist in which friendship ties cut across different

hierarchical levels. Although a tendency towards status homophily exists in most organizations (e.g., Carley, 1991; Lazarsfeld & Merton, 1954; McPherson & Smith-Lovin, 1987; Verbrugge, 1977), workers' mobility through internal promotion and targeted human resource policies (i.e., job rotation, training and coaching) allow for friendship relationships that go beyond hierarchical levels.

Together, we distinguish between five different informal network configurations characterized by different degrees of status homophily (see Figure 6). As a measure of status homophily, we use the assortativity coefficient of Newman (2002)³ which takes on positive values when connected nodes in a network tend to have the same status and negative values otherwise. In our context, the assortativity coefficient is 1 if employees only have friends at the same hierarchical level (high status homophily) and gets close to 0 if employees have friendship relationships across all hierarchical levels (low status homophily).

³ The assortativity coefficient is the Pearson correlation coefficient of the status value (employee class index) for all pairs of linked nodes.

Figure 6: Five informal network configurations with varying degrees of status homophily



3.3.2. Organizational processes

The core organizational process of our model is organizational learning. Following March (1991), the organization's objective is to discover a multi-dimensional reality. At any point in time, each employee holds a belief about each dimension of reality and a given processing capacity. We implement bi-directional learning in order to represent both top-down and bottom-up information flows. Each employee in a given level assesses the correctness of her belief (i.e., the distance between her belief and reality) as well as the correctness of the beliefs held by the individual employees in her reference group, and then adopts the belief closest to reality. Employees have a fixed processing capacity that in effect constrains the size of their reference group: an employee with more subordinates than she can process will only consider a (random) subset of subordinates whose size matches her capacity. While this plays no role before downsizing because span of control and capacity coincide, employees might have more subordinates than what their capacity permits in the post-downsizing organization. This implementation of bottom-up learning follows the hierarchical garbage can models of Padgett (1980) and Morgan and Carley (2012).⁴ Once bottom-up learning has taken place, we follow March (1991) and allow for a phase of socialization which is a specific learning process building on shared experiences. Our implementation is sequential, one level at a time starting from the top of the hierarchy and proceeding downwards, with employees partly adopting the belief of their supervisor regardless of the correctness of this belief.⁵ Moreover, the model also includes employee turnover and workforce downsizing as organizational processes. In the following, we further describe these organizational processes.

⁴ Several recent contributions based on March (1991) also have a form of interpersonal learning that differs from March's original centralized learning procedure (Fang et al., 2010; Miller et al., 2006; Schilling and Fang, 2014).

⁵ Whereas bottom-up learning works clearly towards improving the quality of the beliefs held in the organization, socialization forces adhesion to the values of the organization, regardless of their intrinsic correctness. Another interpretation is that subordinates do not question supervisor authority.

Learning and socialization. In the process of bottom-up learning, individual beliefs are filtered upwards with their accuracy gradually improving as learning proceeds from the bottom level of the hierarchy to its top. While all employees in the organization store knowledge, members of the top management team and middle managers also process knowledge (i.e., in terms of updating their beliefs through comparisons and active adaptations towards increased correctness).

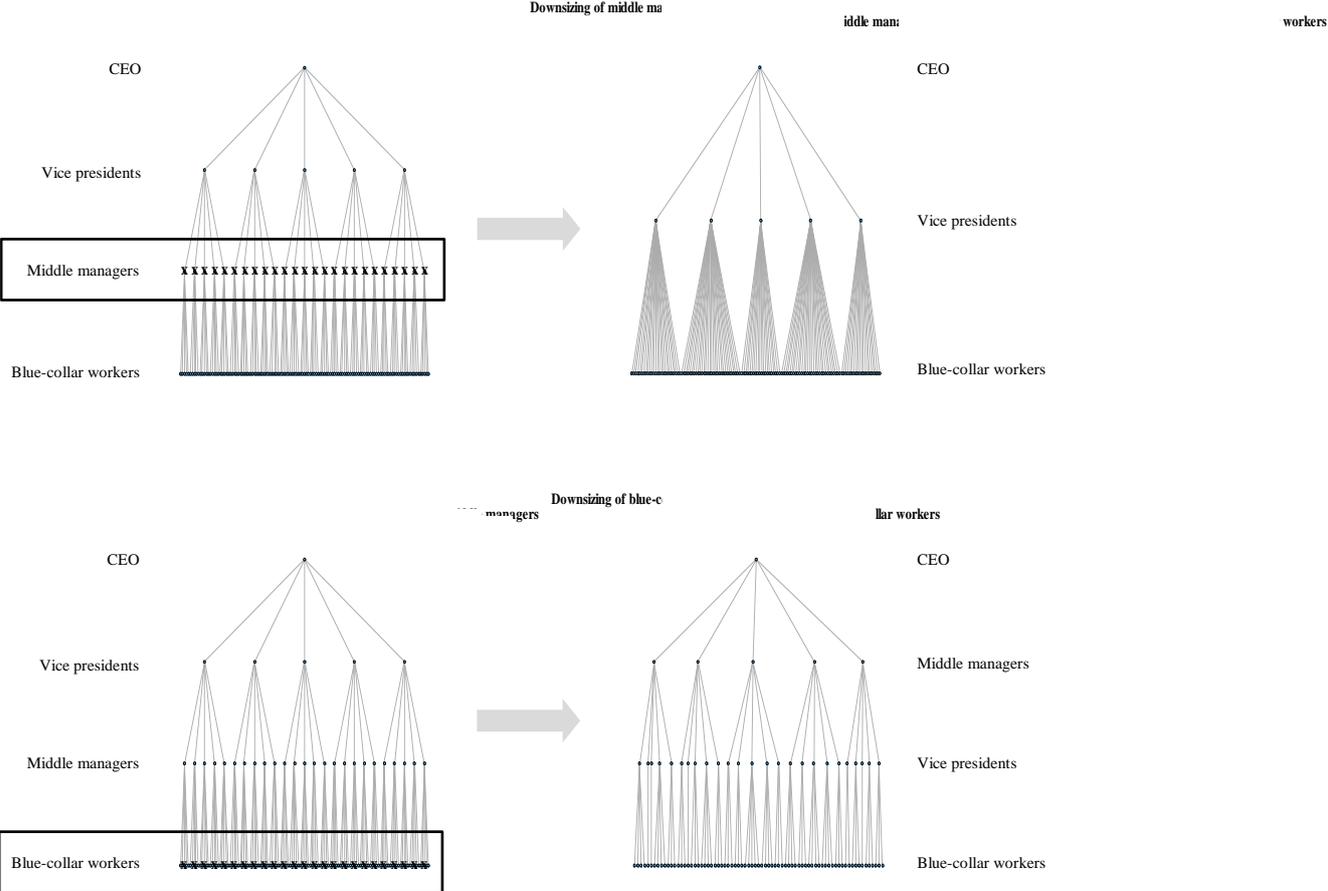
When an employee that processes knowledge learns, she selects a subset of her subordinates whose size matches with her capacity c and adopts with fixed probability $p_{bottomup}$ the belief held on every dimension of reality by the most accurate subordinate within that subset.⁶ This procedure starts with middle-managers, and is repeated for the vice presidents, and finally for the CEO of the organization. The value of bottom-up learning is obvious: beliefs are sequentially updated and transmitted upwards until the most accurate (at least in expected terms) belief reaches the CEO. Socialization operates the other way round. Starting with top management, each individual adopts with fixed probability $p_{topdown}$ the belief held on every dimension of reality by her supervisor. The value of socialization is to disseminate correct beliefs across organization so that the next round of bottom-up learning includes more accurate individual beliefs.

Employee turnover. Employee turnover refers to the process by which current employees leave the organization and are replaced by new individuals in the same organizational roles (March, 1991). The position left vacant by an outgoing employee is assumed to be filled with an incoming individual whose beliefs are randomly initialized, and whose processing capacity is identical to the initial value. The friendship ties of incoming employees are assumed to follow the status homophily patterns that have been described earlier, maintaining a constant density of the friendship network.

⁶ The most accurate subordinate is the subordinate who deviates least from reality. Deviation from reality is computed as the taxicab distance between the belief and reality vectors.

Workforce downsizing. Workforce downsizing refers to the reduction of the total number of employees (Cameron, 1994; Cascio, 1993). We model two downsizing strategies: delayering (i.e., the layoff of an entire layer of middle managers) and thinning (i.e., the layoff of workers located on the lowest hierarchical level). Following Cameron et al. (1991) and DeRue et al. (2008), we thereby contrast a redesign strategy that eliminates hierarchy and thus requires substantial structural restructuring (i.e., delayering) with a traditional workforce reduction strategy (i.e., thinning) that maintains hierarchy and implies fewer structural adaptation to a firm’s formal network. Figure 7 displays the pre- and post-downsizing formal networks for both downsizing strategies.

Figure 7: The formal networks in the aftermath of both downsizing strategies



The upper half of Figure 7 represents the case of delayering which results in a flatter formal network. The subordinates of the dismissed middle-managers directly report to the vice-presidents. The lower half of Figure 7 panel represents thinning. A four-level hierarchy remains still in place, but fewer blue-collar workers at the bottom level. In terms of their impact on the formal network, it is important to emphasize that both approaches lead to the same number of employees but a different overall processing capacity of the post-downsizing organization.

Workforce downsizing also impacts the informal network of surviving employees. As all friendship relationships of dismissed employees vanish, some survivors (if not all) are left with reduced options when seeking support and friendship. The loss of friends affects survivors' knowledge processing capacities (Shah, 2000) and therefore complicates organizational learning. We contrast two forms of the survivor syndrome: a moderate and a strong representation. In both cases, the affected survivors (i.e., the former friends of the laid-off employees) deviate from the strict principles of bottom-up learning.⁷ The moderate survivor syndrome entails confusion and we assume that confusion incentivizes individuals to select and learn from a random subordinate rather than the most accurate one. The strong survivor syndrome is a particularly negative reaction that makes survivors to undermine loyalty and commitment to the firm (Brockner et al., 2004), and intentionally select their less accurate subordinate for imitation (Schilling & Fang, 2014).

3.4. Experimental design

In order to remove as many spurious effects as possible, we adopt the following experimental design. Reality remains fixed for the entire experiment. Thus, we leave out the

⁷ In designing how bottom-up learning exactly deviates from affected survivors, we draw on Schilling's and Fang's (2014) conceptualization of information distortion.

possibility of turbulence considered by March (1991). If reality was permitted to change additionally to downsizing, we would not be able to properly disentangle these two effects.

Regarding the size of the organization, the pre-downsizing formal network is a tree with 4 levels and 5 subordinates per parent node.⁸ All 156 employees in the formal network are initially endowed with random beliefs in the set of $\{1, 2, \dots, 20\}$ in each of the 75 dimensions of reality and given an identical knowledge processing capacity ($c=5$). The pre-downsizing informal network is a random graph from one of the five status homophily configurations discussed in the previous section.

Several parameter values and specificities of the model need to be briefly commented upon. We allow for a much greater diversity of beliefs than March's original model (1990) by considering a 75-dimensional reality with 20 possible values for each dimension. Given these values, the performance of the learning model itself is remarkable when realizing that search takes place over a universe of 20^{75} candidate vectors (roughly 10^{97} elements) and the 95% congruence threshold is very seldom reached in more than 1,000 periods.

All five informal network configurations are generated according to the principles presented earlier, with an average number of 12 friends per employee that corresponds to a sparse friendship network (density of $12/155=7.7\%$). The span of control equals the individual processing capacity ($c=5$). The rate of bottom-up learning ($p_{bottomup}$) is set to 0.9, and the socialization rate ($p_{topdown}$) is set to 0.3. Three rates of employee turnover are considered: low=0.005, moderate=0.025 and high=0.15.

At any point in time, organizational performance is the relative congruence of the CEO belief (i.e., one minus the distance of the CEO to reality over the maximum distance from reality). The expected relative congruence of a random set of beliefs is computed to be equal to 67%, and when reality is discovered relative congruence is 100%.

⁸ Regarding the size of the organization, the span of control and the number of hierarchical levels, we have extensively explored alternative values and found no significant differences with the results presented below, absolute numbers vary but the properties we identify are qualitatively preserved.

The most relevant metric we use to evaluate how organizational learning evolves in the aftermath of downsizing is the hitting time of a rate of relative congruence of 95% (i.e., the period in which organizational performance first exceeds 95% in the aftermath of downsizing). In simple terms, the lower the hitting time, the higher the post-downsizing performance.

Further, we place an upper bound of 3,000 periods to keep the computational experiment within reasonable time limits. Downsizing takes place in period 50, a number for which the likelihood of reaching the 95% relative congruence threshold is negligible. For each parameter configuration, we generate 50 replications to ensure that our findings are representative of the average behavior of the system. We ran all of our simulation analysis in parallel on 50 cores of a computing cluster. This extensive computational capacity specifically allowed for ample testing and experimentation.

3.5. Results and analysis

As pointed out earlier, there are three main factors that explain performance outcomes of workforce downsizing applying an organizational learning perspective: (i) the position of downsized employees in the formal network, (ii) the distribution of friendship relationships among employees and (iii) the level of employee turnover in the aftermath of downsizing. In the following, we not only investigate the strength of each factor but also demonstrate how they interact and jointly determine organizational performance in the aftermath of workforce downsizing. We therefore begin investigating the influence of the formal network position of downsized employee by comparing the performance outcomes of two downsizing strategies.

3.5.1. Downsizing strategies

In the following, we investigate the performance outcomes of delayering (i.e., dismissal of all 25 middle managers) and thinning (i.e., dismissal of 25 blue-collar workers).

We also display the performance outcomes for an organization undergoing no downsizing (reference case).

To provide a first visual indication of the obtained results, Figure 8 displays time series plots of organizational performance for thinning, delayering and no downsizing given three levels of employee turnover. The hitting times for all three cases and the period of the downsizing event are indicated by vertical lines (see legend of Figure 8). The upper half of Figure 8 displays time series from the 1st period to the period in which the 95% threshold is hit (i.e., hitting time), whereas the lower half focuses on the post-downsizing periods only (i.e., starting from period 50). For low and moderate turnover, both downsizing strategies are significantly worse off than the non-downsizing organization. Given high employee turnover, the hitting times for thinning and the non-downsizing organization are virtually identical. For all three levels of turnover, thinning is preferable to delayering and the difference is particularly large when turnover is high.

While these time series only represent single runs, Figure 9 provides robust support of these findings by displaying boxplots of the hitting times pooled over 50 independent replications.⁹ As shown in Figure 9, the median hitting time in the case of delayering is consistently larger than for either thinning or the non-downsizing organization. The difference in median hitting times for delayering and thinning is particularly large given low and high turnover, and smallest for moderate turnover. Further, the median hitting time for thinning is always slightly larger than the median hitting time for the non-downsizing organization.

⁹ The notches extend to: $\pm 1.58 \times \frac{\text{Interquartile range (IQR)}}{\sqrt{n}}$. Notches are useful to display a simplified guidance to significance of difference of medians. If notches of two boxplots do not overlap, there is “strong evidence”, although not a formal test, that those two medians differ (Chambers, Cleveland, Kleiner & Tukey, 1983).

Figure 8: Time series plot showing the effects in the formal network

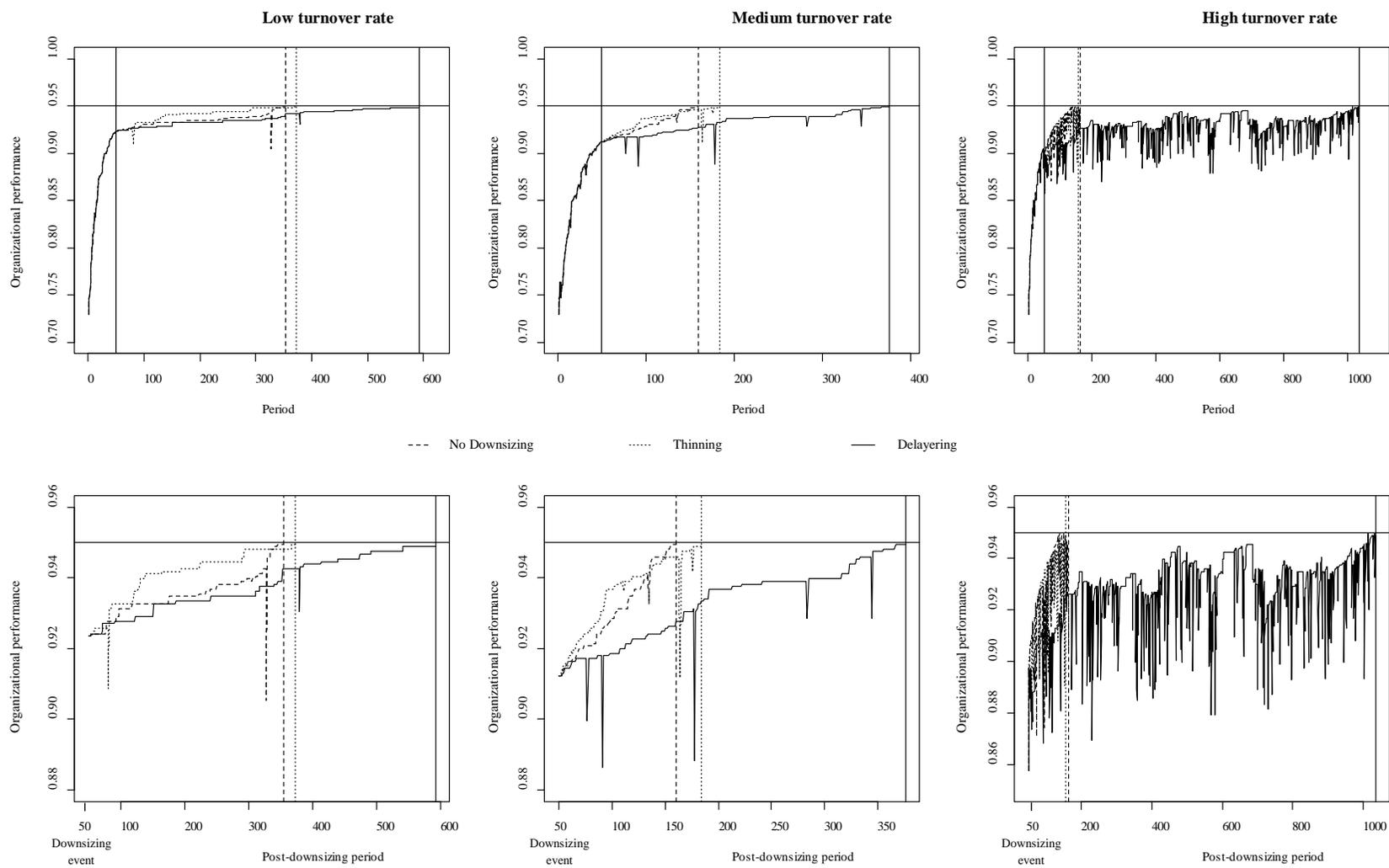
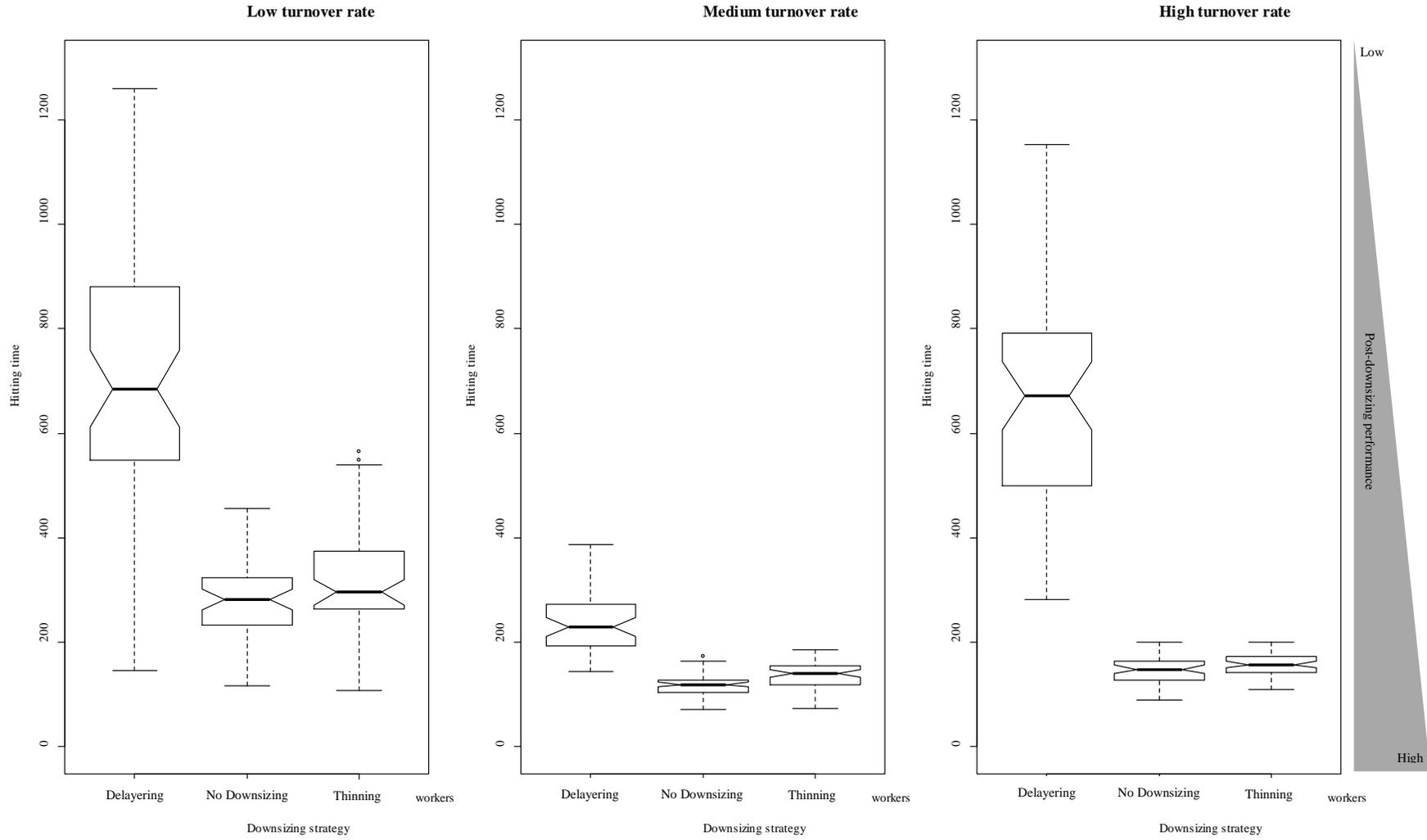


Figure 9: Boxplots of hitting times showing the effects in the formal network



Together, the above results clearly show that the two downsizing strategies lead to significantly different performance outcomes: thinning is preferable for all turnover rates. The key explanation is that blue-collar workers only hold knowledge whereas middle managers both hold and process knowledge. Middle managers acquire raw, unfiltered beliefs from their subordinates, assess their accuracy and adapt their own beliefs before they pass on their knowledge to vice presidents. Consequently, the firm loses parts of its aggregated knowledge processing capacity with fewer middle managers. Thus, median hitting times increase in organizations with fewer middle managers. Further, the results indicate that difference in performance between the downsizing strategies is smallest for a medium turnover rate (i.e., higher for low and high levels). Applying the organizational learning perspective, this means that an appropriate level of employee turnover compensates for negative effects from inhibited knowledge processing. Having discussed the influence of the formal network position of downsized employees, we next shed light on the influence of how friendship relationships among employees are distributed (i.e., a firm's informal network).

3.5.2. The influence of the informal network

Informal network disruptions are specifically important in order to understand performance outcomes of workforce downsizing as Shah (2000) found out that the survivor syndrome (i.e., reduced individual knowledge processing capacity) is particularly strong for survivors who lose friends. Consequently, knowing about who is friends with whom (i.e., a firm's informal network configuration) is specifically relevant. In order to structurally advance the discussion on performance outcomes induced by the survivor syndrome, we model five informal network configurations that are characterized by different levels of status homophily (i.e., the extent to which friendship ties are limited to groups of employees of the same hierarchical level) and two levels of severity of the survivor syndrome (i.e., moderate and strong, corresponding to confusion and intentional manipulation as described in the model section).

Figure 10 displays the boxplots of the hitting times given a moderate survivor syndrome as a function of employee turnover and status homophily in the informal network. In each plot, we also demonstrate the median hitting time obtained in the absence of a survivor syndrome as a solid horizontal line (reference case).

In the case of delaying (first row), the informal network configurations 1 and 3 lead to median hitting times that are identical to the reference scenario. For the informal network configurations 2, 4 and 5, the median hitting times are above the reference value for low and moderate levels of employee turnover. The pattern changes for high employee turnover as the median hitting time in the case of informal network configuration 2 is even smaller than the reference value, while the median hitting time of configuration 4 again exceeds this value. For configuration 5, the median hitting time is very close to the reference value.

In the case of thinning, the informal network configurations 3, 4 and 5 lead to larger hitting times given high turnover. While this pattern is also valid for configuration 3 and 4 given a low level of employee turnover, the median hitting time for informal network configuration 5 is even smaller than in the reference scenario. In the case of moderate turnover, the median hitting times of all three configurations are very close to the reference case.

Figure 11 displays the boxplots of the hitting times given a strong survivor syndrome as a function of employee turnover and status homophily in the informal network.

Figure 10: Boxplots of hitting times showing the influence of five informal network configurations given a moderate survivor syndrome

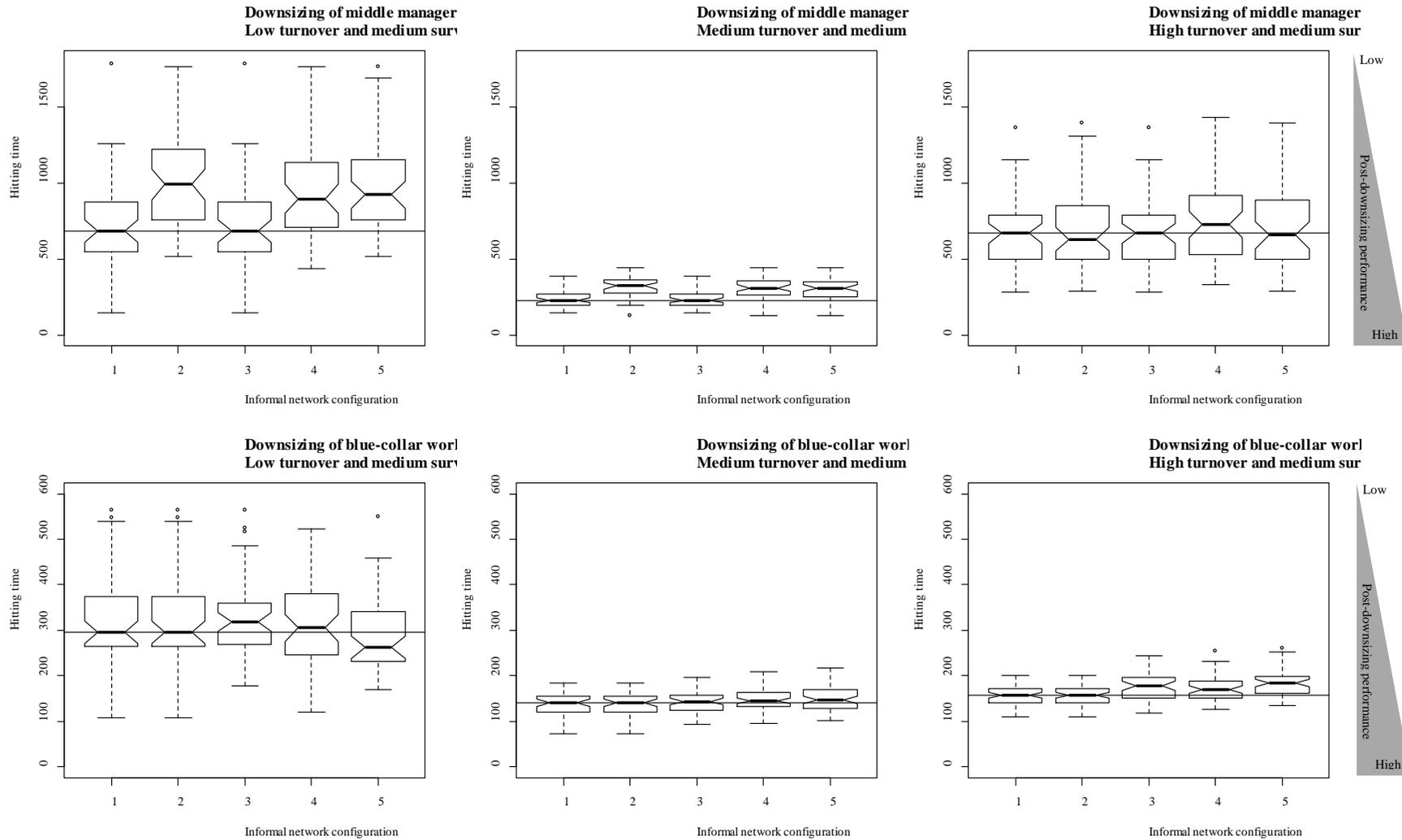
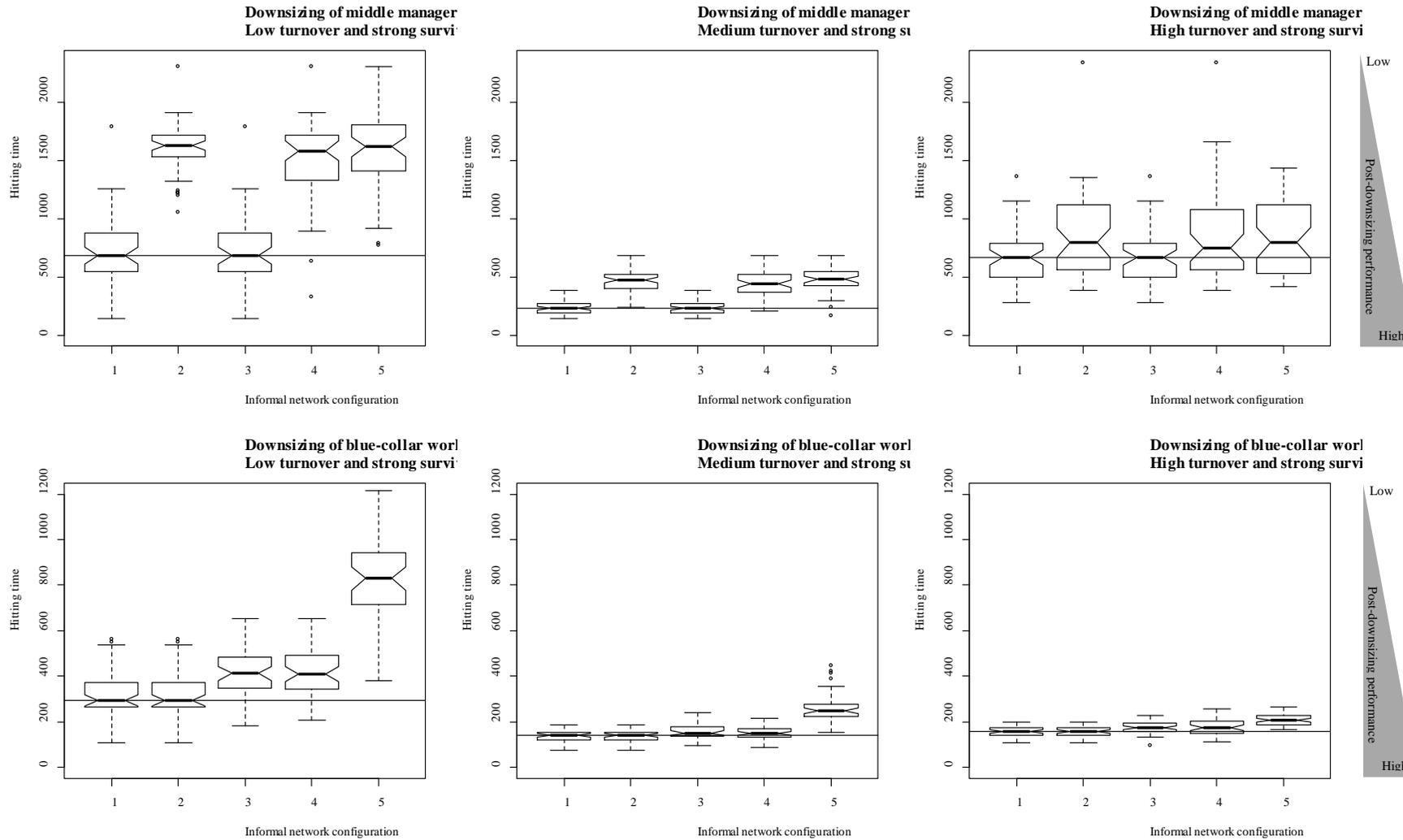


Figure 11: Boxplots of hitting times showing the influence of five informal network configurations given a strong survivor syndrome



In the case of delayering (first row), the informal network configurations 2, 4 and 5 lead to significantly larger hitting times than the informal network configurations 1 and 3. While this pattern occurs for all three levels of turnover, the difference between the median hitting times of these two groups of informal network configurations is particularly large given low employee turnover. Moreover, informal network configurations 1 and 3 lead to median hitting times identical to those in the reference scenario.

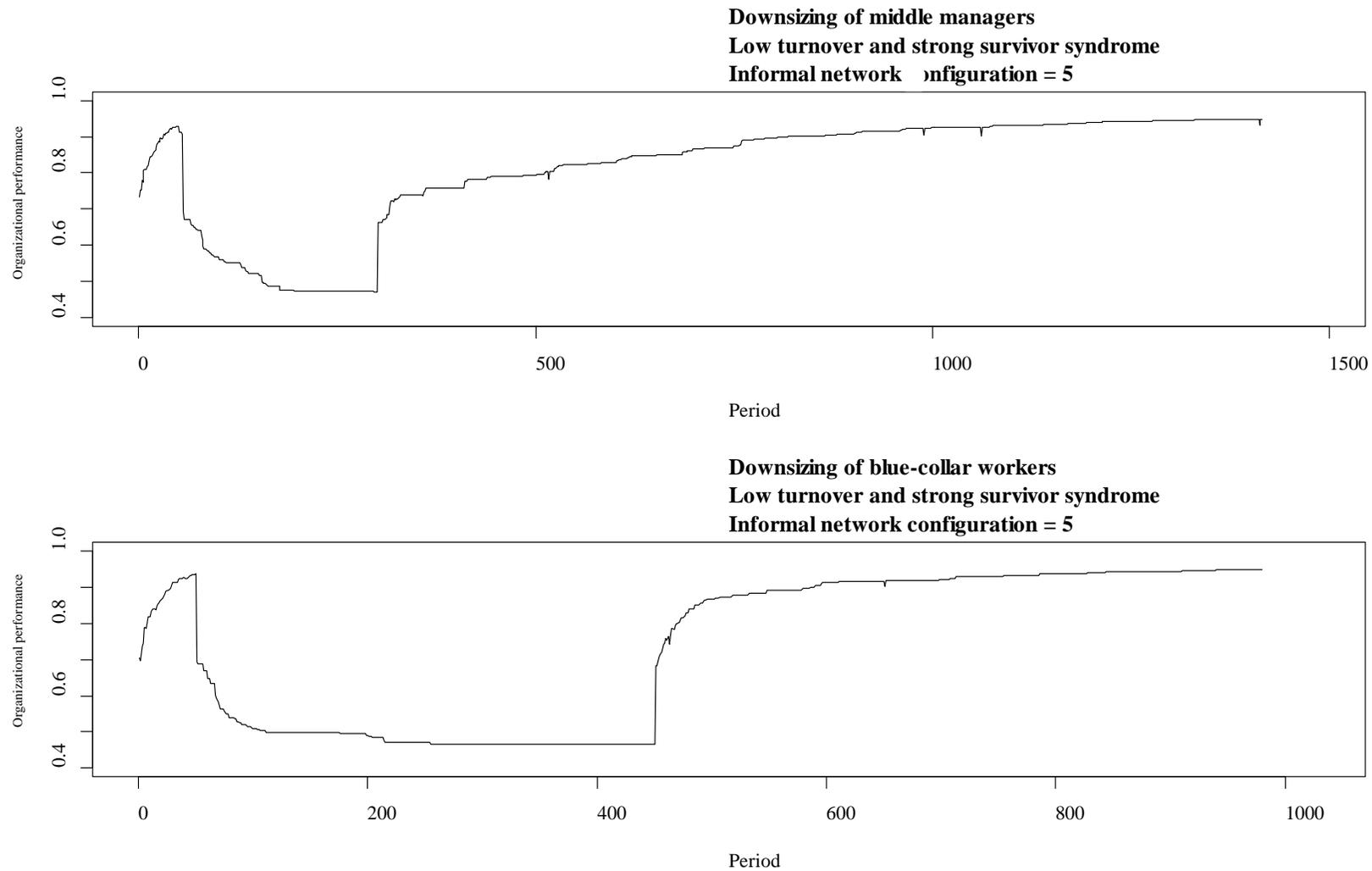
In the case of thinning, the informal configurations 3, 4 and 5 consistently lead to larger hitting times compared with the informal network configurations 1 and 2. The difference between these hitting times is largest for a low level of employee turnover while this difference significantly shrinks for moderate and high levels.

In order to further demonstrate how fundamental the impact of a strong survivor syndrome might be, Figure 12 displays time series plots for both downsizing strategies given informal network configuration 5 and low turnover. In both time series, organizational performance declines to 0.5 which is below the expected performance level of an organization whose behavior would be completely random.¹⁰ This is because employees that severely suffer from the survivor even induce adverse learning as they might select less accurate subordinates.

Together, we see that there are informal network configurations in which even a strong survivor syndrome does not affect performance adversely. This specifically occurs when the informal network is characterized by high levels of status homophily. The explanation is that all employees who are susceptible to the survivor syndrome are either themselves part of the layoff (as is the case for delayering) or incapable of processing knowledge in the first place (as is the case for thinning).

¹⁰ The expected relative congruence of a random set of beliefs is 67%.

Figure 12: Time series plot showing the influence of network configuration 5 given a strong survivor syndrome and low turnover



However, not all status homophily configurations render the firm immune to the survivor syndrome as we also find that organizational performance can substantially deteriorate given specific informal network configurations. In the case of delayering, informal network configurations 2, 4 and 5 deteriorate performance (see Figure 10). All three informal network configurations have in common that top managers (or at least some of them) are friends with laid-off middle managers. Thus, the individual knowledge processing capacity of top managers (i.e., employees who process knowledge) is negatively affected. In the case of thinning, performance outcomes also deteriorate for status homophily configurations 3, 4 and 5 because middle managers and/or top managers might have friends among the laid-off blue-collar workers. Again, employees who substantially process knowledge are plagued by the syndrome in all three cases. Additionally, this performance deteriorating effect increases when the syndrome moves higher in the hierarchy (compare configurations 3 and 5).

Lastly, we also find that performance outcomes might improve in the aftermath of downsizing given a moderate survivor syndrome. This takes place in two specific cases: (i) delayering given high turnover and informal network configuration 2 and (ii) thinning given low turnover and informal network configuration 5. Against the backdrop of how we model a moderate survivor syndrome (i.e., random adoption of beliefs regardless of their accuracy), we see that the preservation and transmission of erroneous beliefs sometimes improves performance. In other words, employees who suffer from a moderate survivor syndrome, because they preserve diversity and beliefs, represent a remedy for insufficient turnover. In other words, some amount of confusion can also serve as a substitute for employee turnover.

These findings therefore complement the initial results on the influence of the formal network and underpin the considerable influence of the informal network on performance outcomes of workforce downsizing. Further, these findings therefore emphasize that not only

the question on who is downsized but also the question on who is friends with whom determine how organizational learning evolves in the aftermath of downsizing.

3.5.3. The influence of increased employee turnover

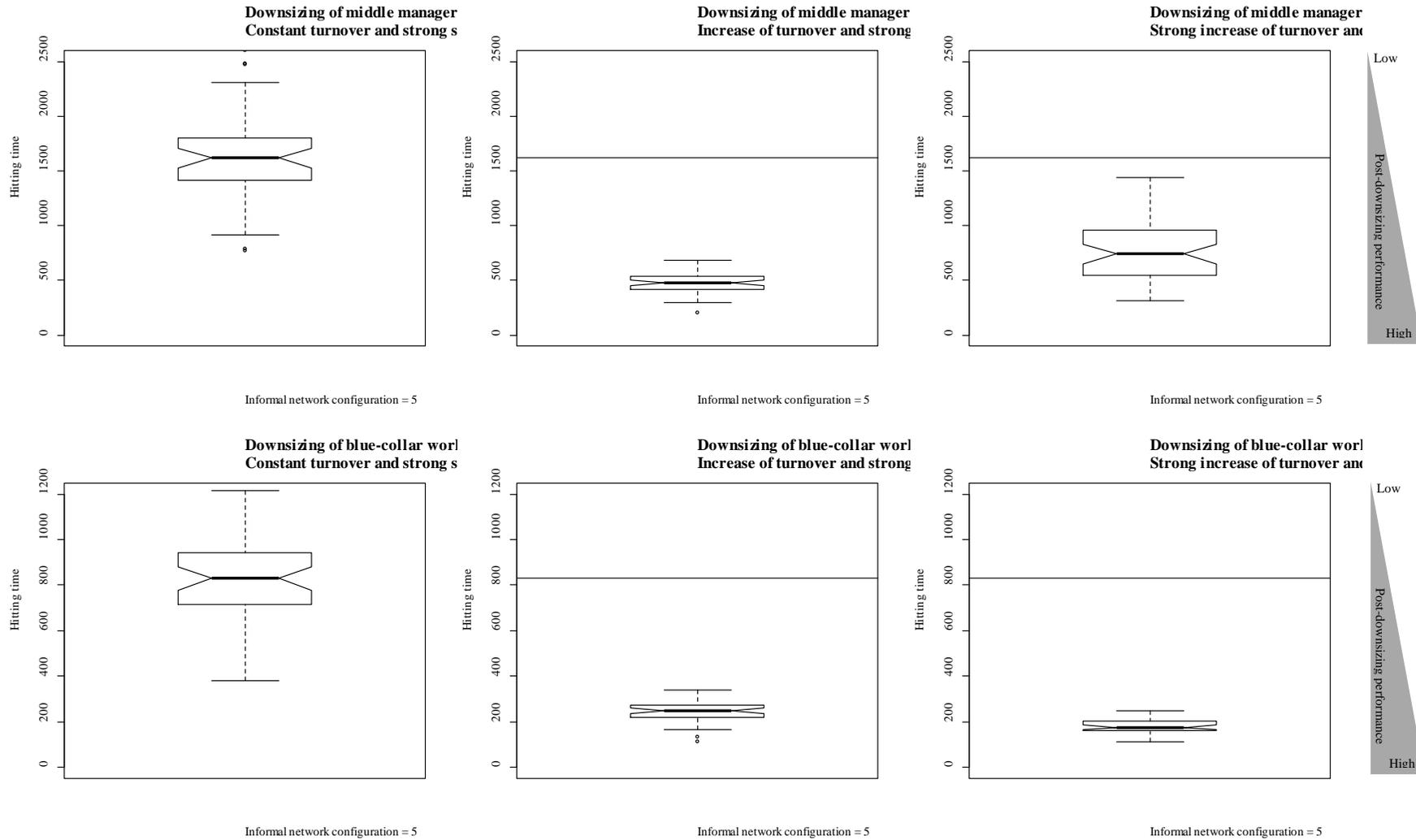
Another important implication of the survivor syndrome is that survivors tend to also leave the organization in the aftermath of downsizing (Trevor & Nyberg, 2008). Downsizing literature considers increasing levels of employee turnover an additional cost (e.g., Cascio, 2000; Sturman et al., 2003). From an organizational learning perspective, performance outcomes of (increasing) employee turnover though rather depend on to what extent firms manage to acquire and internalize novel knowledge.¹¹

In the following, we demonstrate performance outcomes of firms characterized by low levels of employee turnover prior to the downsizing event and an informal network configuration that allocates friendship relationships across all hierarchical levels (i.e., low status homophily, such as in network configuration 5) as these firms severely suffer from workforce downsizing and are particularly vulnerable to the survivor syndrome. Figure 13 displays the boxplots for the hitting times of the 95% congruence threshold for both downsizing strategies.

As shown in the first row, an increase from low to moderate levels of employee turnover leads to a lower median hitting time. A strong increase also decreases the median hitting time but not as much as a moderate increase. For thinning, the increases to moderate employee turnover as well as to high levels of employee turnover lead to a significantly lower median hitting time.

¹¹ It is worth emphasizing that although in this model turnover does not have an explicit cost, it does have a high implicit cost. Low turnover is good because it brings in novelty without destabilizing selection (thereby allowing an exhaustive search of the belief space) but large turnover rates imply the frequent dismissal and replacement of the knowledge processing employees who hold the most accurate beliefs. This renders search memoryless and makes learning almost impossible.

Figure 13: Boxplots of hitting times showing the influence of increased turnover



We therefore show that an increase of employee turnover can in fact help improving performance outcomes for two reasons. The first and intuitive reason is that increased turnover might help the firm reach a better level of diversity in its pool of beliefs that it had not reached before. The second and less intuitive reason is that an increase of employee turnover increases the likelihood that employees who severely suffer from the survivor syndrome are replaced by new employees whose knowledge processing capacity is not reduced.

Together, our results not only show how the disruptions of both organizational networks (i.e., a firm's formal and informal network) affect organizational learning subsequent to workforce downsizing but also that increased levels of employee turnover can help improving the effectiveness of learning. Building on these results, we next discuss both their theoretical and managerial implications.

3.6. Discussion and conclusion

This study adopts an organizational learning perspective by theoretically deriving and rigorously investigating factors that explain negative performance outcomes of workforce downsizing using a simulation approach. In a nutshell, there are three main factors: (i) loss of knowledge, (ii) disrupted knowledge flows and (iii) reduced knowledge processing capacities. While there is consensus that the extent of knowledge losses depends on the quality of the knowledge held by the employees leaving the firm, the latter two factors deserve a more precise understanding of the disruptions of organizational networks caused by workforce downsizing and individual outcomes of survivors.

In order to investigate how knowledge flow disruptions impact performance outcomes of workforce downsizing, we compare two structurally different downsizing strategies. We consider delayering as the downsizing of middle managers and thinning as the downsizing of blue-collar workers. As visualized by Figure 7, delayering implies that knowledge cannot

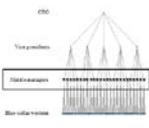
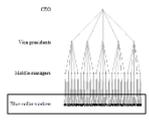
flow through the layer of middle managers anymore whereas the post-downsizing formal network in the case of thinning still includes this hierarchical layer. While our results show that workforce downsizing on average deteriorates organizational performance, we specifically find that thinning should be preferred as delayering leads to significantly worse performance outcomes. This finding thus contradicts the fact that downsizing a firm's middle managers in order to reduce redundancies and speed up decision-making has been a very prominent downsizing strategy in the recent past (Friedman et al., 2006; Littler et al., 2003; Shaw & Schneier, 1993; Wulf, 2012). At the same time, it underpins a specifically important contribution to the aggregated knowledge processing of a firm that middle managers are known for.¹² Their prominent role as knowledge brokers emerges from their hierarchical position as they connect upper and lower parts of a firm's hierarchy and thereby allow accurate bidirectional knowledge flows (Delmestri & Walgenbach, 2005). Thus, a firm without middle managers (i.e., in the aftermath of delayering) disrupts important knowledge flows while thinning leaves them intact and only lowers a firm's overall knowledge base due to the outflow of knowledge. In essence, our first finding specifically emphasizes the importance of middle managers as "linking pins" (Likert, 1961) and the value of their ability to both transform knowledge obtained from lower hierarchical levels into a valuable input for top management decision making, and disseminate the word of top management downwards again (e.g., Kanter, 1981; Nonaka, 1988; Wooldridge & Floyd, 1990; Wooldridge, Schmid, & Floyd, 2008).

We further draw on reduced individual knowledge processing capacities as another factor that explains negative performance outcomes of workforce downsizing applying the organizational learning theory. We therefore investigate how performance outcomes of workforce downsizing evolve given different informal network configurations. The essential

¹² Not all is positive about middle-management practices however, as it has also been identified that middle managers might also process and transmit knowledge in a way that favors their own career perspectives (e.g., Guth and MacMillan, 1986; Wooldridge and Floyd, 1990).

argument for why the configuration of a firm's informal network additionally contributes to a better understanding of performance outcomes of workforce downsizing draws on Shah (2000). The major finding of this study is that employees who lose friends through workforce downsizing suffer from a specifically strong survivor syndrome (i.e., lower levels of trust, commitment and loyalty). From an organizational learning perspective, the individual knowledge processing capacities of those employees (i.e., former friends of downsized employees) are thus reduced. In order to better understand the influence of the informal network, we investigate five informal network configurations that are characterized by different levels of status homophily (i.e., the extent to which friendship ties are limited to groups of employees of the same hierarchical level). The underlying rationale for why the level of status homophily is best suitable to describe different informal network configurations draws on sociology research suggesting that employees intuitively tend to have friends among colleagues (i.e., the same hierarchical level) (Carley, 1991; Lazarsfeld & Merton, 1954; McPherson & Smith-Lovin, 1987; Verbrugge, 1977) while various HR policies involving social events, training, job rotation and coaching initiatives might work against this tendency and additionally create friendship relationship between employees at different hierarchical levels. Our results indicate that, for both downsizing strategies, high levels of status homophily help mitigating negative performance outcomes induced by the survivor syndrome. However, we also find that performance outcomes can also be more negative for other informal network configurations (low and/or medium levels of status homophily). Table 5 summarizes the main findings regarding the performance outcomes given the combination of the downsizing strategy and the informal network configuration.

Table 5: Performance outcomes for given downsizing strategy and informal network configuration

Formal network	Downsizing strategy		Delaying	Negative (Very large increase of hitting time, up to + 150 %)	Positive (Immune to survivor syndrome)	Positive (Immune to survivor syndrome)
			Thinning	Negative (Very large increase of hitting time, up to + 150 %)	Negative (Large increase of hitting time, up to + 30 %)	Positive (Immune to survivor syndrome)
				Low	Medium	High
						
				Level of status homophily		
				Informal network		

Given a high level of status homophily (see right column of Table 5), those employees who are downsized are friends of one another. As an intuitive consequence, those employees who would severely suffer from the survivor syndrome (i.e., those employees with reduced knowledge processing capacities) also leave the organization. This essentially means that nobody is actually affected by the survivor syndrome given an informal network with a high level of status homophily. Thus, the performance outcomes for both downsizing strategies given high levels of status homophily are positive. This, however, changes with decreasing levels of status homophily. As shown in Table 5, the performance outcomes given thinning and low levels of status homophily are negative. This is because many employees who keep important knowledge flows intact (i.e., middle managers) are affected by the survivor syndrome and thereby again lower the effectiveness of these knowledge flows. As a result, the performance outcomes are negative for both downsizing strategies in this case. As middle managers again suffer from the survivor syndrome as a result of medium levels of status homophily, we find a significant difference between the performance outcomes for both

downsizing strategies. Consequently, the performance outcomes of thinning which has been shown to be the dominant downsizing strategy significantly deteriorate. This, however, does not happen in the case of delayering. Together, we thus show that performance outcomes of workforce downsizing not only depend on who is downsized (i.e., the downsizing strategy) but also on the information about who is friends with whom (i.e., the informal network configuration).

Lastly, we investigate how an increasing number of employees leaving the firm subsequent to workforce downsizing affect organizational learning. We thereby draw on the seminal finding by Trevor and Nyberg (2008) suggesting a positive relationship between workforce downsizing and employee turnover. Thereby, we question the common view that increased post-downsizing employee turnover is only a negative side effect of workforce downsizing, imposing additional costs related to employee replacement, training and outplacement (Cascio, 2000; Johnson, 1995; Sturman et al., 2003). From an organizational perspective, there is, however, no reason why increased employee turnover should systematically deteriorate performance as new employees might add new and valuable knowledge. Excessive levels of employee turnover might be detrimental though while certain levels of novel knowledge can significantly improve performance outcomes March (1991) though. Whether or not additional levels of employee turnover that result from workforce downsizing might improve performance outcomes seem to essentially boil down to the question on the extent to which firms manage to acquire and internalize novel knowledge. In fact, we can demonstrate that increased levels of employee turnover in the aftermath of workforce downsizing can improve organizational performance.

Together, our results underpin that performance outcomes of workforce downsizing specifically depend on three factors: the position of downsized employee in the formal

network, the distribution of friendship relationships among employees and the level of employee turnover in the aftermath of downsizing.

3.6.1. Theoretical implications

Our study contributes to organizational learning theory and research on the interplay and performance outcomes of both workforce downsizing and employee turnover. First, we specifically enrich the organizational learning perspective in explaining performance outcomes of workforce downsizing. Applying the organizational learning perspective, we discuss structural implications (i.e., organizational network disruptions) and individual outcomes (i.e., the survivor syndrome) workforce downsizing and thereby explain the existence of negative and positive performance effects. Drawing on these theoretical underpinnings, we use our simulation approach to investigate the strength of each effect as well as their interplay. We demonstrate that, in particular, disrupted knowledge flows resulting from network disruptions and reduced individual knowledge processing capacities of survivors can significantly lower organizational performance in the aftermath of workforce downsizing. Applying learning-based explanations, our simulation results thereby provide a sound underpinning for the existence of negative performance outcomes of workforce downsizing. However, our study goes beyond this as we also demonstrate how and why workforce downsizing might be also be associated with subsequent performance improvements. Again applying the organizational learning perspective, we identify increased employee turnover in the aftermath of workforce downsizing as a means to acquire and internalize novel knowledge in order to (over)compensate for negative effects. The seminal finding on increasing levels of employee turnover subsequent to workforce downsizing by Trevor and Nyberg (2008) specifically underpins the relevance of this potential performance improving effect. Together, our simulation approach demonstrates that the learning-based perspective specifically contributes to resolve the ambiguity of findings on performance outcomes of workforce downsizing.

Further, we add to research on the interplay and performance outcomes of both workforce downsizing and employee turnover. Following the call for more research on this interplay by Hancock et al. (2013), we advance the finding by Trevor and Nyberg (2008) on increased levels of employee turnover in the aftermath of workforce downsizing. Our simulation approach allows isolating the performance effect of employee leaving because of previously conducted job cuts which seems very challenging an empirical setting. Finding that the increasing tendency of employees to leave the organization as a consequence of workforce downsizing might help improving organizational performance, we essentially address research gaps of two literature streams (i.e., outcomes of employee turnover and workforce downsizing). Our learning-based explanations underpin how and why performance outcomes of employee turnover subsequent to workforce downsizing can be positive supporting and thereby questioning the general assumption that the turnover-performance relationship is straightforwardly negative (Hancock et al., 2013; Hancock, Allen, & Soelberg, 2017). In other words, our simulation approach allows investigating how a specifically relevant individual outcome of workforce downsizing (i.e., a survivor's decision to also leave the organization) affects organizational performance contributing to an advanced understanding of the outcomes of employee turnover (Allen, Hancock, & Vardaman, 2014). We therefore relate individual and organizational outcomes of workforce downsizing by demonstrating a specifically strong mediating influence of increased levels of employee turnover in the aftermath of workforce downsizing.

3.6.2. Practical implications

Our study also offers several important managerial insights. Our study cautions managers to underestimate negative effects on organizational learning in the aftermath of downsizing. While we clearly find negative performance outcomes for downsizing organizations compared with non-downsizing organizations (see Figure 9), our study explains the exact mechanisms for why and how organizational learning is negatively affected and

these mechanisms formulate practical implications. First, cutting at the upper half of a firm's hierarchy (e.g., delayering) leads to adverse implications for organizational learning that go beyond knowledge losses. Delayering disrupts essential knowledge flows that might be very complex and costly to re-establish. From an organizational learning perspective, cutting at the bottom of a firm's hierarchy seems preferable as most of the essential knowledge flows are kept intact. We therefore question the positive view on delayering as a downsizing strategy that might come with faster decision-making, less redundancies and more organizational agility (e.g., Friedman et al., 2006; Shaw & Schneier, 1993; Wulf, 2012).

Moreover, our findings on status homophily imply that managers have two ways to develop or restructure informal networks in order to mitigate negative performance outcomes induced by the survivor syndrome. First, high levels of status homophily seem to be a dominant strategy. This is because high levels of status homophily imply clustered networks (i.e., network in which friends of an employee tend to be also friends with one another) and employees who are members of these clusters might be downsized without any negative effect of the survivor syndrome among friends. In essence, this speaks for a positive ring-fencing effect which has also been shown to be positive for divestitures of entire units (e.g., Laamanen, Brauer, & Junna, 2014). Second, the information on both the informal network configuration and the used downsizing strategy need to be aligned. This is because we find that medium levels of status homophily can also be helpful when firms delayer but might deteriorate performance for firms that cut at the lower end of the hierarchy (see Table 5).

3.6.3. Limitations and suggestions for future research

While our simulation approach allows elaborating on non-trivial learning-based explanations for negative performance outcomes of workforce downsizing (i.e., disrupted knowledge flows, reduced individual knowledge processing capacities) by isolating effects from different organizational networks, by decoupling workforce downsizing and employee

turnover as well as by incorporating different strengths of the survivor syndrome, an empirical testing might come with greater generalizability and less parameters to be specified.

In terms of model refinements, we believe that the modeling of employee turnover could deserve a more detailed treatment. Our simulation model could be modified to incorporate various onboarding procedures leading to different, evolving patterns of friendship relationships in the pre- and post-downsizing phases. For example, we think of specific onboarding strategies that exclusively allocate friendship relationship at specific hierarchical levels and thereby explicitly generate certain levels of status homophily. Such modifications, however, will come at the cost of additional complexity of the model and could therefore complicate to again properly disentangle various effects from one another.

4. DETERMINANTS AND PERFORMANCE IMPLICATIONS OF TURNAROUND DURATION

(This chapter is based on a paper co-authored by Matthias Brauer)

4.1. Introduction

Research on organizational decline and turnaround management focuses on explaining why and how some firms are more effective in reversing organizational declines than others (see Trahms et al., 2013 for a review). Building on the seminal turnaround model by Pearce and Robbins (1993) and more recent extensions (Trahms et al., 2013), scholarly contributions widely agree that turnaround success is predominantly influenced by how managers perceive and interpret the organizational decline as well as the extent to which firms engage in turnaround actions (e.g., Anand & Singh, 1997; Arogyaswamy et al., 1995; Barker & Duhaime, 1997; Barker & Mone, 1994; Lim, Celly, Morse, & Rowe, 2013; Morrow et al., 2004; Morrow, Sirmon, Hitt, & Holcomb, 2007; Ndofor et al., 2013; Sudarsanam & Lai, 2001; Trahms et al., 2013). Managers' perceptions and interpretations of the organizational decline are primarily shaped by its extent of severity (Musteen et al., 2011). Turnaround actions comprise of two major types: retrenchment actions that are largely exploitative in nature and involve physical and human asset reductions to improve operational efficiency and recovery actions that are largely explorative in nature, aiming at strategic repositioning via changes in product diversification scope or CEO replacements (e.g., Barker & Duhaime, 1997; Pearce & Robbins, 1993).¹³

Though there is broad consensus and evidence that managerial cognition and turnaround actions are central to turnaround processes, a critical review of the literature reveals that research on the determinants of turnaround outcomes is plagued by inconsistent

¹³ Hence, retrenchment actions have also been labeled operational actions and recovery actions have been labeled strategic actions (e.g., Trahms et al., 2013).

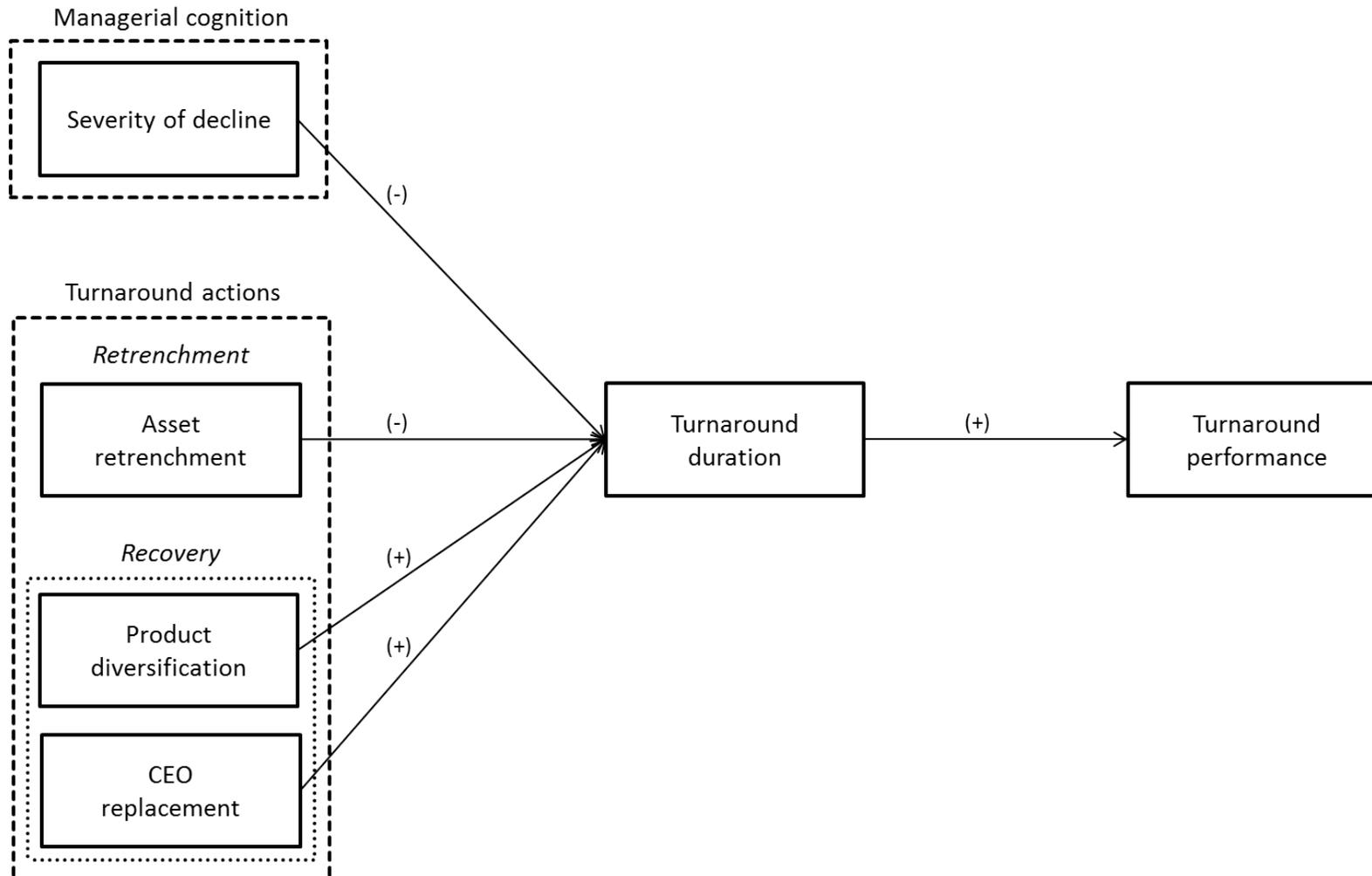
findings. Extant research on turnaround management provides insufficient knowledge on the exact role of managerial cognition. For example, some studies argue that the perception and interpretation of the severity of declines determine turnaround outcomes (e.g., Francis & Desai, 2005) and other scholars suggest that the severity of performance declines is associated with the type of turnaround action that is implemented (e.g., Musteen et al., 2011). In the same vein, prior work on the effectiveness of turnaround actions seems ambivalent. Some studies find that retrenchment actions improve firm performance (e.g., Bruton et al., 2003), others present evidence for negative effects of retrenchment actions on turnaround outcomes – both in terms of lower financial performance as well as losses in human and social capital (e.g., Morrow et al., 2004; Ndofor et al., 2013; Pennings et al., 1998). Again other studies find no significant effect of retrenchment actions on turnaround performance (e.g., Barker & Mone, 1994; Castrogiovanni & Bruton, 2000). Against the backdrop of these inconsistencies, requests for a more detailed understanding of the perception and interpretation of organizational declines and greater sensitivity to contingency effects have been voiced to more accurately determine the performance implications of retrenchment and recovery actions in turnarounds (Trahms et al., 2013).

With our study, we aim to extend both very limited prior work on the role of managerial cognition and research on critical contingencies governing the effectiveness of retrenchment and recovery actions in turnarounds. However, in contrast to prior work we draw attention to turnaround duration as an important contingency factor that may mediate the relationship between managerial cognition as well as two major types of turnaround actions (i.e., retrenchment, recovery) and turnaround outcomes. Our primary focus on turnaround duration as an important characteristic of turnaround processes is motivated by a number of factors. First, related research on portfolio restructuring (i.e., acquisitions, divestitures) has shown that greater attention to the temporal dynamics of restructuring activity might offer

both more accurate and useful explanations for disparate restructuring outcomes (e.g., Brauer & Wiersema, 2012; Shi & Prescott, 2011; Shi, Sun, & Prescott, 2012). Second, the most recent research efforts on turnarounds have provided initial evidence that attention to temporal dynamics can help generate more accurate insights on the effectiveness of turnaround actions and turnaround outcomes (Schmitt & Raisch, 2013; Tangpong et al., 2015). Third, time pressure and duration are common building blocks of definitions of organizational crises. Specifically, organizational crises have been argued to involve major goal reorientation and “time pressured change relative to standard operating procedures” (Combe & Carrington, 2015: 308; Mumford, Friedrich, Caughron, & Byrne, 2007; Williams, Pillai, Deptula, & Lowe, 2012). By incorporating the perception and interpretation of the severity of performance declines, we specifically investigate the role of time pressure in turnaround situations. Though there is no doubt that time pressure is central to turnaround processes, we hold very little knowledge on how this relates to turnaround outcomes and more generally our scholarly understanding of what determines turnaround duration, and how turnaround duration influences outcomes is specifically underdeveloped.

Building on this motivation, our study seeks to better understand turnaround duration by addressing two major issues: First, we examine the relationships between managerial cognition as well as turnaround actions (i.e., retrenchment and recovery) and turnaround duration. Second, we analyze how turnaround duration relates to turnaround performance and whether turnaround duration mediates the relationship between recovery/retrenchment actions and turnaround performance. Figure 14 provides an overview of our research model and the suggested direct and mediating effects.

Figure 14: Research model



Empirical findings derived from the analysis of a multi-year (1988-2015), large scale, cross-industry sample of declining firms suggest that recovery actions (i.e., expansions of diversification scope and CEO replacements) are associated with longer turnaround duration. On the other hand, we find a negative relationship between firms' severity of decline and turnaround duration. Importantly, our study's findings further suggest that turnaround duration is positively associated with turnaround performance. Interestingly, our mediation analyses also reveal that recovery actions do not have a direct effect on turnaround performance. Instead, turnaround duration is found to fully mediate the relationship between these frequently applied turnaround actions and turnaround performance, suggesting that their effect on turnaround performance is time-dependent. Thereby, our study offers an explanation for the failure of prior studies to generate consistent results on the effectiveness of recovery actions in turnarounds. In contrast and counter to our initial predictions, we further find that turnaround duration does not mediate the relationship between asset retrenchment and turnaround duration. Instead, we find that asset retrenchment is positively related with turnaround success regardless of the duration of the turnaround process. Moreover, we find an inconsistent mediation regarding the severity of declines suggesting that more severe declines lead to shorter turnaround duration and thus lower turnaround performance while more severe declines, on average and independent from turnaround duration, are directly associated with greater turnaround performance.

Collectively, our study's focus and findings contribute to organizational decline literature and organization theory in several ways. First, the consideration of turnaround duration allows us to inform the ongoing, controversial discussion on the effectiveness of retrenchment and recovery actions in turnaround processes (e.g., Robbins & Pearce, 1992; Schmitt & Raisch, 2013; Sudarsanam & Lai, 2001; Trahms et al., 2013). Most importantly, we demonstrate that retrenchment and recovery have disparate effects on both turnaround

duration and performance. Recovery actions are associated with longer turnaround duration. Further, turnaround duration is found to fully mediate the relationship between these frequently applied turnaround actions and turnaround performance, suggesting that their effect on turnaround performance is time-dependent. In contrast, asset retrenchment is found to be an effective means to achieve turnaround success regardless of the duration of the turnaround process. Collectively, these insights help partially resolving the ambiguity that has plagued prior work on the effectiveness of recovery and retrenchment actions in turnaround processes, with some studies finding positive effects, and others finding negative or non-significant effects.

Second, we extend organizational decline and turnaround literature by introducing a temporal perspective on turnaround processes. By viewing turnaround duration as a mediating factor, we break with the established logic and research approach of prior work that has exclusively attempted to unravel direct linkages between retrenchment/recovery actions and turnaround success. In doing so, our study not only helps partially resolving the equivocal findings on the effectiveness of retrenchment and recovery actions but also enriches extant theorizing on turnarounds by introducing a temporal perspective that draws on insights from (behavioral) decision theory and strategic decision-making process literature.

Third, our findings contribute to a better understanding of the role of managerial cognition in turnaround management research. By thoroughly interpreting the inconsistent mediation regarding the severity of decline, we underpin that the perception and interpretation of the severity of decline resulting in corresponding levels of urgency might lead to two contrary effects. In some cases, it might speed up managerial decision making and thereby lower the underlying effectiveness while we also find that more severe decline and thus higher levels of the implied urgency, on average and independent from turnaround duration, increases the effectiveness of turnaround outcomes. This seems to point to a motivational

component which might also arise from high-pressure situations. We therefore complement research on the complex role of managerial cognition in turnaround management research by showing that the perception and interpretation of organizational decline can determine both speed and effectiveness of managerial decision making.

The remainder of the paper is organized as follows. In the following, we discuss prior turnaround research and develop our mediation model. Next, we present our empirical design and the results of our empirical analyses. We then discuss our findings and their theoretical and practical implications. We conclude with an outline of our study's limitations and resulting avenues for future research.

4.2. Background and hypotheses

Research on organizational decline and turnaround management focuses on understanding why and how some firms emerge stronger than others subsequent to a period of severely declining firm performance. A review of past work in this domain shows that conceptual and empirical findings are largely consistent in showing that managers' awareness, perception and interpretation of the organizational decline (i.e., response factors) and their actual action repertoire to reverse organizational declines (i.e., turnaround actions) determine turnaround outcomes (see Trahms et al., 2013).

Extant research on response factors suggests that managers' ability to identify the true cause(s) of decline paired with their ability to accurately assess its severity are necessary preconditions to effectively manage a firm's turnaround (e.g., Arogyaswamy et al., 1995; Barker & Patterson, 1996; Ford, 1985; Pearce & Robbins, 1993; Trahms et al., 2013). In this vein, past work has argued and found that managers often lack awareness, and are thus late to respond to organizational decline (e.g., Dranikoff, Koller, & Schneider, 2002; Ravenscraft & Scherer, 2011). Further, in their interpretation of causes for decline managers have been shown to have the tendency to attribute decline to external factors (e.g., Barker & Patterson,

1996; Olson, Van Bever, & Verry, 2008). This tendency has been found to be particularly pronounced for longer-tenure top management teams (Barker & Patterson, 1996). Lastly, the severity of decline has been argued to constitute an important determinant of managerial cognition and behavior. Specifically, the severity of decline has been argued to increase managerial awareness as well as heighten their sense of urgency in taking action (e.g. Sudarsanam & Lai, 2001). Further, managers tend use the severity of declines in order to form urgency levels that underlie their decision making und action taking (e.g., Francis & Desai, 2005; Kiesler & Sproull, 1982; Musteen et al., 2011). However, extant research has not yet shown the exact role of the perception and interpretation of the severity of declines as there is no consensus about whether the severity of decline is a determinant of the choice of turnaround actions or turnaround outcomes. For example, Francis and Desai (2005) argue and find that there is negative relationship between the severity of decline and turnaround outcomes suggesting that less severe performance decline can more effectively be reversed than sharper performance drops. In conceptual contrast to that, Musteen et al. (2011) suggest a positive relationship between the perceived severity of firm decline and the extent of retrenchment activity in response.

While extant research on response factors has tried to better understand managerial cognition in turnarounds and hence their responsiveness to organizational decline, research on turnaround actions has primarily focused on identifying the most widely applied managerial practices to address organizational decline and their effectiveness. Prior work has identified two types of action repertoires: retrenchment and recovery (e.g. Morrow et al., 2004; Morrow et al., 2007; Ndofor et al., 2013; Pearce & Robbins, 1993; Schmitt & Raisch, 2013; Trahms et al., 2013). Retrenchment actions are exploitative in nature and mainly involve physical and human asset reductions to improve operational efficiency (Ndofor et al., 2013; Trahms et al., 2013). In comparison, recovery actions are explorative in nature, involving strategic

repositioning via product diversification and CEO replacements (e.g., Barker & Duhaime, 1997; Pearce & Robbins, 1993).

Though there is broad consensus in the literature that recovery and retrenchment actions resemble the action repertoire of managers during turnaround processes, inconsistencies and ambivalent findings have plagued work on the effectiveness of these two types of turnaround actions. In particular, research on the effectiveness of retrenchment actions has produced highly ambiguous findings. While some studies find that retrenchment actions improve firm performance (e.g., Bruton et al., 2003), others present evidence for negative effects of retrenchment actions on financial performance and a firm's resource base (i.e., losses in social and human capital) (e.g., Morrow et al., 2004; Ndofor et al., 2013; Pennings et al., 1998). Some other studies even find no significant effect of retrenchment actions on firm performance (e.g., Barker & Mone, 1994; Castrogiovanni & Bruton, 2000).

Collectively, prior work shows that previous research efforts that have tried to directly relate turnaround actions with turnaround outcomes have failed to generate a consistent pattern of results. As highlighted by some studies (e.g., Barker & Duhaime, 1997; Moulton, Thomas, & Pruett, 1996; Wan & Yiu, 2009), greater sensitivity to industry, firm and managerial characteristics might prove useful to produce more generalizable findings. With our study, we would like to extend this important work on critical contingencies governing the effectiveness of retrenchment and recovery actions in turnaround processes. However, in contrast to prior work we would like to draw attention to temporality (i.e., turnaround duration) as an important contingency factor that may mediate the relationship between how managers perceive and interpret the severity of declines as well as the two major types of turnaround actions (i.e., retrenchment, recovery) and turnaround outcomes. Our primary focus on turnaround duration as an important characteristic of turnaround processes is motivated by a number of factors. First, related research on portfolio restructuring (i.e., acquisitions,

divestitures) has shown that greater attention to the temporal dynamics of restructuring activity might offer far more accurate and useful explanations for restructuring outcomes (e.g., Brauer & Wiersema, 2012; Shi & Prescott, 2011; Shi et al., 2012) and outcomes of organizational change more generally (see Kunisch, Bartunek, Mueller, & Huy, 2017 for a comprehensive review). Second, most recent research efforts on turnarounds have provided initial evidence that attention to temporal dynamics can help generate more accurate insights on the effectiveness of turnaround actions and turnaround outcomes. Specifically, Tangpong et al. (2015) use a matched pair sample of 96 US firms and find that early retrenchment actions are more effective than late retrenchment actions. We believe that insights on turnaround duration help extend knowledge on the sequencing of turnaround actions.¹⁴ Third, considering turnaround duration also allows better understanding the exact role of managerial cognition. Decision theory specifically suggests that urgency levels which essentially stem from the perception and interpretation of the severity of declines determine decision making speed that corresponds with the time it takes to turnaround declining firm performance. Fourth and more generally, turnaround duration is a factor of utmost importance to managers as well as other key stakeholders (i.e., employees, creditors, investors) involved in the turnaround process. The importance granted to turnaround speed is intuitive as employee morale and thus overall productivity are likely to decline even further if turnaround processes drag out for long. Similarly, creditors and investors may lose patience, and deny further extensions of credit lines or capital injections in dragged out turnaround processes. In contrast, very swift turnaround processes may come at the cost of less sustainable and lower performance improvements in the post-turnaround period. Yet, our scholarly understanding of

¹⁴ At the same time, we see an advantage in focusing on turnaround duration rather than sequence because studies on action sequences (or rhythm) rely on the debatable assumption that organizations follow an explicit and deliberate order in their activities (see Kunisch et al., 2017 for a discussion). Moreover, prior work on turnarounds has criticized that retrenchment and recovery actions in fact are taken concurrently rather than sequentially (Arogyaswamy et al., 1995).

what determines turnaround duration, and how turnaround duration influences outcomes is underdeveloped.

Against the backdrop of the ambiguity of past findings on managerial cognition and turnaround actions as well as the neglect of prior conceptual and empirical work to consider turnaround duration, our work investigates how both the severity of declines and turnaround actions (i.e., retrenchment vs. recovery) relate to turnaround duration. In a subsequent step, we then examine how turnaround duration links to turnaround performance and whether turnaround duration mediates the relationship between retrenchment/recovery actions and turnaround outcomes.

4.2.1. Managerial cognition and turnaround duration

As outlined before, turning around performance declines depends on how managers perceive and interpret the severity of such declines (Musteen et al., 2011; Pearce & Robbins, 1993; Sudarsanam & Lai, 2001; Trahms et al., 2013). More precisely, we though argue the perception and interpretation of how severe declines are initially impact how fast managers make decisions. We therefore draw on research on decision making speed suggesting that decision making speed increases with the urgency under which decisions are made and argue that the perception of the severity of declines forms such urgency levels (Perlow, Okhuysen, & Repping, 2002).

Severe performance declines not only indicate that current strategies and/or resources are not sufficiently effective but also signal managers that change is inevitable (Chowdhury & Lang, 1993). More severe declines heighten managers' sense of urgency as the general range of actions becomes limited and very detailed analyses underlying lengthy decision making processes might come at the cost of bankruptcy (Robbins & Pearce, 1992). As a consequence, managers feel specifically pressured to reverse declining firm performance, seek for "quick fixes" and therefore engage in only sufficiently effective, but most importantly, fast decision making. Therefore, they tend to ignore and simplify information, for example about the true

causes of decline, for the sake of fast decisions (e.g., Duhaime & Schwenk, 1985; Schwenk, 1984). Further, such decision making processes typically draw on lower information densities with the effect that only crucial information is incorporated and more detailed or even redundant information is consciously excluded. Together, we argue that very severe performance declines increase managers' decision making and thus shorten turnaround duration.

In contrast, less severe performance declines reduce the pressure to respond that managers are confronted with. More precisely, the less threatening performance declines are, the more inert managers become as they might interpret less severe declines as less complex tasks that do not require immediate response strategies (Staw et al., 1981). In this vein, extant research on turnaround management and decision making theory suggest that managers tend to first attribute less severe declines to easily controllable factors and potentially underestimate how threatening the situation is. Thus, less severe declines slow down managerial decision making with the effect of the emergence of longer turnaround duration. Together, we therefore hypothesize:

Hypothesis 1: Severity of decline is negatively associated with turnaround duration.

4.2.2. Turnaround actions and turnaround duration

In the following, we theorize about how retrenchment and recovery actions influence turnaround duration. Given the distinct nature of the two types of turnaround actions, we propose disparate effects on turnaround duration for the two types of actions. Specifically, we argue that exploitation focused asset retrenchment reduces contextual complexity and is thus likely to be associated with shorter turnaround duration. Similarly, we draw on behavioral decision theory and literature to argue that exploration focused recovery actions increase the need for more distant and comprehensive search and analysis due to heightened organizational complexity. Specifically, we distinguish between expansions to diversification

scope as an organizational means to strategically reposition the firm and CEO replacements as an individual means. Since in both cases heightened organizational complexity results, we argue that recovery is associated with longer turnaround durations.

Retrenchment actions and turnaround duration. Asset retrenchment involves the elimination of physical assets through plant closures and/or through reductions in stocks of property, equipment and inventory via asset sales (Lim et al., 2013; Morrow et al., 2004). Prior empirical studies in strategy and corporate finance have argued and found that asset retrenchment reduces organizational complexity by streamlining processes and reducing redundancies (e.g., Brauer, 2006; Castrogiovanni & Bruton, 2000; Vijh, 2002). Reduced complexity facilitates information processing and frees up managerial cognitive capacity which allows managers to dedicate more attention to preserved assets as well as to make decisions faster (Cyert & March, 1963). Due to lower organizational complexity and positive effects on managerial cognition, asset retrenchment is thus likely to shorten turnaround duration.

Moreover, asset retrenchment is generally indicative of a firm having a stronger exploitation than exploration focus (Lim et al., 2013; Schmitt & Raisch, 2013). Exploitation in contrast to exploration only necessitates near search to seek incremental and near-term performance improvements. Increases in resource efficiency are mainly achieved by sharing and transferring existing assets across the organization (i.e., Ricardian rent generation) rather than by novel resource re-combinations (i.e., Schumpeterian rent generation). As a result, asset retrenchment usually involves much less experimentation (Schmitt & Raisch, 2013), and thereby is able to realize much more near-term performance improvements (Andriopoulos & Lewis, 2009; Morrow et al., 2007). The most recent empirical results by Tangpong et al. (2015) finding that early retrenchment actions are more effective than late retrenchment actions are supportive of this reasoning.

In summary, this conceptual reasoning suggests that asset retrenchment leads to shorter turnaround duration by (1) reducing organizational and cognitive complexity, and thus allowing for faster decision-making, and by (2) focusing on resource exploitation, allowing for near term performance improvement. Consequently, we predict:

Hypothesis 2: Asset retrenchment is associated with shorter turnaround duration.

Recovery actions in form of expansions of diversification scope and turnaround duration.

While retrenchment refers to a planned shrinking of the scope of a firm, recovery actions describe a strategic repositioning in turnarounds that is frequently brought about by changes to diversification scope (e.g., Barker et al., 2001). Expansions to firm diversification scope by introducing new products, by marketing established products in related product markets or by completing unrelated acquisitions are frequently sought in turnarounds. This is because these diversifying activities help diversify revenue streams as well as to open up new sources of income. During the subprime crisis (2007-2010), for instance, numerous high-profile companies facing severe declines in performance dramatically adjusted their diversification scope. For instance, KUKA, a world-leading German-based robotics company, which generated 90 percent of its revenues with clients from the automotive industry experienced sharp drops in performance in the first years of the crisis. As a response, executive managers broadened KUKA's service and product portfolio in robot-based automation and started diversifying into healthcare, pharmaceutical, e-commerce and consumer goods industries. This allowed KUKA to achieve a highly successful turnaround in the subsequent three to five years.

Though the benefits associated with major adjustments to a firm's scope of diversification might be substantial as illustrated by this example, adjustments to diversification scope which essentially reflect changes in corporate strategy need time to be initiated as well as time to materialize. This is for several reasons. First, comprehensive

analysis which involves extensive information collection and analysis as well as the survey of multiple alternatives is needed to identify suitable new product markets (Elbanna & Child, 2007; Miller, 2008; Papadakis et al., 1998). Second, it is most likely that established products and services need to be modified to fit the needs of the new product markets. In some instance, even complete new product development might be required. Third, given that the firm lacks prior experience in these new product markets (“liability of newness”), decisions and actions need more time (e.g., Vermeulen & Barkema, 2002). As a result, the payback periods of these new strategic initiatives are likely to be longer. Lastly, scope expansions increase organizational complexity which further slows decision-making speed (Lorsch & Allen, 1973). Slowdowns in decision-making speed in the face of increased organizational complexity are likely to be particularly pronounced in turnarounds because erroneous decision-making is survival threatening. Behavioral theory suggests that managers become very risk-averse under such conditions and value greater amounts of information and high levels of information accuracy (Kahneman & Tversky, 1979). Collectively, all these effects lead to slower decision-making speed and action. We thus hypothesize:

Hypothesis 3: Recovery actions in form of diversification scope expansions are associated with longer turnaround duration.

Recovery actions in form of CEO replacements and turnaround duration. Strategic repositioning in turnarounds cannot only be brought about by changes to the diversification scope but also by CEO replacements (e.g., Barker et al., 2001; Chen & Hambrick, 2012; Hofer, 1980; Kanter, 2003). New CEOs have been argued to be “critically important in the context of sensemaking under crises” (Combe & Carrington, 2015: 308) so that CEO replacements are likely to substantially affect decision-making speed. By focusing on CEO replacements, we are also responsive to calls for greater consideration of strategic leadership factors in research on turnarounds (Trahms et al., 2013).

While studies show that CEO replacements frequently occur in turnarounds, Trahms et al. conclude in their review of turnaround literature that “conflicting evidence remains regarding the need for CEO replacement” (2013: 1291). Ndofor et al. (2013), for instance, document a positive effect of CEO succession on turnaround performance for declining firms. In contrast, studies by Winn (1997) and by Barker et al. (2001) show that CEO replacement is much more likely to occur in less successful turnaround processes. At the same time, studies on short-term investor reaction to CEO replacement in distressed situations have found positive effects (Davidson, Worrell, & Dutia, 1993).

Though it remains widely unclear of whether CEO replacements constitute an effective action in turnarounds, upper echelons literature and insights from behavioral decision theory suggest that CEO replacement extends turnaround duration. This is for several reasons: Being usually more unfamiliar with the situation and having less intimate knowledge about the firm than longstanding CEOs, new CEOs have been argued and found to invest much more time and effort in sensemaking (Combe & Carrington, 2015; Gioia & Chittipeddi, 1991). While sensemaking in crisis contexts is perceived as inherently complex and commonly considered to take considerable amount of time (Mumford et al., 2007), new CEOs lacking intimate knowledge about the organization and having less extensive social networks face an even greater challenge in developing consensus in how to deal with the crisis (Combe & Carrington, 2015). Collectively, the more drawn out sensemaking by new CEOs slows decision-making and delays action taking, leading to longer turnaround duration.

But not only sensemaking processes are likely to be prolonged for new CEOs. New CEOs have been suggested to more readily question existing structures and processes and to engage in more substantial resource orchestration (e.g., Chen, 2015; Greiner & Bhambri, 1989). This greater inclination to question internal processes and structures stems from a greater willingness of new CEOs to attribute the crisis to internal rather than merely external

factors (Barker & Patterson, 1996; Ford, 1985). When undertaking more extensive and more substantial changes to structures and processes, turnaround duration is likely to increase because resource orchestration and the accompanying rebuild of organizational routines are time-consuming (Feldman, 2000; Sirmon, Hitt, & Ireland, 2007). Building on the above theoretical and empirical insights, we hypothesize:

Hypothesis 4: Recovery actions in form of CEO replacements during turnaround processes are associated with longer turnaround duration.

4.2.3. Turnaround duration and turnaround performance

Having discussed the determinants of turnaround duration, we next reflect upon the relationship between turnaround duration and turnaround performance. Drawing on (behavioral) decision theory and on empirical insights on the influence of decision making speed on decision outcomes in strategic decision-making process theory, we predict that turnaround processes of shorter duration which are reflective of high decision speed are associated with lower turnaround performance than turnaround processes of longer duration.

Short turnaround duration essentially signals that managers perceive greater time pressure and hence take decisions with greater speed. Decision theory and individual as well as group level empirical psychology research suggest that greater decision speed often comes at the expense of decision accuracy. This has been labelled the speed-accuracy tradeoff (e.g., Donkin, Little, & Houpt, 2014; Hick, 1952; Schouten & Bekker, 1967; Wickelgren, 1977).¹⁵ Lack of accuracy in fast decision-making often results from the fact that managers ignore crucial information or oversimplify information by applying ill-fitting decision rules and heuristics (Duhaime & Schwenk, 1985; Schwenk, 1984). As a consequence, fast decisions typically lack accuracy, and are associated with poorer outcomes (e.g., Donkin et al., 2014; Perlow et al., 2002; Vermeulen & Barkema, 2002).

¹⁵ The speed-accuracy tradeoff essentially describes the relationship between an individual's willingness to respond slowly and reduce mistakes compared with their individual willingness to engage in fast responses that are more prone to mistakes.

In contrast, longer turnaround duration indicates that managers allow themselves more time for decision-making and rely on a more comprehensive decision approach. A comprehensive decision-making approach is characterized by extensive information collection, by qualitative and quantitative analysis and by an exhaustive survey of alternative options (Elbanna & Child, 2007; Forbes, 2007; Miller, 2008). Though far more time-consuming than intuition-based decision-making, comprehensive decision approaches have been found to be associated with significantly better decision outcomes in most decision settings (Dean & Sharfman, 1996; Miller, 2008; Papadakis, Lioukas, & Chambers, 1998). Importantly, in the turnaround context equally positive effects of a comprehensive decision approach can be expected. By engaging in systematic and extensive information search and analysis as well as a careful review of alternative options, comprehensive decision-making allows managers to identify and to fully understand the true causes of decline, and thus to take appropriate and sufficient action.

Next to greater decision comprehensiveness, lower decision-making speed has also been argued and found to be associated with higher degrees of conflict resolution (Hickson, Butler, Cray, Mallory, & Wilson, 1986; Mintzberg, Raisinghani, & Theoret, 1976) and consensus (Dooley, Fryxell, & Judge, 2000). Again, these decision process characteristics are likely to produce particularly positive effects in conflict-laden decision contexts such as turnarounds.

Lastly, our theorizing on the determinants of turnaround duration suggested that longer turnaround duration is the product of managerial efforts to change the strategic orientation of the firm by engaging in product diversification and/or by putting a new CEO in place. Though such changes to a firm's strategic orientation take more time to introduce and to take effect, prior research has shown that their final impact on firm performance is likely to be greater

than the impact of exploitative measures (e.g., Morrow et al., 2007; Ndofor et al., 2013; Wan & Yiu, 2009). Together, we thus hypothesize:

Hypothesis 5: Turnaround duration is positively associated with turnaround performance.

4.2.4. The mediating role of turnaround duration

The preceding hypotheses link together in an overall mediation model: Hypotheses 1 - 4 relate turnaround actions to turnaround duration, while Hypothesis 5 links turnaround duration to turnaround performance. We therefore argue that all three turnaround actions affect turnaround performance through their effects on turnaround duration. The mediation model thereby intends to explicate the relevance of turnaround duration for turnaround performance beyond the simple direct effect, and to help resolve the existing ambiguity in research on the direct relationship between recovery/retranchment actions and turnaround performance and advances our understanding of the exact role of managerial cognition.

In line with our earlier theorizing, we predict that specifically severe declines and asset retranchment which has been argued to be associated with shorter turnaround duration leads to lower turnaround performance. In contrast, efforts to strategically reposition the firm through changes in product diversification and CEO replacements have been argued to be associated with longer turnaround duration, and hence are predicted to lead to greater performance improvements. Consequently, we hypothesize:

Hypothesis 6: Turnaround duration mediates the relationship between firm's severity of decline and turnaround performance.

Hypothesis 7: Turnaround duration mediates the relationship between retranchment as well as recovery actions (i.e., expansions of product diversification scope and CEO replacements) and turnaround performance.

4.3. Methods

Our empirical analyses rely on a full survey of all single business firms included in the Compustat North America Database which experienced organizational decline within the timeframe of 1988 to 2015.¹⁶ The focus on single business firms is the most common research approach in organizational decline and turnaround literature as it specifically reduces extraneous variance and increases the accuracy of measures and results (Morrow et al., 2007). Importantly, a focus on single businesses also allows for more accurate identification and isolation of the causes of organizational decline.

Following Ndofor et al. (2013), we consider firms to experience an organizational decline that have at least two consecutive years of declining return on assets (ROA) after the base year being greater or equal to five percent while the second year of decline is additionally characterized by a net loss (i.e., negative ROA). By applying these criteria, we ensure that firms truly experience a survival-threatening event which extant research treats as the most relevant characteristic of organizational decline (Barker & Mone, 1994; Chen & Hambrick, 2012; Ndofor et al., 2013). In total, we identified 3481 cases of organizational decline, of which 1005 completed a turnaround. This indicates a turnaround success rate of slightly less than 29 percent. This success rate compares well with prior studies' findings.¹⁷

4.3.1. Dependent variables

Turnaround duration. Turnaround duration is operationalized as the time elapsed between onset of the organizational decline and the year of successful turnaround. Successful turnaround is the first year in which the firm manages to restore pre-decline financial performance. On average, firms in our sample achieve the turnaround within a little over 3.5 years.

¹⁶ In keeping with standard practice, we exclude financial service and utility firms from our sample given that they are subject to specific industry regulation and their asset structure lacks comparability.

¹⁷ In their study of the software industry, Ndofor et al. (2013) report a turnaround success rate of slightly less than 32 percent.

Turnaround performance. We measure turnaround performance as the increase in firm performance (i.e., return on assets) in the year of successful turnaround relative to the base year (i.e., the year prior to decline). Figure 15 visualizes our operationalization of turnaround duration and turnaround performance.

4.3.2. Independent variables

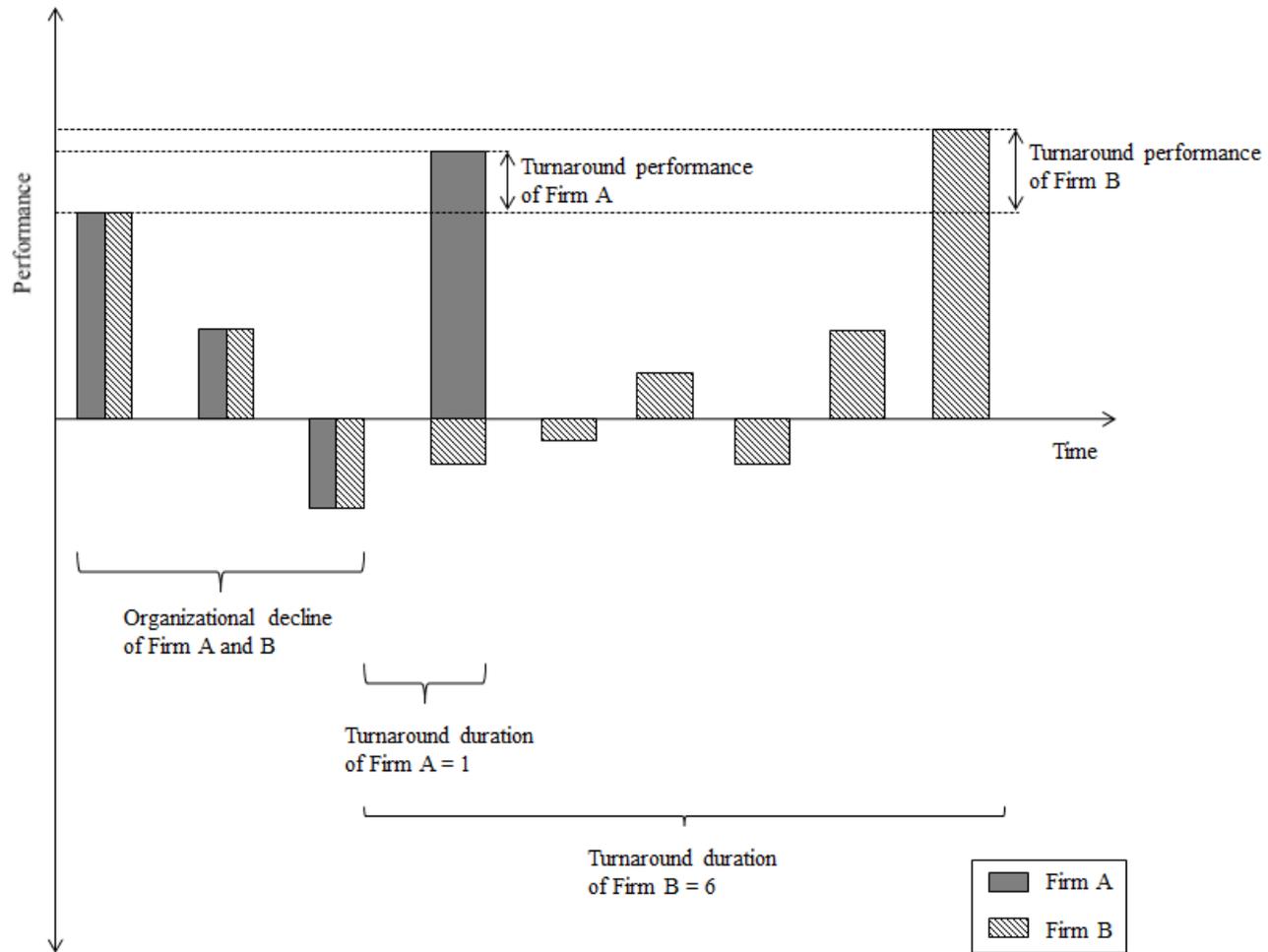
Severity of decline. is assessed by the change in a firm's ROA during the organizational decline relative to a firm's base performance (e.g., Ndofor et al., 2013; Robbins & Pearce, 1992). Higher values indicate more severe decline.

Retrenchment. Following conceptual definitions and prior work (e.g., Bruton et al., 2003; Michael & Robbins, 1998; Morrow et al., 2004), we measure asset retrenchment as the percentage change in assets between the first year of decline and the year of turnaround. Asset reductions indicate that a firm closed or sold any of its physical assets (Ndofor et al., 2013). We reverse coded the variable so that larger values indicate greater asset retrenchment.

Recovery. In line with prior work (e.g., Barker & Duhaime, 1997; Ginsberg, 1988), we proxy the extent to which the firm engages in recovery actions by the change in a firm's scope of product diversification relative to its pre-decline level using Jacquemin's and Berry's entropy measure (Jacquemin & Berry, 1979).¹⁸ Next to this organizational recovery measure, we assess CEO replacement as a particular individual form of a firm's strategic repositioning using the Execucomp database. We code CEO retrenchment as "1" if the CEO was replaced during the turnaround process and "0" otherwise (Chen & Hambrick, 2012).

¹⁸ Change in diversification scope seems a useful aggregate measure as it is of secondary interest to us of whether the strategic repositioning via product diversification is achieved through alliances, acquisitions or new product introductions.

Figure 15: Visualization of turnaround duration and turnaround performance



4.3.3. Control variables

To be able to accurately isolate our main effects, we control for a number of firm and industry characteristics that could influence turnaround duration and performance. We account for *firm size* using the natural logarithm of total assets (Laamanen & Keil, 2008). *Firm slack* is measured as the ratio of current assets to current liabilities (i.e., the current ratio) (Bromiley, 1991). *Firm leverage* is measured as the ratio of total liabilities to shareholder equity (Bromiley, 1991). We also control for firm *geographic diversification* as the ratio of foreign sales to total sales (Kang, 2013; Tallman & Li, 1996). Additionally, we control for potential timing effects of implemented turnaround actions (Tangpong et al., 2015). We assess *early acquisition activity*, *early divestiture activity* and *early alliance formation* as the number of acquisitions and divestitures conducted and the number of newly formed alliances in the first year of the turnaround process. Acquisition, divestiture and alliance data was retrieved from SDC Platinum. Lastly, we control for *industry munificence*, as the regression slope coefficient (sales over time) divided by the corresponding mean value of industry sales, and *industry dynamism*, as the standard error of the regression slope coefficient divided by the mean value of industry sales (Dess & Beard, 1984). Both industry variables are based on four-digit SIC codes and are calculated for the full time span of the organizational decline.

4.3.4. Data analysis

For our regression analyses, we used pooled ordinary least squares (OLS) regressions with clustered standard errors. Subsequent collinearity diagnostics using the variance inflation factors (VIFs) indicated no multicollinearity problems, as none of the VIFs approached the threshold of 10 (Cohen et al., 2013; Neter et al., 1996). The mean VIF for the variables used in our regression model amounts to 1.26 with a maximum VIF of 1.98.

For the mediation analyses, we perform a Sobel (1982) test as this procedure is a more powerful alternative for assessing indirect effects (Preacher & Hayes, 2004; Shrout & Bolger, 2002) than the stepwise procedure suggested by Baron and Kenny (1986).

4.4. Results

Table 6 depicts means, standard-deviations, and correlations for all variables included in our study.

Table 7 presents the results of estimating the effects of our explanatory and control variables on turnaround duration (Models 1 and 2) and on turnaround outcome (Models 3, 4). As indicated by the *F*-test statistics, all models are highly significant and the full model fits the data significantly better than the control model.

Model 1 in Table 7, the control model, indicates that early divestiture activity is significantly, negatively ($b = -0.37, p < 0.05$) associated with turnaround duration, suggesting that conducting divestitures in an early stage of the turnaround process shortens the turnaround duration.

Table 6: Descriptive statistics and correlations^c

	Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Turnaround performance	0.08	0.14	1.00														
2	Turnaround duration	3.67	2.29	0.08	1.00													
3	Firms' decline severity	0.23	0.19	0.17	-0.08	1.00												
4	Asset retrenchment	-0.28	0.99	0.12	-0.07	0.12	1.00											
5	Product diversification	0.10	0.29	0.00	0.12	0.02	-0.12	1.00										
6	CEO replacement	0.12	0.33	-0.04	0.14	-0.01	-0.07	0.11	1.00									
7	Firms' base performance	0.10	0.07	-0.14	-0.05	-0.14	0.08	0.01	0.35	1.00								
8	Firm size	4.36	1.97	-0.01	0.06	0.01	-0.06	-0.01	-0.01	-0.12	1.00							
9	Firm slack	3.03	2.50	-0.03	0.01	0.00	0.07	-0.01	-0.05	-0.01	-0.12	1.00						
10	Firm leverage	0.11	0.53	0.01	-0.03	-0.01	0.00	0.02	0.06	0.25	0.02	-0.02	1.00					
11	Geographic diversification	0.13	0.25	-0.06	-0.02	-0.02	-0.17	0.04	0.11	0.14	-0.05	0.05	0.04	1.00				
12	Early acquisition activity	0.14	0.58	-0.02	-0.08	0.03	0.05	0.04	0.10	0.22	-0.07	-0.01	0.10	0.15	1.00			
13	Early divestiture activity	0.10	0.42	-0.03	-0.05	0.02	-0.04	0.04	0.14	0.20	-0.01	-0.03	0.12	0.22	0.20	1.00		
14	Early alliance formation	0.12	0.32	0.02	-0.01	0.00	-0.06	0.07	-0.04	-0.14	0.04	0.00	-0.05	-0.01	0.01	0.03	1.00	
15	Industry munificence	0.07	0.16	0.01	0.01	-0.05	0.00	-0.04	-0.05	0.00	-0.02	0.00	-0.04	-0.02	0.03	-0.02	0.12	1.00
16	Industry dynamism	0.05	0.07	0.03	-0.14	-0.01	0.07	-0.05	0.03	0.26	-0.02	-0.08	0.07	-0.03	0.02	-0.11	-0.26	-0.06

^c $N = 1005$. Correlations greater than 0.06 are significant at $p < .05$.

Table 7: Results of regression analysis predicting turnaround duration and performance^d

Explanatory Variables	DV: Turnaround duration		DV: Turnaround performance	
	Model 1	Model 2	Model 3	Model 4
Turnaround duration				0.01*** (0.00)
Firms' severity of decline		-0.15** (0.06)		0.02*** (0.00)
Asset retrenchment		-0.06 (0.09)		0.02** (0.01)
Product diversification		0.81*** (0.27)		0.00 (0.01)
CEO replacement		1.19*** (0.26)		0.00 (0.01)
Firm size	0.02 (0.04)	-0.06 (0.04)	-0.01*** (0.00)	-0.01*** (0.00)
Firm slack	0.05 (0.03)	0.04 (0.03)	-0.00 (0.00)	-0.00 (0.00)
Firm leverage	-0.00 (0.10)	0.04 (0.10)	-0.01 (0.01)	-0.01 (0.01)
Geographic diversification	-0.15 (0.29)	-0.08 (0.28)	0.03 (0.02)	0.03 (0.02)
Early acquisition activity	-0.03 (0.13)	-0.10 (0.12)	-0.01** (0.00)	-0.00 (0.00)
Early divestiture activity	-0.37** (0.16)	-0.37** (0.15)	0.00 (0.01)	0.00 (0.01)
Early alliance formation	-0.35 (0.24)	-0.38 (0.24)	0.00 (0.01)	0.00 (0.01)
Industry munificence	-0.68 (0.46)	-0.78* (0.43)	0.01 (0.03)	0.02 (0.03)
Industry dynamism	0.22 (1.13)	0.56 (1.10)	0.03 (0.05)	0.05 (0.05)
Constant	123.65*** (23.23)	110.90*** (22.86)	-3.22** (1.60)	-3.71** (1.57)
<i>F</i> -value	3.590***	6.213***	3.180***	5.366***
<i>R</i> ²	0.04	0.08	0.03	0.08

^d *N* = 1005; Unstandardized regression coefficients are shown; year dummies included.

*** *p*<0.01. ** *p*<0.05. * *p*<0.1

Hypothesis 1 predicted a negative relationship between firms' severity of decline and turnaround. As shown in Model 2 of Table 7, firm's severity of decline is significantly, negatively ($b = -0.15, p < 0.05$) associated with turnaround duration. Thus, Hypothesis 1 finds support.

Hypothesis 2 suggested a negative relationship between asset retrenchment and turnaround duration. As shown in Model 2 of Table 7, asset retrenchment not is found to be significant. Therefore, Hypothesis 2 does not find support. Further, product diversification is found to be significant and positively related to turnaround duration ($b = 0.81, p < 0.01$), supporting Hypothesis 3. Further, Hypothesis 4 proposed a positive relationship between CEO replacement and turnaround duration. As shown in Model 2 of Table 7, CEO replacement is found to be significant and positively related to turnaround duration ($b = 1.19, p < 0.01$). Hypothesis 4 thus finds support. Together, we find support for a positive relationship between recovery actions and turnaround duration while we do find support for a negative relationship between retrenchment and turnaround duration.

Model 3 displays the effects of the control variables on turnaround performance with firm size and early acquisition activity being negatively related to turnaround performance. Model 4 provides a test for Hypothesis 5 which argued for a positive relationship between turnaround duration and turnaround performance. Turnaround duration is found to be significant and positively related to turnaround performance ($b = 0.01, p < 0.01$). Hypothesis 5 thus finds support. To examine Hypotheses 6 and 7 which suggested a mediating effect of turnaround duration, we conducted a Sobel (1982) test to complement our regression results. Table 8 shows the results of the Sobel test.

Table 8: Sobel test for indirect effects^e

	Sobel test statistics
Firms' severity of decline	2.05*
Asset retrenchment	0.53
Product diversification	2.23*
CEO replacement	2.74**

^e Sobel tests were conducted using full model estimates.

** p<0.01. * p<0.05.

The Sobel test statistics are significant ($p < .05$) for product diversification and CEO retrenchment. When inspecting the direct effects of asset retrenchment, product diversification and CEO replacement on turnaround performance, we find that only asset retrenchment ($b = 0.01$, $p < 0.01$) is significantly related with turnaround performance. Taken together, this suggests that turnaround duration fully mediates the relationship between recovery actions and turnaround performance. Further, we unravel the interesting finding of an inconsistent mediation regarding firms' severity of decline as the sign of the direct effect of firms' severity of decline on turnaround performance is positive while the multiplied sign of the indirect effect (see Model 2 and 4 in Table 7: $b_{Severity} < 0$ and $b_{Duration} > 0$) is negative. This finding means that specifically severe declines lead to shorter turnaround durations which again are associated with lower turnaround performance. However, more severe performance declines, on average and independent from turnaround durations, are directly associated with greater turnaround performance. Together, Hypothesis 6 finds support while Hypothesis 7 finds only partial support as the mediation can only be confirmed for recovery actions.

4.4.1. Supplementary analyses

We performed several supplementary tests to assure the robustness of our results. First, given that prior research suggested that industry characteristics may have a significant moderating influence on the relationship between retrenchment/recovery actions and turnaround performance (e.g., Barker & Duhaime, 1997; Moulton et al., 1996; Wan & Yiu, 2009), we included those interaction terms as additional control variables in our models.

However, we find no significant moderating influence of industry munificence or dynamism on our key relationships. Additionally, we tested whether severity of decline moderates the relationship between retrenchment/recovery actions and turnaround duration. We tested this influence because it could be argued that retrenchment/recovery actions might take different forms depending on decline severity. Our interaction analyses, however, do not provide evidence for a significant moderating influence of decline severity. Furthermore, we checked upon the robustness of our finding regarding CEO retrenchment by adding a control for general personnel retrenchment, using the percentage change in the number of employees during the turnaround process. Personnel retrenchment, however, is not found to have a significant effect on our outcome variables, and also does not impact our reported findings for CEO retrenchment. Additionally, we created a categorical variable for CEO retrenchment (0=No replacement, 1=Internal replacement, 2=External replacement) to be better able to assess whether there are material differences between internal and external CEOs. We find that results remain fully consistent when using this alternative operationalization. Descriptive analyses (i.e., mean difference tests) also do not bring to light any material differences between internal and external CEOs ($t = 0.123$, for testing the difference in turnaround duration between internal and external replacements). CEO replacements take place in 14 % of all turnaround processes and 32 % of these replacements are external replacements. Moreover, the correlation between the categorical variable for CEO retrenchment (i.e., differentiating between internal and external replacements) and turnaround duration equals 14 % which is only slightly higher than the correlation of 12 % between CEO retrenchment and turnaround duration presented in our study.

4.5. Discussion and implications

Given strategic management scholars' strong interest in the notion of competitive advantage and firm survival, it is surprising to see that our understanding of how firms can

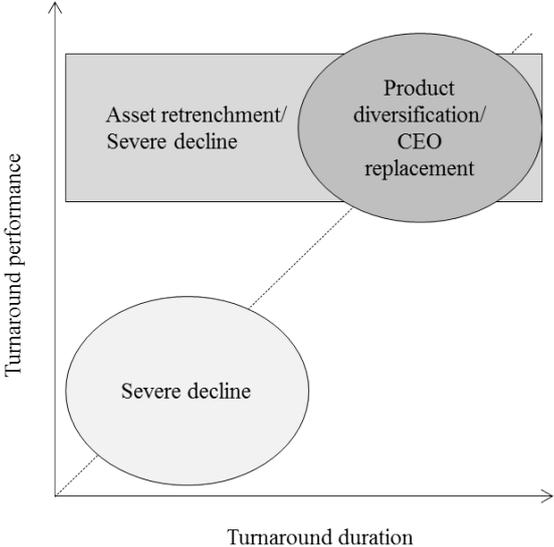
effectively reverse organizational decline is relatively underdeveloped. Against the backdrop of more frequent and severe macroeconomic and industry shocks, the shortage of scholarly knowledge on how to effectively manage turnarounds not only seems lamentable from an academic perspective but also from a business practitioner perspective.

Despite the scarcity of research on turnarounds, prior work has generated some valuable insights into the role of how managers perceive and interpret declines but also into what kind of actions (i.e., retrenchment vs. recovery) are taken in order to reverse declining performance (Trahms et al., 2013). Among the most important insights of prior work is that recovery and retrenchment actions constitute the main activities during turnaround processes (Barker & Duhaime, 1997; Barker & Mone, 1994; Lim et al., 2013; Morrow et al., 2004; Morrow et al., 2007; Ndofor et al., 2013; Schmitt & Raisch, 2013; Trahms et al., 2013). Empirical findings on the direct effects of retrenchment and recovery actions on turnaround success, however, have remained highly equivocal. As a result, a greater focus on contextual factors of turnaround processes has been called for (see Trahms et al., 2013). Similarly, extant research on the role of managerial cognition is very limited and inconclusive. Though there seems consensus that the accurate assessment of the severity of declines is of utmost importance for successful turnaround management (e.g., Arogyaswamy et al., 1995; Barker & Patterson, 1996; Ford, 1985; Pearce & Robbins, 1993; Trahms et al., 2013), we hold very little knowledge on the exact role of the perception and interpretation of the severity of declines. Some studies argue that the perception and interpretation of the severity of declines determines turnaround outcomes (e.g., Francis & Desai, 2005) while other scholars suggest that the severity of performance declines is associated with the type and extent of turnaround actions that are implemented (e.g., Musteen et al., 2011).

In line with these shortcomings and requests, our study applies a temporal perspective on organizational decline and draws attention to turnaround duration as an important

contingency in turnaround processes. Our empirical findings based on a full survey of all North American single business firms between 1988 and 2015 suggest that recovery actions (i.e., expansions of diversification scope and CEO replacements) are associated with longer turnaround duration. Further, we find a negative relationship between firms' severity of decline and turnaround duration. Additionally, our study's findings further suggest that turnaround duration is positively associated with turnaround performance. Our mediation analyses also reveal that recovery actions do not have a direct effect on turnaround performance. Figure 16 summarizes the main findings of our study.

Figure 16: Summary of main findings



Turnaround duration is found to fully mediate the relationship between these frequently applied turnaround actions and turnaround performance, suggesting that their effect on turnaround performance is time-dependent. Counter to our line of reasoning, we find that turnaround duration does not mediate the relationship between asset retrenchment and turnaround duration, as highlighted by the rectangle which is valid for all levels of turnaround duration. Instead, we find that asset retrenchment is positively related with turnaround performance regardless of the duration of the turnaround process. Lastly, we find an inconsistent mediation regarding the severity of declines suggesting that more severe declines

lead to shorter turnaround duration and thus lower turnaround performance while more severe declines, on average and independent from turnaround duration, are directly associated with greater turnaround performance.

Collectively, our study's focus and findings contribute to organizational theory and organizational decline literature in several ways. First, the consideration of turnaround duration allows us to inform the ongoing, controversial discussion on the effectiveness of retrenchment and recovery actions in turnaround processes (e.g., Robbins & Pearce, 1992; Schmitt & Raisch, 2013; Sudarsanam & Lai, 2001; Trahms et al., 2013). Most importantly, we demonstrate that retrenchment and recovery have disparate effects on both turnaround duration and performance. Collectively, these insights help partially explaining the ambiguity that has plagued prior work on the effectiveness of recovery and retrenchment actions in turnaround processes, with some studies finding positive effects, and others finding negative or non-significant effects.

Second, we extend organizational decline and turnaround literature by introducing a temporal perspective on turnaround processes. By viewing turnaround duration as a mediating factor, we break with the established logic and research approach of prior work that has exclusively attempted to unravel direct linkages between retrenchment/recovery actions and turnaround success. Specifically, our findings indicate that the consideration of turnaround duration is a critical explanatory factor in turnaround processes. Recovery actions (i.e., CEO replacement and product diversification) are not found to have a direct effect on turnaround outcomes but only through turnaround duration. This suggests that the effectiveness of both actions is time-dependent.

Third, our findings contribute to a better understanding of the role of managerial cognition in turnaround management research. By thoroughly interpreting the inconsistent mediation regarding the severity of decline, we underpin that the perception and interpretation

of the severity of decline resulting in corresponding levels of urgency might lead to two contrary effects. In some cases, it allows speeding up managerial decision making and thereby lowers the underlying effectiveness. This is evidenced by the mediation effect. However, we also find that more severe declines and thus higher levels of implied urgency, on average and independent from turnaround duration, increases the effectiveness of turnaround outcomes. While this initially might sound like a counterintuitive phenomenon (i.e., increased effectiveness under high pressure), it eventually boils down to a motivational element arising from high pressure situations and driving managerial excellence. We therefore also complement research on the complex role of managerial cognition in turnaround management research by showing that the perception and interpretation of organizational decline can affect both speed and efficacy of managerial decision making.

4.5.1. Practical implications

Our study also offers several prescriptions to managers on how to achieve successful turnarounds. A first recommendation from our study is that managers should engage in close dialogue with their stakeholders – especially their creditors and investors – to better understand the time pressure under which the turnaround needs to be realized. If turnaround needs to be realized within very short time periods, managers should de-prioritize recovery actions and try to reverse the situation with the CEO in place as both recovery actions are found to be associated with longer turnaround duration. At the same time, our results also offer the opportunity to managers to convince stakeholders that greater patience might pay off. Our mediation analyses indicate that while recovery actions may be associated with longer turnaround duration, they eventually can lead to very positive turnaround outcomes.

Moreover, our findings are fully aligned with insights from divestiture research (see Brauer, 2006 for a review) in showing that asset retrenchment is a highly effective way of restoring financial performance. Based on our empirical analysis, however, it appears doubtful whether retrenchment really serves as a “quick fix”. Managers are thus cautioned to

have overly high expectations on achieving very near term performance improvements through asset retrenchment.

Finally, our empirical findings serve as a cautious reminder to managers not to lose their ability to objectively judge and assess problems facing severe organizational declines. Though the pressure to respond that is associated with situations of severely declining firm performance makes it very challenging to retain patience, it seems beneficial as longer turnaround duration produces more positive turnaround outcomes. Thus, decision making processes require objective and clearly defined quality gates that significantly lower the propensity to engage in hasty and incomplete decisions in severe turnaround situations.

4.5.2. Limitations and future research avenues

Clearly, our large scale, cross-industry study is also subject to a natural set of limitations. First, by sampling the biggest possible universe of single business firms, we are unable to use more granular measures of retrenchment such as product withdrawals. Similarly, we were unable to capture the more granular recovery measures that may underlie changes in diversification scope such as the number of new product introductions. Future single industry studies which use these more nuanced measures to capture different approaches to retrenchment and recovery would thus be useful to further assess the validity of our findings. Second, we interpret the severity of a performance decline as a manager's perception and interpretation of the urgency of the situation. In doing so, we might underrepresent personal preferences and characteristics of top managers towards the over- and underestimation of the severity situations. Therefore, we believe that the consideration of personal characteristics such as individual risk preferences as well as insights on preferred temporal foci of CEOs might additionally contribute to a better understanding of determinants and performance outcomes of different turnaround durations. Hence, we see great merit in future research efforts that also incorporate these alternative paths when studying the temporal dynamics of turnaround processes.

5. GENERAL CONCLUSION

The question of *how to effectively reverse declining firm performance* has ever been an important question for both academic scholars and business practitioners. Though a profound answer to this question seems more and more important as today's business landscape is becoming increasingly volatile amplifying the threat of facing organizational declines, extant research is still inconclusive. Against this backdrop, this dissertation project aims to better understand *how declining firm performance can effectively be reversed*. Therefore, this dissertation project identifies and rigorously investigates unexplored contingencies that better explain the effectiveness of turnaround actions and also breaks with established research approaches both conceptually and methodologically.

The first study of this dissertation project applies the concept of resilience (i.e., buffering volatility in declines and subsequent performance recovery) originating from psychology to an organizational context. Extant research approaches have primarily focused on distinct turnaround actions in order to better understand how performance recovery can be achieved. The organizational resilience perspective suggests though that not only organizational behavior in the aftermath of declines but also during declines is equally important in order to reverse declining firm performance (i.e., the buffering of performance volatility). Moreover, it is the first study that empirically tests and confirms the existence of the concept of resilience in an organizational context.

The second study unravels two important contingencies that govern the effectiveness of workforce downsizing as one of the most prominent managerial practices in order to reverse declining firm performance. Most importantly, this study adopting a simulation approach demonstrates that intra-organizational networks (i.e., the configuration of formal and informal networks) and the extent of employee turnaround significantly influence the effectiveness of workforce downsizing. Against the backdrop of the empirical nature of almost all existing studies on the performance outcomes of workforce downsizing, the

simulation approach enabling the investigation of these contingencies can help resolve parts of the ambiguity of findings on the effectiveness of workforce downsizing.

The third study of this dissertation project introduces a temporal perspective to research on organizational decline and turnaround management and thereby draws attention to turnaround duration as an important contingency. This study first analyzes how managerial cognition (i.e., the severity of decline) and turnaround actions (i.e., retrenchment and recovery) relate to turnaround duration. In a subsequent step, the study examines how turnaround duration links with turnaround performance and whether turnaround duration mediates the relationship between managerial cognition as well as turnaround actions and turnaround performance. While extant research on the effectiveness of managerial cognition and turnaround actions has focused on direct performance effects and generated a remarkable ambiguity of findings, this study shows that the consideration of a temporal perspective contributes to a better understanding of how substantial performance recoveries can be achieved.

Together, the three single studies of this dissertation project complement established knowledge on *how to effectively reverse declining firm performance* by transferring established concepts from other research disciplines to an organizational context (i.e., Chapter 2 – *Organizational resilience*), by applying a simulation method in an empirically characterized research fields (i.e., Chapter 3 – *Workforce downsizing*) as well as by fundamentally breaking with the established research logic of assessing direct performance effects (i.e., Chapter 4 – *Turnaround duration*).

REFERENCES

- Alexander, D. E. 2013. Resilience and disaster risk reduction: An etymological journey. *Natural Hazards and Earth System Sciences*, 13(11): 2707-2716.
- Allen, D. G., Hancock, J. I., & Vardaman, J. M. 2014. Analytical mindsets in turnover research. *Journal of Organizational Behavior*, 35(S1): 61-86.
- Amit, R. & Schoemaker, P. J. H. 1993. Strategic assets and organizational rent. *Strategic Management Journal*, 14(1): 33-46.
- Anand, J. & Singh, H. 1997. Asset redeployment, acquisitions and corporate strategy in declining industries. *Strategic Management Journal*, 18(1): 99-118.
- Andriopoulos, C. & Lewis, M. W. 2009. Exploitation-exploration tensions and organizational ambidexterity: Managing paradoxes of innovation. *Organization Science*, 20(4): 696-717.
- Annarelli, A. & Nonino, F. 2016. Strategic and operational management of organizational resilience: Current state of research and future directions. *Omega*, 62: 1-18.
- APA; The Road to Resilience; <http://www.apa.org/helpcenter/road-resilience.aspx>; 20 June 2016, 2015.
- Arogyaswamy, K., Barker, V. L., & Yasai-Ardekani, M. 1995. Firm turnarounds: An integrative two stage-model. *Journal of Management Studies*, 32(4): 493-525.
- Askeland, D. & Wright, W. 2013. *Essentials of materials science & engineering*. Stamford: Cengage Learning.
- Audia, P. G. & Greve, H. R. 2006. Less likely to fail: Low performance, firm size, and factory expansion in the shipbuilding industry. *Management Science*, 52(1): 83-94.
- Barker, V. L. & Mone, M. A. 1994. Retrenchment: Cause of turnaround or consequence of decline? *Strategic Management Journal*, 15(5): 395-405.

- Barker, V. L. & Patterson, P. W. 1996. Top management team tenure and top manager causal attributions at declining firms attempting turnarounds. *Group & Organization Management*, 21(3): 304-336.
- Barker, V. L. & Duhaime, I. M. 1997. Strategic change in the turnaround process: Theory and empirical evidence. *Strategic Management Journal*, 18(1): 13-38.
- Barker, V. L., Patterson, J. P. W., & Mueller, G. C. 2001. Organizational causes and strategic consequences of the extent of top management team replacement during turnaround attempts. *Journal of Management Studies*, 38(2): 235-269.
- Barney, J. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17(1): 99-120.
- Baron, R. M. & Kenny, D. A. 1986. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6): 1173-1182.
- Bettis, R. A. & Prahalad, C. K. 1995. The dominant logic: Retrospective and extension. *Strategic Management Journal*, 16(1): 5-14.
- Bloodgood, J. M. & Morrow, J. L. 2003. Strategic organizational change: Exploring the roles of environmental structure, internal conscious awareness and knowledge. *Journal of Management Studies*, 40(7): 1761-1782.
- Bonanno, G. A. 2004. Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American Psychologist*, 59(1): 20-28.
- Bonanno, G. A., Romero, S. A., & Klein, S. I. 2015. The temporal elements of psychological resilience: An integrative framework for the study of individuals, families, and communities. *Psychological Inquiry*, 26(2): 139-169.
- Bowman, E. H. & Singh, H. 1993. Corporate restructuring: Reconfiguring the firm. *Strategic Management Journal*, 14: 5-14.

BP; Annual Report 2015; <http://www.bp.com/en/global/corporate/investors/results-and-reporting/annual-report/annual-reporting-archive.html>; 20 June 2016, 2016.

Bradley, S. W., Shepherd, D. A., & Wiklund, J. 2011. The importance of slack for new organizations facing 'tough' environments. *Journal of Management Studies*, 48(5): 1071-1097.

Brass, D. J. 1984. Being in the right place: A structural analysis of individual influence in an organization. *Administrative Science Quarterly*: 518-539.

Brauer, M. 2006. What have we acquired and what should we acquire in divestiture research? A review and research agenda. *Journal of Management*, 32(6): 751-785.

Brauer, M. & Wiersema, M. F. 2012. Industry divestiture waves: How a firm's position influences investor returns. *Academy of Management Journal*, 55(6): 1472-1492.

Brauer, M. & Laamanen, T. 2014. Workforce downsizing and firm performance: An organizational routine perspective. *Journal of Management Studies*, 51(8): 1311-1333.

Brockner, J., Konovsky, M., Cooper-Schneider, R., Folger, R., Martin, C., & Bies, R. J. 1994. Interactive effects of procedural justice and outcome negativity on victims and survivors of job loss. *Academy of Management Journal*, 37(2): 397-409.

Brockner, J., Spreitzer, G., Mishra, A., Hochwarter, W., Pepper, L., & Weinberg, J. 2004. Perceived control as an antidote to the negative effects of layoffs on survivors' organizational commitment and job performance. *Administrative Science Quarterly*, 49(1): 76-100.

Bromiley, P. 1991. Testing a causal model of corporate risk taking and performance. *Academy of Management Journal*, 34(1): 37-59.

Bruton, G. D., Ahlstrom, D., & Wan, J. C. C. 2003. Turnaround in East Asian firms: Evidence from ethnic overseas Chinese communities. *Strategic Management Journal*, 24(6): 519-540.

Cameron, K., Freeman, S., & Mishra, A. 1991. Best practices in white-collar downsizing: Managing contradictions. *Academy of Management Perspectives*, 5(3): 57-73.

- Cameron, K. S., Kim, M. U., & Whetten, D. A. 1987. Organizational effects of decline and turbulence. *Administrative Science Quarterly*, 32(2): 222-240.
- Cameron, K. S. 1994. Strategies for successful organizational downsizing. *Human Resource Management*, 33(2): 189-211.
- Capron, L. & Mitchell, W. 2009. Selection capability: How capability gaps and internal social frictions affect internal and external strategic renewal. *Organization Science*, 20(2): 294-312.
- Carley, K. 1991. A theory of group stability. *American Sociological Review*, 56(3): 331-354.
- Carvalho, H., Barroso, A. P., Machado, V. H., Azevedo, S., & Cruz-Machado, V. 2012. Supply chain redesign for resilience using simulation. *Computers & Industrial Engineering*, 62(1): 329-341.
- Cascio, W. F. 1993. Downsizing: What do we know? What have we learned? *Academy of Management Executive*, 7(1): 95-104.
- Cascio, W. F., Young, C. E., & Morris, J. R. 1997. Financial consequences of employment-change decisions in major US corporations. *Academy of Management Journal*, 40(5): 1175-1189.
- Cascio, W. F. 2000. *Costing human resources : The financial impact of behavior in organizations*. Boston: Kent.
- Castrogiovanni, G. J. & Bruton, G. D. 2000. Business turnaround processes following acquisitions: Reconsidering the role of retrenchment. *Journal of Business Research*, 48(1): 25-34.
- Chambers, J. M., Cleveland, W. S., Kleiner, B., & Tukey, P. A. 1983. *Graphical methods for data analysis*. Belmont: Wadsworth International Group.
- Chen, G. & Hambrick, D. C. 2012. CEO replacement in turnaround situations: Executive (mis) fit and its performance implications. *Organization Science*, 23(1): 225-243.

Chen, G. 2015. Initial compensation of new CEOs hired in turnaround situations. *Strategic Management Journal*, 36(12): 1895-1917.

Chiu, S.-c., Johnson, R. A., Hoskisson, R. E., & Pathak, S. 2016. The impact of CEO successor origin on corporate divestiture scale and scope change. *Leadership Quarterly*, 27(4): 617-633.

Chowdhury, S. D. & Lang, J. R. 1993. Crisis, decline, and turnaround: A test of competing hypotheses for short-term performance improvement in small firms. *Journal of Small Business Management*, 31(4): 8.

Ciravegna, L. & Brenes, E. R. 2016. Learning to become a high reliability organization in the food retail business. *Journal of Business Research*, 69(10): 4499-4506.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. 2013. *Applied multiple regression/correlation analysis for the behavioral sciences*. London: Routledge.

Combe, I. A. & Carrington, D. J. 2015. Leaders' sensemaking under crises: Emerging cognitive consensus over time within management teams. *Leadership Quarterly*, 26(3): 307-322.

Cumming, G. S., Barnes, G., Perz, S., Schmink, M., Sieving, K. E., Southworth, J., Binford, M., Holt, R. D., Stickler, C., & Van Holt, T. 2005. An exploratory framework for the empirical measurement of resilience. *Ecosystems*, 8(8): 975-987.

Cyert, R. M. & March, J. G. 1963. *A behavioral theory of the firm*. Englewood Cliffs: Prentice-Hall.

Dane, E. 2011. Paying attention to mindfulness and its effects on task performance in the workplace. *Journal of Management*, 37(4): 997-1018.

Dane, E. & Brummel, B. J. 2014. Examining workplace mindfulness and its relations to job performance and turnover intention. *Human Relations*, 67(1): 105-128.

Datta, D. K., Guthrie, J. P., Basuil, D., & Pandey, A. 2010. Causes and effects of employee downsizing: A review and synthesis. *Journal of Management*, 36(1): 281-348.

Datta, D. K. & Basuil, D. A. 2015. Does employee downsizing really work? In M. Andresen & C. Nowak (Eds.), *Human resource management practices: Assessing added value*: 197-221. Cham: Springer International Publishing.

Davidson, W. N., Worrell, D. L., & Dutia, D. 1993. The stock market effects of CEO succession in bankrupt firms. *Journal of Management*, 19(3): 517-533.

Davis, G. F. & Stout, S. K. 1992. Organization theory and the market for corporate control: A dynamic analysis of the characteristics of large takeover targets, 1980-1990. *Administrative Science Quarterly*, 37(4): 605-633.

Dean, J. W. & Sharfman, M. P. 1996. Does decision process matter? A study of strategic decision-making effectiveness. *Academy of Management Journal*, 39(2): 368-392.

Delmestri, G. & Walgenbach, P. 2005. Mastering techniques or brokering knowledge? Middle managers in Germany, Great Britain and Italy. *Organization Studies*, 26(2): 197-220.

DeRue, D. S., Hollenbeck, J. R., Johnson, M. D., Ilgen, D. R., & Jundt, D. K. 2008. How different team downsizing approaches influence team-level adaptation and performance. *Academy of Management Journal*, 51(1): 182-196.

Dess, G. G. & Beard, D. W. 1984. Dimensions of organizational task environments. *Administrative Science Quarterly*, 29(1): 52-73.

Dewitt, R.-L. 1998. Firm, industry, and strategy influences on choice of downsizing approach. *Strategic Management Journal*, 19(1): 59.

Dinh, L. T., Paskan, H., Gao, X., & Mannan, M. S. 2012. Resilience engineering of industrial processes: Principles and contributing factors. *Journal of Loss Prevention in the Process Industries*, 25(2): 233-241.

Donkin, C., Little, D. R., & Houpt, J. W. 2014. Assessing the speed-accuracy trade-off effect on the capacity of information processing. *Journal of Experimental Psychology: Human Perception and Performance*, 40(3): 1183-1202.

- Dooley, R. S., Fryxell, G. E., & Judge, W. Q. 2000. Belaboring the not-so-obvious: Consensus, commitment, and strategy implementation speed and success. *Journal of Management*, 26(6): 1237-1257.
- Dranikoff, L., Koller, T., & Schneider, A. 2002. Divestiture: Strategy's missing link. *Harvard Business Review*, 80(5): 74-83, 133.
- Duhaime, I. M. & Schwenk, C. R. 1985. Conjectures on cognitive simplification in acquisition and divestment decision making. *Academy of Management Review*, 10(2): 287-295.
- Dutton, J. E. & Ashford, S. J. 1993. Selling issues to top management. *Academy of Management Review*, 18(3): 397-428.
- Elbanna, S. & Child, J. 2007. The influence of decision, environmental and firm characteristics on the rationality of strategic decision-making. *Journal of Management Studies*, 44(4): 561-591.
- Espahbodi, R., John, T. A., & Vasudevan, G. 2000. The effects of downsizing on operating performance. *Review of Quantitative Finance and Accounting*, 15(2): 107-126.
- Fang, C., Lee, J., & Schilling, M. A. 2010. Balancing exploration and exploitation through structural design: The isolation of subgroups and organizational learning. *Organization Science*, 21(3): 625-642.
- Feldman, E. R. 2014. Legacy divestitures: Motives and implications. *Organization Science*, 25(3): 815-832.
- Feldman, M. S. 2000. Organizational routines as a source of continuous change. *Organization Science*, 11(6): 611-629.
- Fiol, C. M. & O'Connor, E. J. 2003. Waking up! Mindfulness in the face of bandwagons. *Academy of Management Review*, 28(1): 54-70.
- Fisher, S. R. & White, M. A. 2000. Downsizing in a learning organization: Are there hidden costs? *Academy of Management Review*, 25(1): 244-251.

- Forbes, D. P. 2007. Reconsidering the strategic implications of decision comprehensiveness. *Academy of Management Review*, 32(2): 361-376.
- Ford, J. D. 1985. The effects of causal attributions on decision makers' responses to performance downturns. *Academy of Management Review*, 10(4): 770-786.
- Francis, J. D. & Desai, A. B. 2005. Situational and organizational determinants of turnaround. *Management Decision*, 43(9): 1203-1224.
- Fredrickson, B. L. 2001. The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56(3): 218.
- Fredrickson, J. W., Hambrick, D. C., & Baumrin, S. 1988. A model of CEO dismissal. *Academy of Management Review*, 13(2): 255-270.
- Friedman, D., Scullion, C., & Hill, J. 2006. Global delayering for competitive advantage. *BCG Perspectives*.
- GE; How GE works - governance - resilience; <http://www.gesustainability.com/how-ge-works/governance/resilience/>; 20 June 2016, 2016.
- Gioia, D. A. & Chittipeddi, K. 1991. Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal*, 12(6): 433-448.
- Gittell, J. H., Cameron, K., Lim, S., & Rivas, V. 2006. Relationships, layoffs, and organizational resilience airline industry responses to September 11. *Journal of Applied Behavioral Science*, 42(3): 300-329.
- Gordon, S. S., Stewart, J. W. H., Sweo, R., & Luker, W. A. 2000. Convergence versus strategic reorientation: The antecedents of fast-paced organizational change. *Journal of Management*, 26(5): 911-945.
- Greene, W. H. 2003. *Econometric analysis*. Upper Saddle River: Prentice Hall.
- Greiner, L. E. & Bhambri, A. 1989. New CEO intervention and dynamics of deliberate strategic change. *Strategic Management Journal*, 10(S1): 67-86.

- Guth, W. D. & MacMillan, I. C. 1986. Strategy implementation versus middle management self-interest. *Strategic Management Journal*, 7(4): 313-327.
- Guthrie, J. P. & Datta, D. K. 2008. Dumb and dumber: The impact of downsizing on firm performance as moderated by industry conditions. *Organization Science*, 19(1): 108-123.
- Hambrick, D. C. & Snow, C. C. 1977. *A contextual model of strategic decision making in organizations*. Paper presented at the Academy of Management Proceedings, Kissimmee.
- Hambrick, D. C. & Fukutomi, G. D. 1991. The seasons of a CEO's tenure. *Academy of Management Review*, 16(4): 719-742.
- Hancock, J. I., Allen, D. G., Bosco, F. A., McDaniel, K. R., & Pierce, C. A. 2013. Meta-analytic review of employee turnover as a predictor of firm performance. *Journal of Management*, 39(3): 573-603.
- Hancock, J. I., Allen, D. G., & Soelberg, C. 2017. Collective turnover: An expanded meta-analytic exploration and comparison. *Human Resource Management Review*, 27(1): 61-86.
- Haunschild, P. R. 1993. Interorganizational imitation: The impact of interlocks on corporate acquisition activity. *Administrative Science Quarterly*, 38(4): 564-592.
- Haunschild, P. R. & Beckman, C. M. 1998. When do interlocks matter?: Alternate sources of information and interlock influence. *Administrative Science Quarterly*, 43(4): 815-844.
- Hausman, J. A. 1978. Specification tests in econometrics. *Econometrica: Journal of the Econometric Society*, 46(6): 1251-1271.
- Hayward, M. L. A., Rindova, V. P., & Pollock, T. G. 2004. Believing one's own press: The causes and consequences of CEO celebrity. *Strategic Management Journal*, 25(7): 637-653.
- Helfat, C. E. & Peteraf, M. A. 2015. Managerial cognitive capabilities and the microfoundations of dynamic capabilities. *Strategic Management Journal*, 36(6): 831-850.
- Henderson, A. D., Miller, D., & Hambrick, D. C. 2006. How quickly do CEOs become obsolete? Industry dynamism, CEO tenure, and company performance. *Strategic Management Journal*, 27(5): 447-460.

- Hick, W. E. 1952. On the rate of gain of information. *Quarterly Journal of Experimental Psychology*, 4(1): 11-26.
- Hickson, D., Butler, R., Cray, D., Mallory, G., & Wilson, D. 1986. *Top decisions: Strategic decision making in organizations*. San Francisco: Jossey-Bass.
- Hofer, C. W. 1980. Turnaround strategies. *Journal of Business Strategy*, 1(1): 19-31.
- Holling, C. S. 1973. Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics*, 4: 1-23.
- Holling, C. S. 1996. Engineering resilience versus ecological resilience. In P. Schulze (Ed.), *Engineering within ecological constraints*: 31-44. Washington DC: National Academy Press.
- Hoskisson, R. E., Johnson, R. A., & Moesel, D. D. 1994. Corporate divestiture intensity in restructuring firms: Effects of governance, strategy, and performance. *Academy of Management Journal*, 37(5): 1207-1251.
- Jacquemin, A. P. & Berry, C. H. 1979. Entropy measure of diversification and corporate growth. *Journal of Industrial Economics*, 27(4): 359-369.
- Jenter, D. & Kanaan, F. 2015. CEO turnover and relative performance evaluation. *Journal of Finance*, 70(5): 2155-2184.
- Johnson, A. A. 1995. The business case for work-family programs. *Journal of Accountancy*, 180(2): 53-58.
- Kahneman, D. & Tversky, A. 1979. Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2): 263-291.
- Kang, J.-K. & Shivdasani, A. 1997. Corporate restructuring during performance declines in Japan. *Journal of Financial Economics*, 46(1): 29-65.
- Kang, J. 2013. The relationship between corporate diversification and corporate social performance. *Strategic Management Journal*, 34(1): 94-109.

Kang, J. 2016. Labor market evaluation versus legacy conservation: What factors determine retiring CEOs' decisions about long-term investment? *Strategic Management Journal*, 37(2): 389-405.

Kanter, R. M. 1981. The middle manager as innovator. *Harvard Business Review*, 60(4): 95-105.

Kanter, R. M. 2003. Leadership and the psychology of turnarounds. *Harvard Business Review*, 81(6): 58-67.

Karim, S. & Mitchell, W. 2000. Path-dependent and path-breaking change: Reconfiguring business resources following business. *Strategic Management Journal*, 21(10/11): 1061-1081.

Karim, S. 2006. Modularity in organizational structure: The reconfiguration of internally developed and acquired business units. *Strategic Management Journal*, 27(9): 799-823.

Kesner, I. F. & Dalton, D. R. 1994. Top management turnover and CEO succession: An investigation of the effects of turnover on performance. *Journal of Management Studies*, 31(5): 701-713.

Kiesler, S. & Sproull, L. 1982. Managerial response to changing environments: Perspectives on problem sensing from social cognition. *Administrative Science Quarterly*, 27(4): 548-570.

Kleinbaum, A. M. & Stuart, T. E. 2014. Network responsiveness: The social structural microfoundations of dynamic capabilities. *Academy of Management Perspectives*, 28(4): 353-367.

Kossek, E. E. & Perrigino, M. B. 2016. Resilience: A review using a grounded integrated occupational approach. *Academy of Management Annals*, 10(1): 729-797.

Kunisch, S., Bartunek, J. M., Mueller, J., & Huy, Q. N. 2017. Time in strategic change research. *Academy of Management Annals*, 11(2): 1005-1064.

Laamanen, T. & Keil, T. 2008. Performance of serial acquirers: Toward an acquisition program perspective. *Strategic Management Journal*, 29(6): 663-672.

- Laamanen, T., Brauer, M., & Junna, O. 2014. Performance of acquirers of divested assets: Evidence from the U.S. software industry. *Strategic Management Journal*, 35(6): 914-925.
- Langer, E. J. 1989. Minding matters: The consequences of mindlessness–mindfulness. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, Vol. 22: 137-173. London: Academic Press.
- Lazarsfeld, P. F. & Merton, R. K. 1954. Friendship as a social process: A substantive and methodological analysis. *Freedom and Control in Modern Society*, 18(1): 18-66.
- Lengnick-Hall, C. A., Beck, T. E., & Lengnick-Hall, M. L. 2011. Developing a capacity for organizational resilience through strategic human resource management. *Human Resource Management Review*, 21(3): 243-255.
- Leonard-Barton, D. 1992. Core capabilities and core rigidities: A paradox in managing new product development. *Strategic Management Journal*, 13: 111-125.
- Levinthal, D. & Rerup, C. 2006. Crossing an apparent chasm: Bridging mindful and less-mindful perspectives on organizational learning. *Organization Science*, 17(4): 502-513.
- Likert, R. 1961. *New patterns of management*. New York: McGraw-Hill.
- Lim, D. S., Celly, N., Morse, E. A., & Rowe, W. G. 2013. Rethinking the effectiveness of asset and cost retrenchment: The contingency effects of a firm's rent creation mechanism. *Strategic Management Journal*, 34(1): 42-61.
- Linnenluecke, M. K. 2017. Resilience in business and management research: A review of influential publications and a research agenda. *International Journal of Management Reviews*, 19(1): 4-30.
- Littler, C. R., Wiesner, R., & Dunford, R. 2003. The dynamics of delayering: Changing management structures in three countries. *Journal of Management Studies*, 40(2): 225-256.
- Littler, C. R. & Innes, P. 2004. The paradox of managerial downsizing. *Organization Studies* 25(7): 1159-1184.

London, M. 1983. Toward a theory of career motivation. *Academy of Management Review*, 8(4): 620-630.

Lorsch, J. W. & Allen, S. A. 1973. *Managing diversity and interdependence: An organizational study of multidivisional firms*. Boston: Harvard University.

Luthans, B. C. & Sommer, S. M. 1999. The impact of downsizing on workplace attitudes: Differing reactions of managers and staff in a health care organization *Group & Organization Management*, 24(1): 46-70.

Luthar, S. S., Cicchetti, D., & Becker, B. 2000. The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*, 71(3): 543-562.

Mallak, L. 1998. Putting organizational resilience to work. *Industrial Management*, 40(6): 8-13.

March, J. G. 1991. Exploration and exploitation in organizational learning. *Organization Science*, 2(1): 71-87.

Marcus, A. A. & Nichols, M. L. 1999. On the edge: Heeding the warnings of unusual events. *Organization Science*, 10(4): 482-499.

Massingham, P. 2008. Measuring the impact of knowledge loss: More than ripples on a pond? *Management Learning*, 39(5): 541-560.

Masten, A. S., Best, K. M., & Garmezy, N. 1990. Resilience and development: Contributions from the study of children who overcome adversity. *Development and Psychopathology*, 2(4): 425-444.

Matta, E. & Beamish, P. W. 2008. The accentuated CEO career horizon problem: Evidence from international acquisitions. *Strategic Management Journal*, 29(7): 683-700.

McKinley, W. 1993. Organizational decline and adaptation: Theoretical controversies. *Organization Science*, 4(1): 1-9.

McKinley, W., Latham, S., & Braun, M. 2014. Organizational decline and innovation: Turnarounds and downward spirals. *Academy of Management Review*, 39(1): 88-110.

- McPherson, J. M. & Smith-Lovin, L. 1987. Homophily in voluntary organizations: Status distance and the composition of face-to-face groups. *American Sociological Review*, 52(3): 370-379.
- Mellor, S. 1992. The influence of layoff severity on postlayoff union commitment among survivors: The moderating effect of the perceived legitimacy of a layoff account. *Personnel Psychology*, 45(3): 579-600.
- Michael, S. C. & Robbins, D. K. 1998. Retrenchment among small manufacturing firms during recession. *Journal of Small Business Management*, 36(3): 35-45.
- Miller, D. 1993. Some organizational consequences CEO succession. *Academy of Management Journal*, 36(3): 644-659.
- Miller, K. D., Meng, Z., & Calantone, R. J. 2006. Adding interpersonal learning and tacit knowledge to March's exploration-exploitation model. *Academy of Management Journal*, 49(4): 709-722.
- Miller, M. K. 2008. Judgment aggregation and subjective decision-making. *Economics & Philosophy*, 24(2): 205-231.
- Mintzberg, H., Raisinghani, D., & Theoret, A. 1976. The structure of "unstructured" decision processes. *Administrative Science Quarterly*: 246-275.
- Mone, M. A., McKinley, W., & Barker, V. L. 1998. Organizational decline and innovation: A contingency framework. *Academy of Management Review*, 23(1): 115-132.
- Morgan, G. P. & Carley, K. M. 2012. Modeling formal and informal ties within an organization: A multiple model integration. In A. Lomi & J. R. Harrison (Eds.), *The garbage can model of organizational choice: Looking forward at forty* 253-292. Bingley: Emerald Group Publishing Limited.
- Morrow, J. L., Johnson, R. A., & Busenitz, L. W. 2004. The effects of cost and asset retrenchment on firm performance: The overlooked role of a firm's competitive environment. *Journal of Management*, 30(2): 189-208.

- Morrow, J. L., Sirmon, D. G., Hitt, M. A., & Holcomb, T. R. 2007. Creating value in the face of declining performance: Firm strategies and organizational recovery. *Strategic Management Journal*, 28(3): 271-283.
- Moulton, W. N., Thomas, H., & Pruett, M. 1996. Business failure pathways: Environmental stress and organizational response. *Journal of Management*, 22(4): 571-595.
- Mumford, M. D., Friedrich, T. L., Caughron, J. J., & Byrne, C. L. 2007. Leader cognition in real-world settings: How do leaders think about crises? *Leadership Quarterly*, 18(6): 515-543.
- Musteen, M., Liang, X., & Barker, V. L. 2011. Personality, perceptions and retrenchment decisions of managers in response to decline: Evidence from a decision-making study. *Leadership Quarterly*, 22(5): 926-941.
- Nadler, D., Tushman, M., & Nadler, M. B. 1997. *Competing by design: The power of organizational architecture*. New York: Oxford University Press.
- Ndofor, H. A., Vanevenhoven, J., & Barker, V. L. 2013. Software firm turnarounds in the 1990s: An analysis of reversing decline in a growing, dynamic industry. *Strategic Management Journal*, 34(9): 1123-1133.
- Neter, J., Kutner, M. H., Nachtsheim, C. J., & Wasserman, W. 1996. *Applied linear statistical models*. Chicago: Irwin
- Newbert, S. L. 2008. Value, rareness, competitive advantage, and performance: A conceptual-level empirical investigation of the resource-based view of the firm. *Strategic Management Journal*, 29(7): 745-768.
- Newman, M. E. 2002. Assortative mixing in networks. *Physical Review Letters*, 89(20): 208701.
- Nonaka, I. 1988. Toward middle-up-down management: Accelerating information creation. *MIT Sloan Management Review*, 29(3): 9-18.
- O'Neill, R. V. 1986. *A hierarchical concept of ecosystems*. Princeton, N.J.: Princeton University Press.

- Olson, M. S., Van Bever, D., & Verry, S. 2008. When growth stalls. *Harvard Business Review*, 86(3): 50.
- Ortiz-De-Mandojana, N. & Bansal, P. 2016. The long-term benefits of organizational resilience through sustainable business practices. *Strategic Management Journal*, 37(8): 1615-1631.
- Padgett, J. F. 1980. Managing garbage can hierarchies. *Administrative Science Quarterly*, 25(4): 583-604.
- Palmon, O. & Sun, H.-L. 1997. Layoff announcements: Stock market impact and financial performance. *Journal of the Financial Management Association*, 26(3): 54-68.
- Papadakis, V. M., Lioukas, S., & Chambers, D. 1998. Strategic decision-making processes: The role of management and context. *Strategic Management Journal*, 19(2): 115-147.
- Pearce, J. A. & Robbins, K. 1993. Toward improved theory and research on business turnaround. *Journal of Management*, 19(3): 613-636.
- Pearce, J. A. & Robbins, D. K. 1994. Retrenchment remains the foundation of business turnaround. *Strategic Management Journal*, 15(5): 407-417.
- Pennings, J. M., Lee, K., & Van Witteloostuijn, A. 1998. Human capital, social capital, and firm dissolution. *Academy of Management Journal*, 41(4): 425-440.
- Perlow, L. A., Okhuysen, G. A., & Repenning, N. P. 2002. The speed trap: Exploring the relationship between decision making and temporal context. *Academy of Management Journal*, 45(5): 931-955.
- Perry, T. & Shivdasani, A. 2005. Do boards affect performance? Evidence from corporate restructuring. *Journal of Business*, 78(4): 1403-1431.
- Pimm, S. L. 1984. The complexity and stability of ecosystems. *Nature*, 307(5949): 321-326.
- Powell, T. C. 2001. Competitive advantage: Logical and philosophical considerations. *Strategic Management Journal*, 22(9): 875-888.

- Prahalad, C. K. & Bettis, R. A. 1986. The dominant logic: A new linkage between diversity and performance. *Strategic Management Journal*, 7(6): 485-501.
- Preacher, K. J. & Hayes, A. F. 2004. SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods*, 36(4): 717-731.
- Priem, R. L. & Butler, J. E. 2001. Is the resource-based "view" a useful perspective for strategic management research? *Academy of Management Review*, 26(1): 22-40.
- Puffer, S. M. & Weintrop, J. B. 1991. Corporate performance and CEO turnover: The role of performance expectations. *Administrative Science Quarterly*, 36(1): 1-19.
- Ravenscraft, D. J. & Scherer, F. M. 2011. *Mergers, sell-offs, and economic efficiency*. Washington: Brookings Institution Press.
- Reb, J., Narayanan, J., & Ho, Z. W. 2015. Mindfulness at work: Antecedents and consequences of employee awareness and absent-mindedness. *Mindfulness*, 6(1): 111-122.
- Robbins, D. K. & Pearce, J. A. 1992. Turnaround: Retrenchment and recovery. *Strategic Management Journal*, 13(4): 287-309.
- Romanelli, E. & Tushman, M. L. 1994. Organizational transformation as punctuated equilibrium: An empirical test. *Academy of Management Journal*, 37(5): 1141-1166.
- Rousseau, D. M. & Tijoriwala, S. A. 1998. Assessing psychological contracts: Issues, alternatives and measures. *Journal of Organizational Behavior*, 19(51): 679-695.
- Schemeil, Y. 2013. Bringing international organization in: Global institutions as adaptive hybrids. *Organization Studies*, 34(2): 219-252.
- Schilling, M. A. & Fang, C. 2014. When hubs forget, lie, and play favorites: Interpersonal network structure, information distortion, and organizational learning. *Strategic Management Journal*, 35(7): 974-994.
- Schmitt, A., Borzillo, S., & Probst, G. 2012. Don't let knowledge walk away: Knowledge retention during employee downsizing. *Management Learning*, 43(1): 53-74.

- Schmitt, A. & Raisch, S. 2013. Corporate turnarounds: The duality of retrenchment and recovery. *Journal of Management Studies*, 50(7): 1216-1244.
- Schouten, J. & Bekker, J. 1967. Reaction time and accuracy. *Acta Psychologica*, 27(1): 143-153.
- Schreyögg, G. & Kliesch-Eberl, M. 2007. How dynamic can organizational capabilities be? Towards a dual-process model of capability dynamization. *Strategic Management Journal*, 28(9): 913-933.
- Schwenk, C. R. 1984. Cognitive simplification processes in strategic decision-making. *Strategic Management Journal*, 5(2): 111-128.
- Shah, P. P. 2000. Network destruction: The structural implications of downsizing. *Academy of Management Journal*, 43(1): 101-112.
- Sharfman, M. P., Wolf, G., Chase, R. B., & Tansik, D. A. 1988. Antecedents of organizational slack. *Academy of Management Review*, 13(4): 601-614.
- Shaw, D. G. & Schneier, C. E. 1993. Making organization change happen: The keys to successful delayering. *Human Resource Planning*, 16(1): 1-18.
- Shi, W. & Prescott, J. E. 2011. Sequence patterns of firms' acquisition and alliance behaviour and their performance implications. *Journal of Management Studies*, 48(5): 1044-1070.
- Shi, W., Sun, J., & Prescott, J. E. 2012. A temporal perspective of merger and acquisition and strategic alliance initiatives: Review and future direction. *Journal of Management*, 38(1): 164-209.
- Shonin, E., Van Gordon, W., Dunn, T. J., Singh, N. N., & Griffiths, M. D. 2014. Meditation awareness training (MAT) for work-related wellbeing and job performance: A randomised controlled trial. *International Journal of Mental Health and Addiction*, 12(6): 806-823.
- Shrout, P. E. & Bolger, N. 2002. Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods*, 7(4): 422-445.

- Simon, H. A. 1987. Making management decisions: The role of intuition and emotion. *Academy of Management Executive*, 1(1): 57-64.
- Sirmon, D. G., Hitt, M. A., & Ireland, R. D. 2007. Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review*, 32(1): 273-292.
- Sobel, M. E. 1982. Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology*, 13: 290-312.
- Starke, F. A., Dyck, B., & Mauws, M. K. 2003. Coping with the sudden loss of an indispensable employee: An exploratory case study. *Journal of Applied Behavioral Science*, 39(2): 208-228.
- Staw, B. M., Sandelands, L. E., & Dutton, J. E. 1981. Threat rigidity effects in organizational behavior: A multilevel analysis. *Administrative Science Quarterly*, 26(4): 501-524.
- Sturman, M. C., Trevor, C. O., Boudreau, J. W., & Gerhart, B. 2003. Is it worth to win the talent war? Evaluating the utility of performance-based pay. *Personnel Psychology*, 56(4): 997-1035.
- Sudarsanam, S. & Lai, J. 2001. Corporate financial distress and turnaround strategies: An empirical analysis. *British Journal of Management*, 12(3): 183-199.
- Tallman, S. & Li, J. 1996. Effects of international diversity and product diversity on the performance of multinational firms. *Academy of Management Journal*, 39(1): 179-196.
- Tangpong, C., Abebe, M., & Li, Z. 2015. A temporal approach to retrenchment and successful turnaround in declining firms. *Journal of Management Studies*, 52(5): 647-677.
- Teece, D. J., Pisano, G., & Shuen, A. 1997. Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7): 509-533.
- Teece, D. J. 2007. Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, 28(13): 1319-1350.

Teece, D. J. 2014. The foundations of enterprise performance: Dynamic and ordinary capabilities in an (economic) theory of firms. *Academy of Management Perspectives*, 28(4): 328-352.

Thompson, J. D. 1967. *Organizations in action: Social science bases of administrative theory*: Transaction publishers.

Tilman, D. & Downing, J. A. 1994. Biodiversity and stability in grasslands. *Nature*, 367: 363-365.

Trahms, C. A., Ndofor, H. A., & Sirmon, D. G. 2013. Organizational decline and turnaround: A review and agenda for future research. *Journal of Management*, 39(5): 1277-1307.

Trevor, C. O. & Nyberg, A. J. 2008. Keeping your headcount when all about you are losing theirs: Downsizing, voluntary turnover rates, and the moderating role of HR practices. *Academy of Management Journal*, 51(2): 259-276.

van der Vegt, G. S., Essens, P., Wahlström, M., & George, G. 2015. Managing risk and resilience. *Academy of Management Journal*, 58(4): 971-980.

Verbrugge, L. M. 1977. The structure of adult friendship choices. *Social Forces*, 56(2): 576-597.

Vermeulen, F. & Barkema, H. 2002. Pace, rhythm, and scope: Process dependence in building a profitable multinational corporation. *Strategic Management Journal*, 23(7): 637-653.

Vidal, E. & Mitchell, W. 2015. Adding by subtracting: The relationship between performance feedback and resource reconfiguration through divestitures. *Organization Science*, 26(4): 1101-1118.

Vijh, A. M. 2002. The positive announcement-period returns of equity carveouts: Asymmetric information or divestiture gains? *Journal of Business*, 75(1): 153-190.

Vogus, T. J. & Welbourne, T. M. 2003. Structuring for high reliability: HR practices and mindful processes in reliability-seeking organizations. *Journal of Organizational Behavior*, 24(7): 877-903.

Vogus, T. J. & Sutcliffe, K. M. 2007. *Organizational resilience: Towards a theory and research agenda*. Paper presented at the IEEE International Conference on Systems, Man and Cybernetics, Montreal.

Wan, W. P. & Yiu, D. W. 2009. From crisis to opportunity: Environmental jolt, corporate acquisitions, and firm performance. *Strategic Management Journal*, 30(7): 791-801.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. 1999. Organizing for high reliability: Process of collective mindfulness. *Research in Organizational Behavior*, 21: 81-123.

Weick, K. E. & Sutcliffe, K. M. 2006. Mindfulness and the quality of organizational attention. *Organization Science*, 17(4): 514-524.

Werner, E. E., Bierman, J. M., & French, F. E. 1971. *The children of Kauai: A longitudinal study from the prenatal period to age ten*. Honolulu: University of Hawaii Press.

Werner, E. E. 1997. Vulnerable but invincible: High-risk children from birth to adulthood. *Acta Paediatrica*, 86(S422): 103-105.

Werner, E. E. & Smith, R. S. 2001. *Journeys from childhood to midlife: Risk, resilience, and recovery*. London: Cornell University Press.

Westphal, J. D. & Fredrickson, J. W. 2001. Who directs strategic change? Director experience, the selection of new CEOs, and change in corporate strategy. *Strategic Management Journal*, 22(12): 1113-1137.

Whetten, D. A. 1980. Organizational decline: A neglected topic in organizational science. *Academy of Management Review*, 5(4): 577-588.

Wickelgren, W. A. 1977. Speed-accuracy tradeoff and information processing dynamics. *Acta Psychologica*, 41(1): 67-85.

Williams, E. A., Pillai, R., Deptula, B., & Lowe, K. B. 2012. The effects of crisis, cynicism about change, and value congruence on perceptions of authentic leadership and attributed charisma in the 2008 presidential election. *Leadership Quarterly*, 23(3): 324-341.

Williams, T., Gruber, D., Sutcliffe, K., Shepherd, D., & Zhao, E. Y. 2017. Organizational response to adversity: Fusing crisis management and resilience research streams. *Academy of Management Annals*: annals. 2015.0134.

Williams, T. A. & Shepherd, D. A. 2016. Building resilience or providing sustance: Different paths of emergent ventures in the aftermath of the haiti earthquake. *Academy of Management Journal*, 59(6): 2069-2102.

Winn, J. 1997. Asset productivity turnaround: The growth/efficiency challenge. *Journal of Management Studies*, 34(4): 585-600.

Wooldridge, B. & Floyd, S. W. 1990. The strategy process, middle management involvement, and organizational performance. *Strategic Management Journal*, 11(3): 231-241.

Wooldridge, B., Schmid, T., & Floyd, S. W. 2008. The middle management perspective on strategy process: Contributions, synthesis, and future research. *Journal of Management*, 34(6): 1190-1221.

Wulf, J. 2012. The flattened firm: Not as advertised. *California Management Review*, 55(1): 5-23.

Zollo, M. & Winter, S. G. 2002. Deliberate learning and the evolution of dynamic capabilities. *Organization Science*, 13(3): 339-351.

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