Size Matters: Multi-level Short- and Long-term Change Dynamics in Organizations Responses to the COVID-19 Pandemic

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Dissertation written under the supervision of Prof. Dr. Ekin Ilseven

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Abstract

While crises can be disruptive, they can also be catalysts for development. When individuals and organizations face challenges, they adapt to navigate the environment and exit the situation as survivors. When this development is retained after the crisis, it contributes to learning and the organization's or individual's knowledge base in preparation for the next unexpected event. This approach aligns with the resilience perspective, which suggests that dealing with challenges builds resilience. This thesis investigates the effects of challenges, the resulting need for change implementation, and the retention of organizations and individuals in the context of the COVID-19 pandemic. Organizations and individuals showed different levels of responses, indicating other variables influencing this relationship. Consequently, this thesis examines how firm size (measured in the number of employees) and market size (measured in the number of revenue) influence adaptation patterns and change retention during and after a crisis. Using a qualitative approach, with the addition of some quantitative data, the findings show a positive relationship between size and change implementation and retention. Larger firms and those serving larger markets demonstrate higher levels of change and retention. The analysis also detected an industry-specific effect impacting change patterns, so a deep dive into the healthcare industry was conducted to understand these dynamics. This thesis's findings have theoretical and managerial implications, showing that organizational characteristics, like size, influence change patterns in a crisis context. The findings highlight the need for managers to understand organizational and individual change patterns in building resilience and successfully navigating difficult conditions.

KEYWORDS: multi-level change, short vs long-run change dynamics, resilience, firm size, market size, crisis, COVID-19, organizational learning

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Resumo

Embora as crises possam ser disruptivas, podem também atuar como catalisadores do desenvolvimento. Quando indivíduos e organizações enfrentam desafios, adaptam-se para navegar no ambiente e emergir da situação como sobreviventes. Quando este desenvolvimento é mantido após a crise, contribui para a aprendizagem e para a base de conhecimento da organização ou do indivíduo na preparação para o próximo evento inesperado. Esta abordagem alinha-se com a perspetiva da resiliência, que sugere que enfrentar desafios desenvolve a resiliência. Esta dissertação investiga os efeitos dos desafios, a consequente necessidade de implementação de mudanças e a retenção das organizações e indivíduos no contexto da pandemia de COVID-19. As organizações e os indivíduos demonstraram diferentes níveis de resposta, indicando outras variáveis que influenciam esta relação. Consequentemente, esta dissertação examina como a dimensão da empresa (medida pelo número de colaboradores) e a dimensão do mercado (medida pelo volume de faturação) influenciam os padrões de adaptação e retenção de mudanças durante e após uma crise. Utilizando uma abordagem qualitativa, complementada com dados quantitativos, os resultados evidenciam uma relação positiva entre a dimensão e a implementação e retenção de mudanças. A análise também identificou um efeito específico do setor da saúde. As conclusões desta dissertação têm implicações teóricas e de gestão, demonstrando que características organizacionais influenciam os padrões de mudança num contexto de crise.

PALAVRAS-CHAVE: mudança multinível, dinâmicas de mudança de curto versus longo prazo, resiliência, dimensão da empresa, dimensão do mercado, crise, COVID-19, aprendizagem organizacional

TÍTULO: A Dimensão Importa: Dinâmicas de Mudança Multinível de Curto e Longo Prazo nas Respostas das Organizações à Pandemia COVID-19

AUTOR: Leonie Natasha Rosenlöcher

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Lastly, but equally as important, I want to thank my family. I would not be who or where I am without their support. They have been with me every step of my academic journey and have always believed in my capabilities, even in the moments when I did not. Also, I want to thank my amazing friends who have been understanding about my level of stress and limited time while working on this thesis.

Notes

I acknowledge the use of AI only for grammar, writing structure checking, and translation. No content was originally generated by AI. Any support from AI has been acknowledged in the text.

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1. Introduction

As the world constantly evolves and changes due to rapid technological and scientific development, organizations adopt new technologies and expand their business to make use of new opportunities. However, at times, organizations are forced to adapt due to sudden changes and external pressures. They must eventually face the need to find innovative solutions to unexpected situations to keep the business operations running and exit the situation successfully. Yet, this also has consequences for their members; individuals managing the organizations need to adapt almost simultaneously, as suddenly their ways of operating or decision-making might not work anymore, or their belief in right and wrong is challenged. An unexpected situation causing the need for such adaptations can be a crisis, which often has detrimental impacts but can lead to development in various areas, as well as increased resilience. During a crisis, organizations and individuals are motivated to take action in uncertain and new environments, thus adapt and improve their processes and approaches to navigate these conditions (Duchek, 2020). Just recently, the COVID-19 pandemic has impacted individuals as well as organizations globally and had a significant economic and psychological impact (Lee, Lampel & Shapira, 2020; Serafini, Parmigiani, Amerio, Aguglia, Sher & Amore, 2020). Many aspects of work and business life have not been the same after COVID-19 (Staudenmayer, Tyre & Perlow, 2002). Individuals and organizations had to adjust to the new normal, think out of the box, and deviate from things they know (Williams, Gruber, Sutcliffe, Shepherd & Zhao, 2017).

However, not all of those changes are retained in the long term. Previous literature argues that some adaptation during a crisis may be treated as an exception. On the organizational level, adaptations typically become more embedded into the organizational processes, which increases the likelihood of retention (Sydow, Schreyögg & Koch, 2009). The structural embedding needed for retention is less common and more complex to achieve on the individual level, making it less typical for those changes to be retained long-term (Feldman & Pentland, 2003). All in all, crisis moments have both multi-level and short- and long-term impacts, and previous literature has yet to treat such impact in a holistic manner. Without doing so, our understanding of where change comes from and lasts would be incomplete. I further focus on firm and market size to scope my investigation into this high-level question. As such, in this thesis, I pose the research question: **<How do organizational size and market size influence adaptation patterns and long-term retention of change during and after a crisis?=**.

I employ a qualitative research method, as my intention is to identify factors leading to such multi-level dynamics while keeping some of the richness of the real world. Through interviews with entrepreneurs and CEOs, I first confirm the intuition that, even when organizations and individuals face the same situation as they did in a global crisis like the COVID-19 pandemic, they adapt and retain the changes differently. Organizations showed varying structural and digital transformation patterns. Some organizations implemented and maintained changes, while others reversed their adaptations after the pandemic or maintained only selected changes. A similar pattern can be identified on the individual level among entrepreneurs and CEOs. Some changed their decision-making and leadership approaches permanently, while others maintained their initial approaches or reverted to them shortly after the crisis. The results reveal that individual-level changes have been more prominent during the pandemic. Still, organizational-level adaptations are more sustainable, as proved by higher retention rates after the crisis.

I identify three main factors that have a substantial effect on these outcomes. The firm size (measured in employees) and the market size (measured in revenue) both appear to be strongly associated with change. Nevertheless, the market size shows a slightly stronger relationship with change than the firm size. The qualitative findings further highlight the need to consider an industry effect when examining adaptation in a crisis context. Specifically, the nature of the crisis experience varies by industry type. Without attention to the industry-specific challenges, explaining the multi-level change and retention dynamics is less accurate. As such, the way crisis is experienced depends on the organizational and market sizes, which prove to be significant factors influencing the organizational and individual-level adaptation patterns both in the short- and long-run.

The findings of this thesis contribute to the existing literature by adding to the understanding of change dynamics during and after crises, as well as resilience built through crises. I specifically identify the effect of size on change dynamics in the context of a crisis. They also contribute to the existing discussion in the literature regarding the effects of firm size on change capacity, supporting the argument that firm size has a positive relationship with change capabilities. There are conflicting views in the literature regarding the nature of the relationship, making it a fascinating and relevant topic to study (Damanpour, 1992; Moch & Morse, 1977; Haveman, 1993). Furthermore, I contribute to the literature on how the subjectivity of a crisis will affect seemingly disparate organizational action in the wake of a common shock. My

findings show that industry-specific effects impact an individual9s or organization's crisis experience, influencing their change patterns. The literature also states that the unique perception of an unexpected event impacts the actions taken in response and, hence, the learning of the organization or individual (Duchek, 2020).

From the point of view of rare-event research, the way organizations change and adapt when disruptions like crises occur is of great interest in academic literature (Staudenmayer, Tyre & Perlow, 2002). Rare events like the COVID-19 pandemic occur infrequently yet have profound impacts, making the learning and development from such exceptional circumstances particularly interesting (Argote & Miron-Spektor, 2011).

2. Theoretical Background

Craighead, Ketchen, and Darby (2020) argue that pandemics qualitatively differ from typical disruptions. It becomes apparent that COVID-19 can be described as an organizational crisis, as it was a rare event and suddenly caused the world and its people to rethink society's fundamental principles and rules. An organizational crisis is further characterized by its threat to an organization9s viability and recognized as such by key stakeholders, making adaptations at the individual and organizational levels necessary to manage the crisis effectively. The uncertainty during such an organizational crisis can lead to people doubting basic assumptions and questioning their beliefs and values (Pearson & Clair, 1998). This doubting and questioning in uncertain situations make change and adaptation possible, as it does not only require change but causes it simultaneously. As a response to uncertainty, processes within the business are adjusted, as well as behaviors and management styles by the leaders (Aftab, Veneziani, Sarwar & Ishaq, 2024).

2.1 Multi-level Change in the Crisis Context

These adaptations, a typical response to uncertainty and crisis, can occur at different levels. As a consequence of unexpected situations, processes within the business are adjusted, as well as behaviors and management styles by the leaders (Aftab, Veneziani, Sarwar & Ishaq, 2024). Therefore, I distinguish between individual- and organizational-level changes and dive into the literature, which, in a puzzling manner, offers opposing opinions about the effect of firm size and market size on how such multi-level change may occur.

As soon as a crisis strikes or challenges arise, individuals and actors in the organization need to make decisions about the next steps and respond to the challenges they are facing (Wiklund & Shepherd, 2003). Unprecedented situations often lead to actors feeling uncertain about how to proceed or which decisions to make in the process, as the details of the problem might be unknown. (Williams, Gruber, Sutcliffe, Shepherd & Zhao, 2017). To navigate this uncertainty, actors must adapt their behavior to display specific critical abilities and characteristics. They must familiarize themselves with timely decision-making and actively recognize opportunities and innovation. Another essential ability an actor must possess to manage hostile situations and environments successfully is to display changeable behavior. (Williams, Gruber, Sutcliffe, Shepherd & Zhao, 2017). Lastly, Covin and Slevin (1989) refer to Millers research (1983), in which the author hypothesizes that entrepreneurial efforts in terms of risk-taking, innovation, and proactiveness are required to cope with hostile conditions and environments. Miller supports this with a positive correlation between the variables of environmental hostility and entrepreneurial orientation. Not only the individual actors are required to change, but also the organization's processes, structures, and strategies. When organizations want to build resilience to environmental uncertainty, they must adapt to market and environmental changes during and after the crisis (Ratten, 2020). If an organization does not adjust its internal processes, the business cannot continue operations in the new environment after the crisis (Williams, Gruber, Sutcliffe, Shepherd & Zhao, 2017).

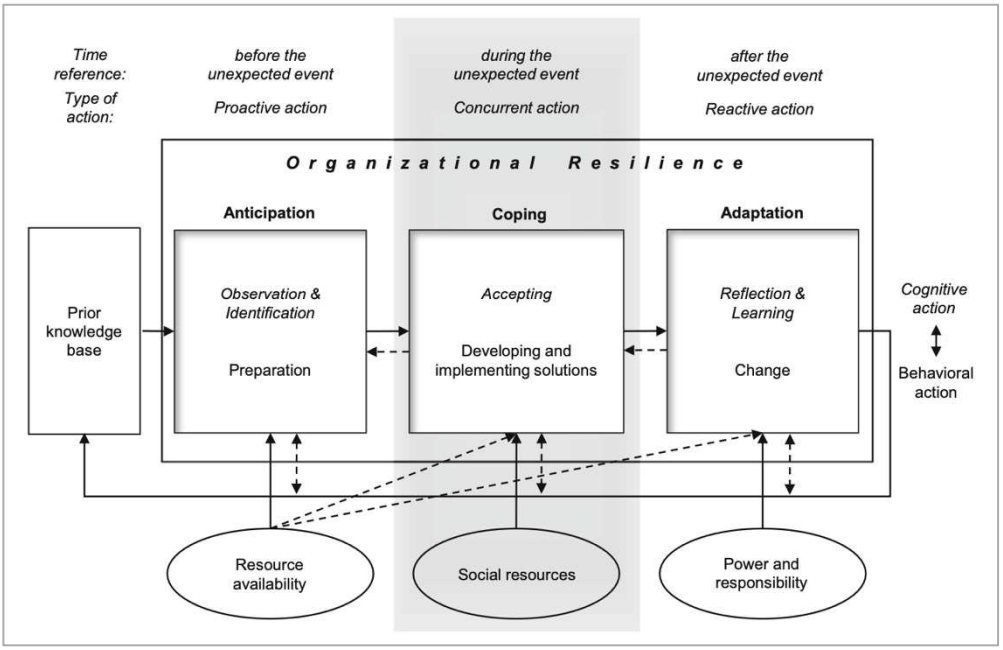
2.2 Resilience and Learning

The changes on different levels when facing a crisis or unexpected circumstances do not necessarily need to have the function of damage control and the goal of survival. These adaptations can function as transformations and result in development and resilience. The resilience perspective is essential in terms of change in a crisis context, as it considers a crisis as an opportunity for growth instead of simply a threat. In academic literature, there are several definitions and interpretations of the term 8resilience9, with a pattern of a distinction of perspective emerging between two approaches. One describes resilience as the simple rebound of an organization to the status quo that was in place before the event. The other represents the development and growth through crisis (Lengnick-Hall, Beck & Lengnick-Hall, 2011). This thesis will be based on Duchek's definition (2020), which defines organizational resilience as *<an organization9s ability to anticipate potential threats, to cope effectively with adverse events, and to adapt to changing conditions=* (p. 2020).

Resilience is typically explored on an organizational level. Vogus and Sutcliffe (2007) explain the term as the process of organizations making positive adjustments in situations like, for example, crises or routine disruptions, which they define as challenging conditions. Linnenluecke (2017) found that resilience on the organizational level revolves around specific characteristics of a business. These include, for example, fast response and recovery time, as well as finding different, unique ways of doing business. These capabilities enabling an organization to be resilient do not necessarily exist from the beginning. They have to develop through dealing and coping with challenging conditions or unexpected events (Linnenluecke et al. 2012, as cited in Duchek, 2020). Resilience is not only viewed on the organizational level, as there is also the individual level of resilience, which has to be considered, as it is said to be a major contributor to enforcing organizational resilience. Individual-level resilience is about the members of an organization and their characteristics, skills, behaviors, and abilities. Those include, for example, handling challenges and succeeding even when faced with uncertain and complex situations. (Van Der Vegt, Essens, Wahlström & George, 2015; Linnenluecke, 2017; Lengnick-Hall, Beck, & Lengnick-Hall, 2011). Therefore, resilience is commonly referred to on an organizational and individual level (Linnenluecke, 2017).

Neither organizational nor individual-level resilience is simply a state but a process that Duchek (2020) divided into three distinct stages. The model, displayed in ***Figure 1***, aids in understanding the nature and interconnection of the concept of resilience. I refer to this conceptualization of organizational resilience to further highlight the significance of change and adaptation for resilience and the importance of considering the before, during, and after. These phases of the resilience process help to connect the dots between the occurrence of an unexpected event, the need and implementation of change, and the retention of long-term adaptations.

Figure 1: A capability-based conceptualization of organizational resilience by Duchek (2020)



The main stages of the model by Duchek (2020), anticipation, coping, and adaptation, represent a process cycle, as the knowledge accommodated by the end of the adaptation phase after one unexpected event acts as the new knowledge base for the next one. These stages build the foundation for the storyline of this study, as the anticipatory phase represents the identification and perception of challenges during COVID-19, and the coping stage represents the change implementation of solutions and the accompanying change during the pandemic. Lastly, the adaptation describes the retention of the changes post-pandemic and, thereby, the long-term learning. The anticipation phase involves identifying so-called weak signals, a concept explained by Ansoff (2012). He describes weak signals as information regarding a possibly problematic situation, which is still uncertain in scope and importance. During COVID-19, it was essential for entrepreneurs and organizations to identify the new challenges, even if the surrounding information was unknown. Based on these perceptions and observations, the solutions and the change are implemented during the second stage of coping. Here, short-term solutions are found and implemented to respond actively to unexpected events (Madni & Jackson, 2009, as cited in Duchek, 2020). Until this point, an organization has implemented short-term measures to cope with the challenges but has not yet grown through the crisis by creating learning or retaining the changes. This step takes place in the third phase of the model. It can be divided into organizational change capabilities and learning and reflection. The

generation of change within an organization is a complex process guided by the initial knowledge base and the knowledge generated during the previous phases. The most essential step in producing this change is acting based on this acquired knowledge. To create learning and reflection, the second part of the adaptation phase, the organization needs to generate meaning from what is happening or what has happened during and after an event. This enables them to extend their knowledge base for the next anticipatory phase when the next unexpected event occurs (Duchek, 2020; Argote & Miron-Spektor, 2011).

Investigating the individual and organizational levels is appropriate, as they depend on each other to a certain extent. Considering both allows for a more comprehensive insight into change patterns and dynamics within organizations (Bercovitz & Feldman, 2008; Lengnick-Hall, Beck, & Lengnick-Hall, 2011). From a resilience perspective, examining the different organizational levels and short- and long-term change and retention patterns simultaneously is essential. Understanding the development of resilience through crisis involves more than one period, as displayed in the framework of Duchek (2020) in ***Figure 1***. With the consideration of both temporal periods and both organizational levels, it is ensured that the change dynamics in a crisis context are fully explored and understood.

2.3 Firm Size Effects and Market Size Effects

There are plenty of factors that could affect how individuals and organizations implement or retain the change in the long term. The inductive nature of this research question and the corresponding method is a strong motivation to scope our theoretical interest. In that regard, the size of an organization, whether how many people work or how many customers are served, is the initial theoretical focus I take, particularly given that how size affects change has been discussed for a long time.

There are opposing views on the relationship between firm size and change. One view on the effect of organizational size on a company's adaptibility is that the relationship is positive, meaning that a larger size leads to more adaptability (Damanpour, 1992; Moch & Morse, 1977; Haveman, 1993). The reasons are that larger companies often employ more skilled employees, leading to more expert knowledge making it easier for them to develop technologically (Damanpour, 1992). It is not only easier but also more beneficial and reasonable for organizations of larger sizes to adopt new technologies and innovations as they require processing a large amount of inputs (Moch & Morse, 1977). Access to resources of all kinds,

including human resources, builds a foundation for large firms to react quickly when faced with a challenge or an uncertain environment (Duchek, 2020). The availability of slack resources in large companies is an essential argument in the literature to support this view (Haveman, 1993; George, 2005). Slack resources allow for more freedom in strategic decision-making and risk-taking, allowing for more innovation, as challenges or problems during the change process can be better compensated (Haveman, 1993; Nohria & Gulati, 1996). The opposing view of this relationship is that small firms are more likely to change (Moch & Morse, 1977). Damanpour (1992) and Haveman (1993) argue that the flexibility of small firms allows them to better implement and accept change than large firms. Firms of bigger size take more time and require more effort to coordinate internal activities, including the change process, making it more difficult for them to adapt. Another hindering factor for change is the concept of bureaucratization, which is present in large organizations. Bureaucracy causes a business to become rigid, indicating less flexibility in decision-making and strategy (Haveman, 1993; Downs, 1967). Both views of this relationship present several logical arguments suggesting a more complex relationship between these concepts. Haveman9s research (1993) explains that the context in which the relationship is analyzed and the external constraints are essential. In a crisis like the COVID-19 pandemic, the relationship might be different than in a more relaxed state.

Revenue is often related to organizational size. Sufficient financial resources allow businesses to take more risks and make proactive choices, as they have a safety net of money even in economically difficult times (George, 2005). High revenue offers a good foundation for new developments, innovation, and ventures into other domains, as sufficient resources are available (Haveman, 1993; Huang & Knight, 2017).

Based on this overview, I pose the research question: **<How do organizational size and market characteristics influence adaptation patterns and long-term retention of change during and after a crisis?=.**

3. Research Method and Data

I utilized a qualitative research method to seek an answer to my research question. This approach consisted of semistructured expert interviews and a short preliminary survey sent before the interviews. The input derived from the interviews and open-ended questions allowed

for identifying and exploring the critical factors and ratings necessary for the study. The survey was an appropriate tool in this research as the measures and variables included in the study are already well-established in existing literature and offer numerical support to the findings derived from interviews (Edmondson & McManus, 2007).

3.1 Research Sample and Data Collection

In my interviewee sample, I included entrepreneurs from Germany who experienced the COVID-19 pandemic. My research sample consists of founders and CEOs from various industries, such as automotive retail, healthcare, real estate, electrotechnology, consulting, finance, and transport. Twelve entrepreneurs participated, six of whom are in the healthcare sector. All participants are between 48 and 70 years old and have a balanced gender distribution (Appendix A). All 12 participants completed the survey and took part in the interviews. Both the preliminary survey and the interviews were conducted in German, as the study focuses on the geographical area of Germany.

The primary purpose of the preliminary survey was to obtain demographic information about the participant and their company, including the size and revenue of their firms. The survey took the participants around 3-5 minutes, and the questions were split into two groups (Appendix B). The first group of questions aims to collect demographic data of the participant, followed by the second group of questions, which seeks to collect data about the participants' business, both with a multiple-choice question design. The survey participants were informed about their data's use and safe storage and consented.

The semi-structured interviews were conducted over two weeks, guided by a script created in advance (Appendix C). The interview was structured in four parts, starting with questions about the challenges faced by entrepreneurs and organizations during the pandemic. The second part was about their decisions and reactions to those challenges. The next part was about the individual and organizational changes during the pandemic. The last part was about the retention of those changes post-pandemic. The interviews lasted an average of 25 minutes and were conducted in person, via Phone, and Microsoft Teams, depending on the participant's availability. The conversations were recorded with the permission of the participant to uphold privacy and avoid the loss of information.

3.2 Data Analysis

I first transcribed the interviews using the MAXQDA software. I proofread the transcripts and adjusted if parts were incorrectly transcribed. I used the same software to code the transcripts to get insight into the interview information. Then, I created a table according to Gioia9s qualitative analysis with first-order codes, second-order themes, and aggregate dimensions seen in ***Figure 15*** (Gioia, Corley & Hamilton, 2013). Finally, I created a conceptual model depicting relationships and flows, which can be seen in ***Figure 22: Change Framework***. This creates a more transparent view of the initial Gioia table.

In addition to the Gioia analysis, I used the interviews to derive a score for individual- and organizational-level change, both during and post-crisis, to analyze the change patterns and the impact of size. Individual-level change is a complex construct, meaning it is not feasible to look at how people change in every term. Therefore, I decided to use a concept that is well-founded in literature and is very important for an individual9s adaptability. To measure individual change, this study uses the three dimensions of Individual Entrepreneurial Orientation (IEO), innovativeness, risk-taking, and proactiveness, which is shown to be adaptable when the external environment changes (Clark, Covin & Pidduck, 2024). Organizational change was measured in digital transformation and structural changes. I found those categories to be the most predominantly mentioned ways of organizational-level change while conducting the interviews.

The scoring was done via a system focussing on the depth of change and language indicators (Appendix D). This system was created with the support of the AI software Claude AI. The initial scoring was done manually, and then the score was checked with Claude AI to ensure a consistent and fair rating. The ratings mostly aligned, but there were a few exceptions, which can be found in Appendix E. During the rating process, I detected two potential biases: First, I identified an order effect bias based on the difficulty of retrospectively adjusting the scores after completing the later scores. This order effect bias would have affected the consistency of the scores across all interviews. Second, I identified a personal preference bias, as I tended to rate specific actions higher based on subjective judgment, which could affect the objectivity of the ratings. To address those biases, I used Claude AI to function as a second rater for an independent assessment based on the scoring framework mentioned before. After thoroughly checking Claude9s rating and reasoning in those few exceptions, I adjusted the final rating to align with Claude9s evaluation. This rating procedure ensures more reliability and consistency

of the scores on which the further analysis is based. Each of the four categories is evaluated using a three-point scale, with scores assigned based on the level of change evident in participants' interview responses. The maximum score for the category of individual change was 9 points, and the maximum score for the category of organizational change was 6 points. The individual and organizational change score was determined during and post-COVID. As maximum points are different for individual and organizational change, to ensure consistency, the points for individual change (max. 9) were later adjusted by calculation to match the 6 points of organizational change. I utilized post-crisis data of firm size and market size, as post-crisis organizational characteristics are indicators for survival of the crisis (Van Der Vegt, Essens, Wahlström & George, 2015). The approach is grounded in resilience literature (Vogus and Sutcliffes, 2007). It captures the characteristics that are steady and help to navigate the crisis.

To combine the qualitative and quantitative data in one place to examine the relationship between size and change, I added the demographic data from the survey and the individual and organizational change scores during and post COVID-19 into a summary table (Appendix E). Based on the summary table, I created scatterplots in RStudio to examine the relationship.

4. Results

The presentation of findings is guided by the mentioned scatterplots created from the qualitative and quantitative data. Given the research question, the findings show the relationship between size and individual-level change, and between size and organizational-level change. Firm size is measured in the number of employees (greater or less than 10 employees), and market size is measured in the amount of revenue (greater or less than 500k revenue). The histograms in ***Figure 2*** until ***Figure 8*** show the data distribution for the named variables.

The histograms show more change on both levels during COVID-19 than retention after the crisis. They also indicate that more change happened to individuals during the pandemic, but that changes on the organizational level were better retained after. Despite the effort of having a balanced firm size and a balanced market size, the ratio leans towards the smaller firm size and the higher market size. The revenue per employee ratio leans towards a lower ratio.
Figure 2, ***Figure 3***, ***Figure 4,*** and ***Figure 5*** show the scores of individual and organizational-level changes during and post-COVID on a scale of 0 to 6 based on the qualitative interviews.

Figure 2: Histogram of Individual-level Change During COVID-19

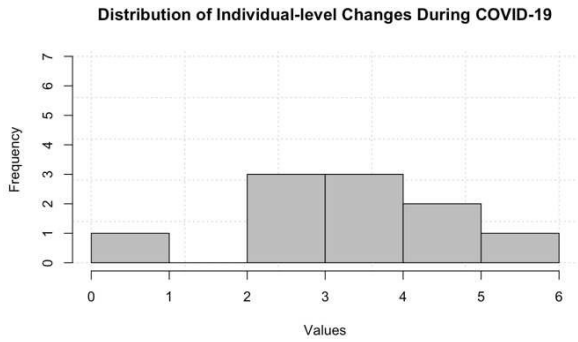


Figure 3: Histogram of Individual-level change post-COVID-19

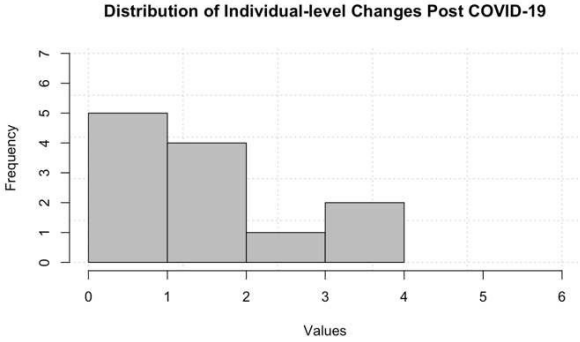


Figure 4: Histogram of Organizational-level Change During COVID-19

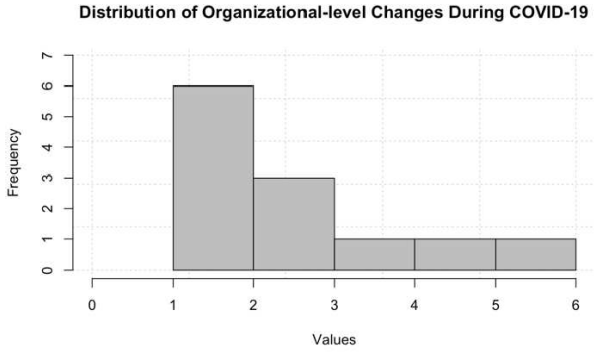


Figure 5: Histogram of Organizational-level Change Post COVID-19

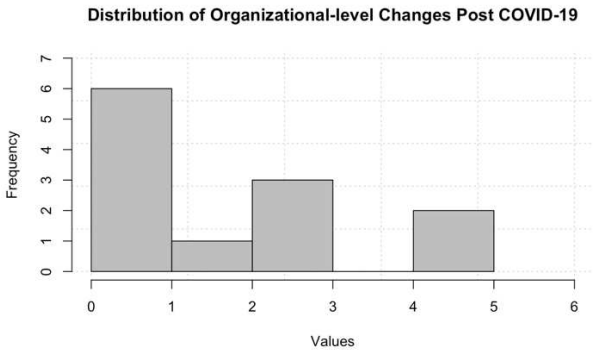


Figure 6 and ***Figure 7*** show the quantitative organization metrics from the survey. The categories were decided based on the distribution of the data to create an equal sample. For the histogram of 8Firm Size9, 0 to 1 represents an organization with more than 10 employees, and 1 to 2 represents an organization with less than 10 employees. Similarly, for histogram of 8Market size9, 0 to 1 represents an organization with more than 500 thousand euros in revenue, and 1 to 2 represents an organization with less than 500 thousand euros in revenue.

Figure 6: Histogram of Firm Size

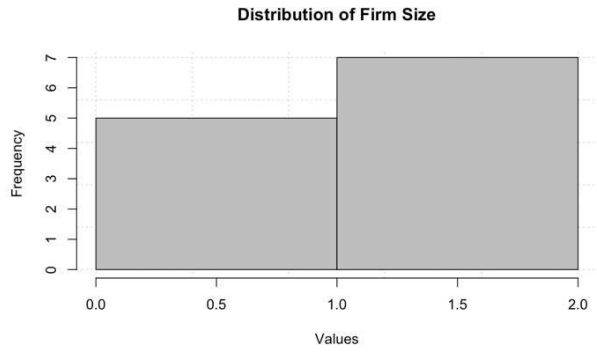


Figure 7: Histogram of Market Size

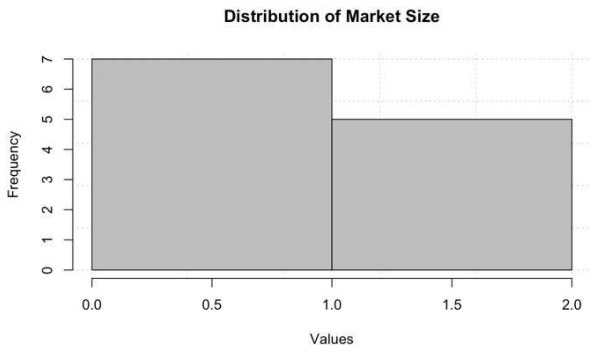
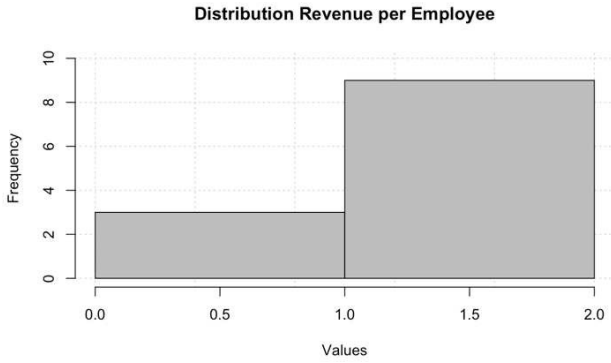


Figure 8 shows the revenue per employee. The median (54,545) was calculated based on the companies' revenue and employee numbers, and each organization is categorized above or below. 0 to 1 represents organizations of a smaller size, serving a larger market, and 1 to 2 represents firms with a market size comparable to their size.

Figure 8: Histogram of Revenue per Employee



4.1 Individual and Organizational-level Change

Figure 9 and ***Figure 10*** present the relationship between individual- (y-axis) and organizational-level change (x-axis) during and post COVID-19. Individual-level change exceeded organizational-level changes during the COVID-19 pandemic. The post-COVID figure reveals that organizational-level changes surpassed individual adaptations. These figures suggest that during COVID-19, entrepreneurs adapted more individually than their organizations. However, organizational changes were retained more successfully after the pandemic.

Figure 9: Scatterplot of Change during COVID-19

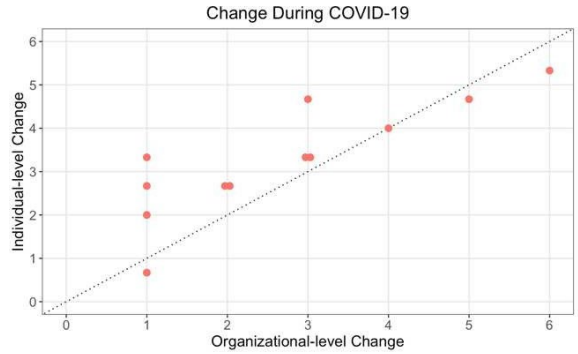
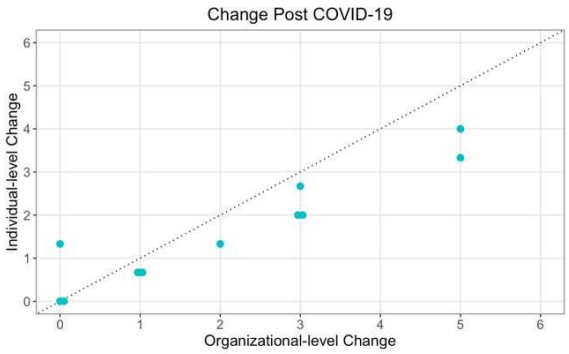


Figure 10: Scatterplot of Change post COVID-19



4.2 Size and Individual-level change

Figure 11 presents the relationship between individual-level change during (y-axis) and post COVID-19 (x-axis). The colors of the data points represent the number of employees. It shows that larger companies (red) have a more consistent and systematic pattern of change during COVID-19. The data also indicates that larger companies have better and more consistent retention of changes post-COVID. The data points for companies with less than ten employees (blue) are more scattered and less systematic. The retention of changes post-COVID is lower. There is one exception of a small company (blue) that shows a higher level of individual-level change and retention than the rest.

Figure 12 presents the relationship between individual-level change during (y-axis) and post COVID-19 (x-axis). The colors of the data points represent the number of revenue. The figure shows how market size, measured in revenue, affects individual change. The data shows that companies serving a large market (red) show consistent high-level changes. The retention of individual-level changes is strong and consistent post-COVID. Examination of data from companies serving small markets (blue) indicates low change adoption during COVID-19 and poor retention rates post-COVID.

Figure 11: Scatterplot of Individual-level Change and Firm Size

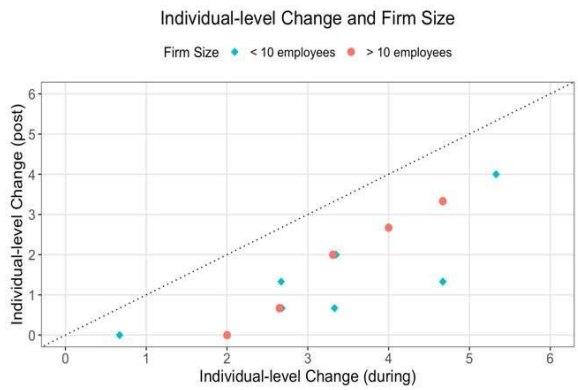
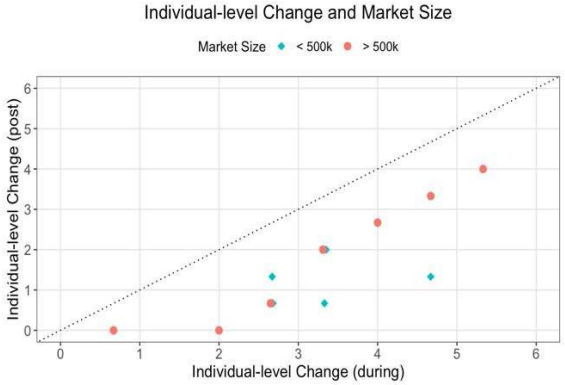


Figure 12: Scatterplot of Individual-level Change and Market Size



4.3 Size and Organizational-level change

Figure 13 presents the relationship between organizational-level change during (y-axis) and post COVID-19 (x-axis). The colors of the data points represent the number of employees. Large companies (red) show consistent organizational change during COVID-19 and high retention post-COVID. The data for small companies (blue) indicates variable levels of organizational-level change during COVID-19. Post COVID-19, small companies show inconsistent retention rates. There is one expection of a small organization (blue) showing high levels of organizational-change and retention.

Figure 14 presents the relationship between organizational-level change during (y-axis) and post COVID-19 (x-axis). The colors of the data points represent the number of revenue. Companies serving larger markets (red) show high levels of organizational changes during COVID-19 and a constant, strong retention of changes post-COVID. The data for companies serving smaller markets (blue) indicate lower levels of organizational-level change. It also shows lower retention rates of organizational-level change post-COVID.

Figure 13: Scatterplot of Organizational-level Change and Firm Size

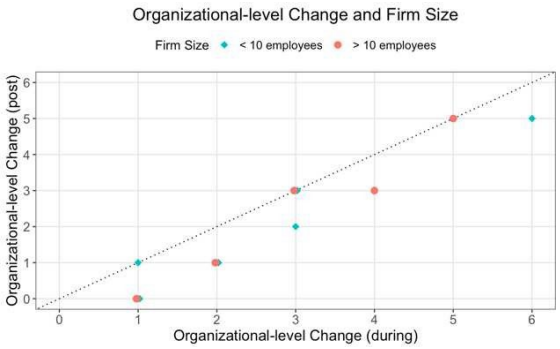
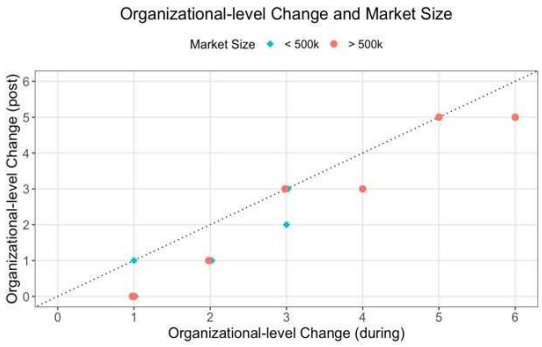


Figure 14: Scatterplot of Organizational-level Change and Market Size



Both market size and firm size have a positive relationship with change. Based on the above-shown data, market size has a slightly more prominent effect on change levels during COVID-19 and retention of change post COVID-19 than firm size. This conclusion is based on an exception in the data: one case differs between the size categories. All others are either a small company (<10 employees; blue) serving a small market (<500k revenue; blue) or a large company (>10 employees; red) serving a large market (>500k revenue; red). This special case is a small company serving a large market. Despite the company's small size, there are high levels of individual and organizational-level change and retention, even the highest out of all cases. This contradicts the previously identified positive relationship between firm size and individual-level change. The case still agrees with the positive relationship between market size and change. The conclusion that market size has a more significant effect on change than firm size is reinforced by this case, as it demonstrates that a small company might have high change levels if it has sufficient financial resources.

4.4 Explaining the variation

The analyzed patterns of change at both individual and organizational level reflect strategic responses to the challenges caused by the COVID-19 pandemic. Turning to my qualitative data, I seek to understand where such changes may have emerged. ***Figure 15*** presents the themes and constructs identified in my qualitative analysis through the Gioia method (Gioia, Corley & Hamilton, 2013).

An emerging dimension, ***crisis experience, and challenges*** appear to be essential for understanding why individuals and organizations may have changed differently in the short- and long-term. Accordingly, I delve deeper into the findings in this dimension.

The first common challenges mentioned across industries were ***business-related***. One entrepreneur from the consulting industry even said that

> *<Due to the fact that there were massive restrictions on what was allowed, who met where and when, there was actually no longer any possibility of providing the services in the same way as before Covid= (P4).*

The business challenges further included the loss of profit, higher supply prices, supply chain issues, and the general uncertainty of the business situation. The second kind of challenge that was apparent across industries was ***customer demand changes***. One entrepreneur from the healthcare industry mentioned:

> *<They (the customers) have contemplated whether to go to the orthodontist. Some for health reasons, the others because they said, 8Hm, I don't know exactly whether I want to tackle this at this stage, whether I can organize it into my life9= (P12)*

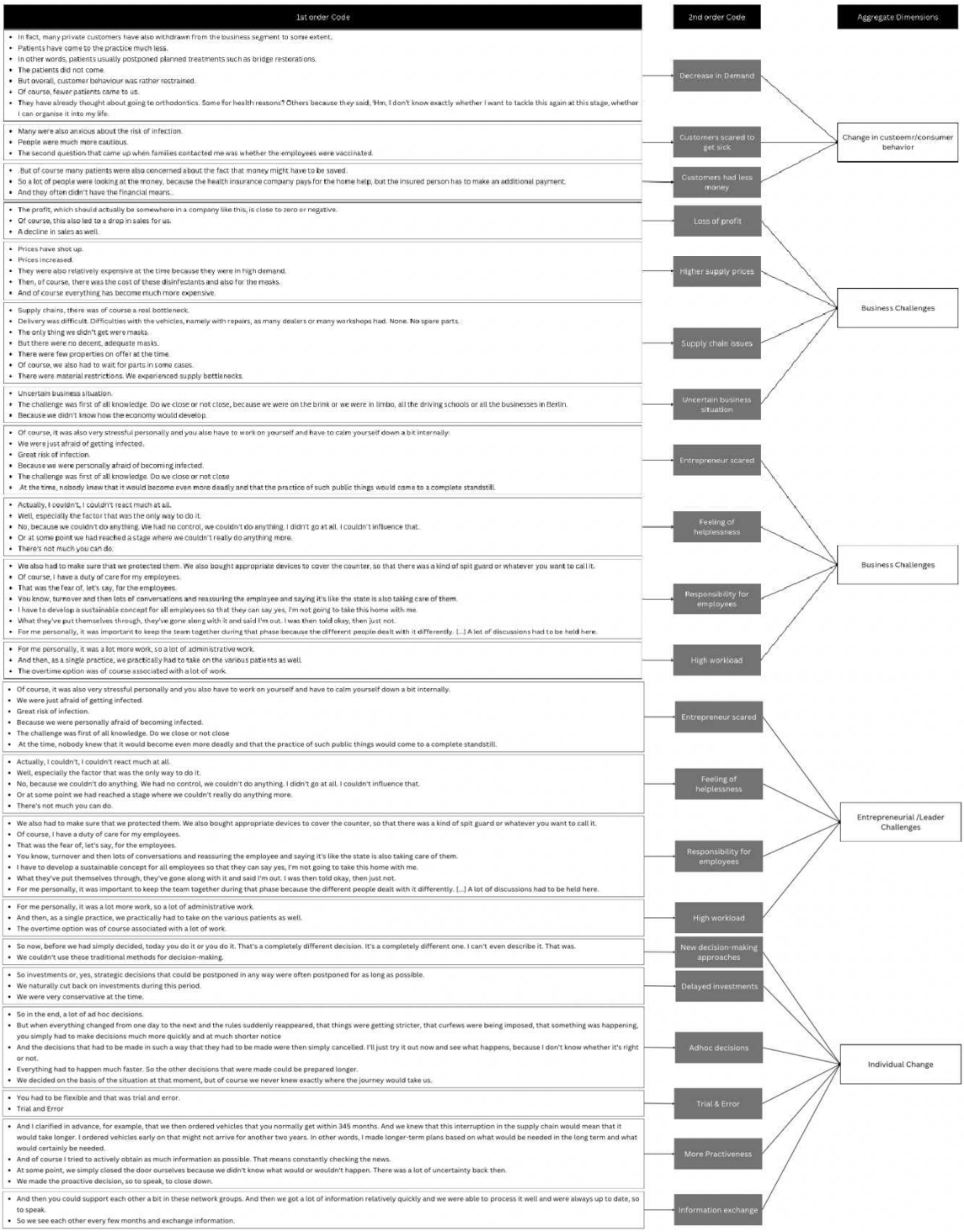
The challenge of customer demand included a decrease in demand, customers being afraid to get sick, and customers having less money or at least being less willing to spend their money. The third challenge across industries was ***entrepreneur or leader-related***. An entrepreneur from the transport industry stated: *<You know, sales go down, and then there are a lot of conversations, and you reassure the employee and tell them that the state is also involved= (P11)*. This also included challenges like the entrepreneur being scared, feeling helpless, being responsible for their employees, and having an increased workload.

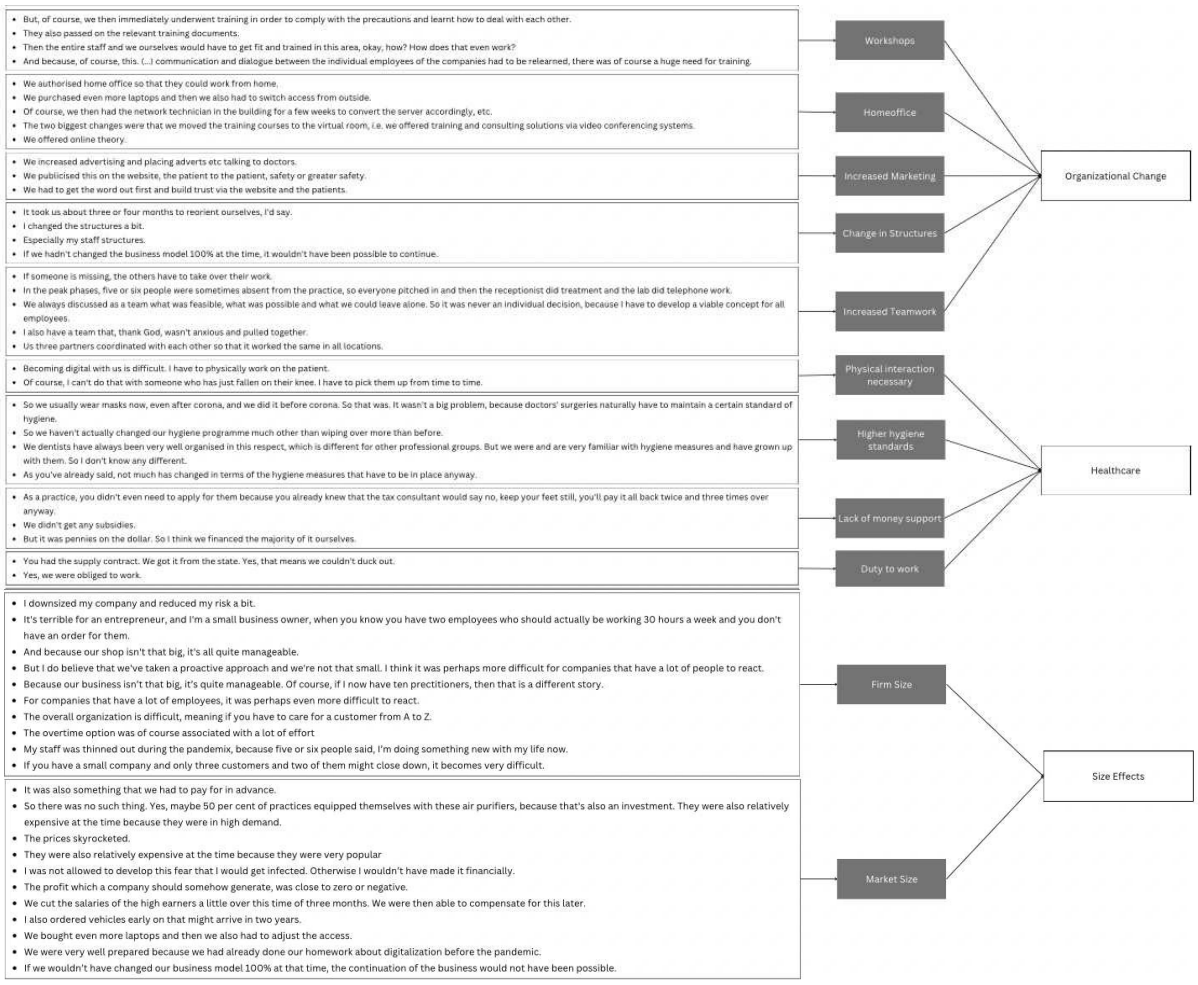
A pattern that emerged throughout the interviews is that entrepreneurs working in the healthcare industry frequently mentioned some specific challenges. These challenges were the lack of government support, the duty to stay open during the pandemic, and the barely possible shift to online, as they had to look at healthcare issues in person. One of the entrepreneurs in the healthcare industry stated: *<Becoming digital is difficult for us. After all, I have to work physically on the patient= (P3).* Another entrepreneur mentioned: *<We had the public service obligation from the state, that means we couldn9t duck away= (P7)*. They also commented on the lack of government support:

> *<As a practice, you didn9t even need to apply for government support because you already knew that the tax consultant would say no, keep your feet still, you9ll pay it all back twice and three times over anyway= (P7).*

This pattern in differentiation and specific challenges indicates industry-specific effects, which draws attention to the fact that some industries were more affected than others. This may have significant implications for the analysis. Hence, I will remove such variation by diving into the healthcare industry before explaining the impact of size on individual and organizational-level change.

Figure 15: Gioia Framework





4.5 Healthcare deep-dive

The industry has an apparent effect on how a crisis is experienced, which challenges the previous findings regarding the firm and market size, especially if they are confounded. To have a more comparable sample to understand the effects of firm and market size, I will only focus on the data of entrepreneurs within the healthcare industry. This step ensures that the industry effect is eliminated and the relationship between size and change can be evaluated more concretely. Six entrepreneurs from the healthcare industry are isolated from my large sample for this deep-dive analysis. In this sample, the firm size category equals the market size category.

Figure 16 and ***Figure 17*** present the relationship between individual (y-axis) and organizational-level change (x-axis) during and after COVID-19. Both individual-level and organizational-level changes show a decrease in change levels post COVID-19, with individual

change levels dropping lower. During COVID-19, individual-level changes were at higher levels than organizational-level changes. Post-COVID-19, it was the other way around.

Figure 16: Scatterplot of Change During COVID-19 in the Healthcare Industry

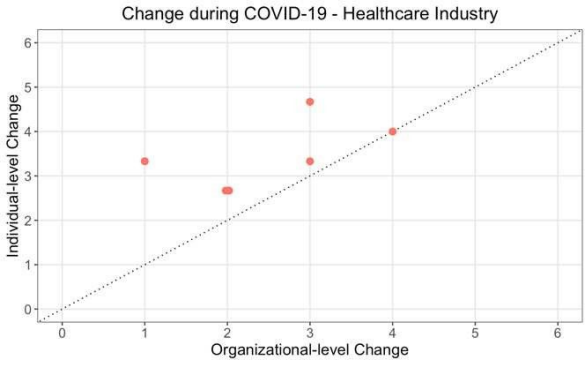


Figure 17: Scatterplot of Change Post COVID-19 in the Healthcare Industry

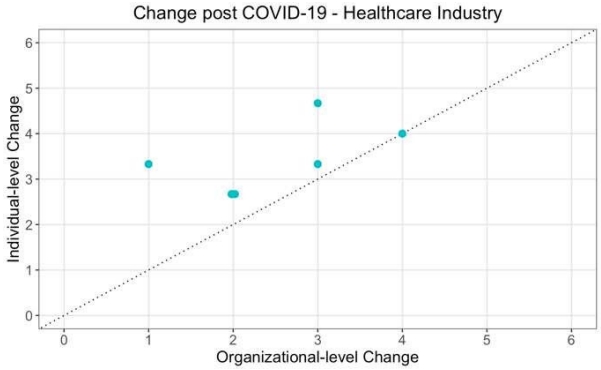


Figure 18 presents the relationship between individual-level change during (y-axis) and post COVID-19 (x-axis) in the healthcare industry. The colors of the data points represent the number of employees. Large companies (red) show low to moderate change levels during COVID-19. The retention is constant but in the area of low to moderate levels after the pandemic. The points follow a somewhat linear relationship. The data points for small companies (blue) show lower change and retention levels.

Figure 19 presents the relationship between individual-level change during (y-axis) and post COVID-19 (x-axis) in the healthcare industry. The colors of the data points represent the amount of revenue. The figure including market size is the same as the one including firm size, as there are no differences between the categories in the small data sample. The same observations of firm size apply to market size. Companies serving large markets show higher retention post-COVID, while companies serving a smaller market show more variation during and after COVID-19.

Figure 18: Scatterplot of Individual-level Change and Firm Size in the Healthcare Industry

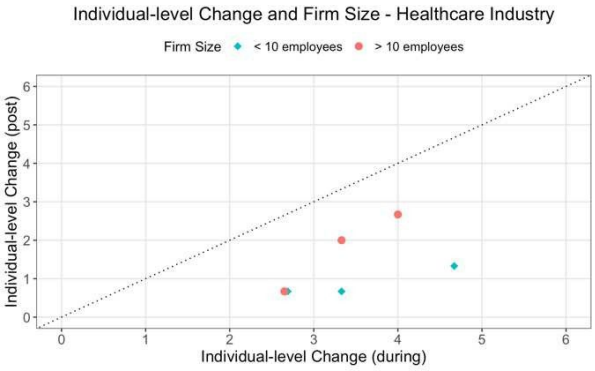


Figure 19: Scatterplot of Individual-level Change and Market Size in the Healthcare Industry

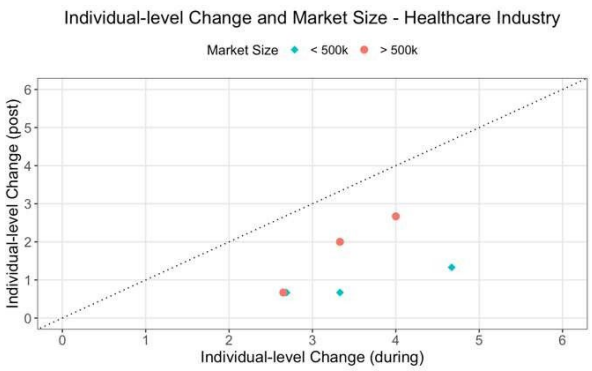


Figure 20 presents the relationship between organizational-level change during (y-axis) and post COVID-19 (x-axis) in the healthcare industry. The colors of the data points represent the number of employees. The figure illustrates the effect of firm size on organizational-level change in the healthcare industry. The data for large firms (red) suggests higher organizational-level change during COVID-19 and high retention rates after the pandemic. For small firms (blue), the data indicates lower change rates during the pandemic and low retention after.

Figure 21 presents the relationship between organizational-level change during (y-axis) and post COVID-19 (x-axis) in the healthcare industry. The colors of the data points represent the amount of revenue. Companies serving a large market (red) show high organizational-level change during COVID-19 but moderate retention post-COVID. Companies serving a smaller market (blue) show lower change levels during the pandemic and low retention after.

Figure 20: Scatterplot of Organizational-level Change and Firm Size in the Healthcare Industry

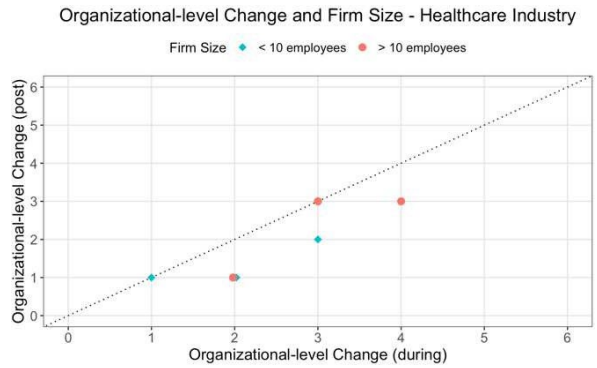
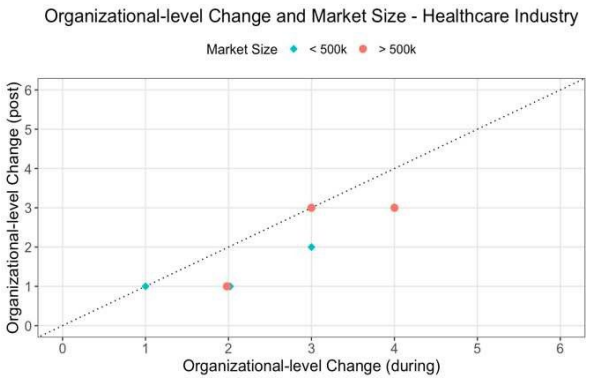


Figure 21: Scatterplot of Organizational-level Change and Market Size in the Healthcare Industry



When comparing the results from the healthcare data to the across-industry data regarding individual- and organizational-level change, several similarities and differences become apparent. The general sample of across-industry data showed a positive relationship between size and individual- and organizational-level changes. Market size had a more significant effect on change than firm size. There was a clear separation between companies serving large and small markets. The data also displayed a clear change pattern and better retention of changes in companies serving large markets. In the healthcare sample, change patterns were more conservative. Both samples show an evident decline in change levels from during the pandemic to after. There are higher levels of individual change during COVID-19 compared to post COVID-19 retention, which agrees with the results of broad sample. Another similarity is that the analysis of the smaller sample also shows size affecting individual- and organizational-level change positively, as larger firms and firms serving larger markets show more stability, constant patterns, and higher retention levels. It is essential to mention that the effect is less pronounced in the healthcare sample. However, the same patterns could be identified even if they are less prominent in the industry-specific sample. These results replicate what I have found in the broader sample. Even if the difference between the effect of firm size and market size is not as visible, the general significance of the positive relationship between size and change is also found when the industry effect is eliminated.

4.6 Qualitative Analysis of Firm and Market Size Effect on Change

Now I seek to understand why firm and market size impact change both in the short- and long-run, by again, referring to the qualitative data analysis seen in ***Figure 15***.

I will begin by examining the evidence for the effect of firm size from the interviews. <*Because our business isn9t that big, it9s quite manageable, but if I now have ten practitioners, then that is a different story= (P7).* This quote from one of the healthcare entrepreneurs offers a good introduction to this analysis. It outlines that depending on the size, a different response is necessary. This entrepreneur also introduced the first relevant point when looking at why smaller firms have shown less individual-level and organizational-level change. According to them, the challenges faced during COVID-19 are easier to manage in a smaller-sized firm. For entrepreneurs with more employees, more change seems to be necessary, as the situation is less <manageable= and needs new solutions. This is also supported by this comment from an entrepreneur of a larger company: <*For companies that have a lot of employees, it was perhaps even more difficult to react= (P11)*. A related point, indicated by a fellow entrepreneur, is that there might be less risk involved and, therefore, less urgency to change if there are fewer employees: <*The reduction of the size of the company and reduced my risk a little= (P2).* A factor why companies with fewer employees have less capacity to change might be that implementing changes might be too risky and time-consuming, as they had to battle their issues alone or with less manpower. The comment of an entrepreneur of a smaller organization supports this assumption: <*The overall organization is difficult, meaning if you have to care for a customer from A to Z= (P8)*. As did another from an entrepreneur of a small business: <*The overtime option was of course associated with a lot of effort= (P9).*

Additionally, entrepreneurs from large companies mentioned that businesses with more employees saw a reduction in their workforce: <*My staff was thinned out during the pandemic, because five or six people said, I9m doing something new with my life now= (P12).* It could be assumed that this is because of the weaker loyalty in large firms compared to small ones, as this entrepreneur later describes how they now focus more on employee retention. This indicates that situations like this force entrepreneurs of a larger business to implement changes, for example, by approaching employee, human resource management, and employee structures differently. Furthermore, within larger sized companies, entrepreneurs have to take various perspectives and opinions into consideration, which can motivate change as outlined by entrepreneurs of larger organizations: <*We always discussed as a team what is feasible, what works, and what we don9t do. It was never an individual decision= (P7), <Us three partners coordinated with each other so that it worked the same in all locations= (P3).* In larger companies, more people are involved in communication and decision-making. Large companies with more decision-makers and perspectives are prone to be more flexible and open-

minded regarding adjustments, as more opinions play a role. The interviews also revealed that the large network of companies of bigger size seems to influence their change capacity. One entrepreneur mentioned:

> *<I am relatively well connected, I have a few network groups in which I am active. There are also entrepreneurs working there who have really large and personnel-intensive companies. (...) They then also forwarded corresponding training documents=. (P1)*

This indicates that the broad network larger companies often possess can support the change capacity by, for example, sharing training documents, which probably outline certain practices for digital transformation or employee preparation.

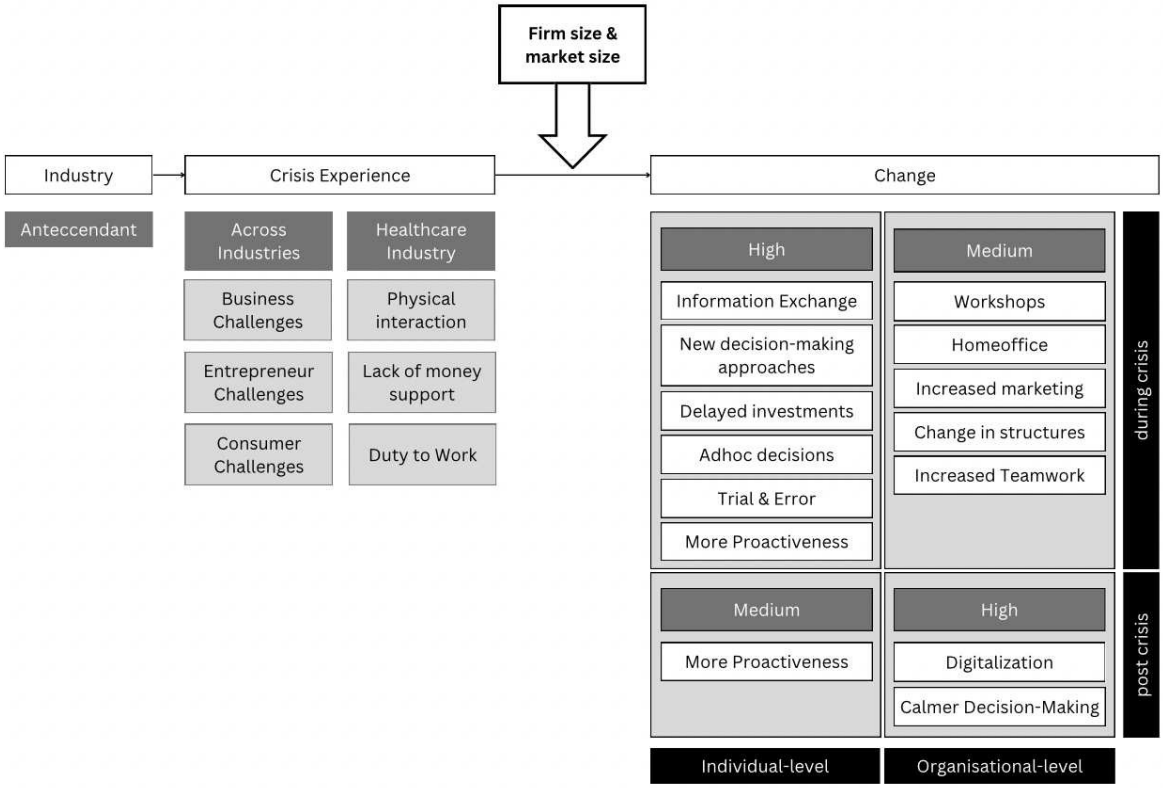
The following presents the evidence for the effect of market size. The data shows that companies serving a larger market, indicated by high revenue, have higher individual and organizational change levels, which is also supported by the qualitative interview data. One entrepreneur from the revenue group under 500k mentioned: *<I was not allowed to develop this fear that I would get infected. Otherwise, I wouldn9t have made it financially.= (P8).* This indicates that there may not have been enough time and space to change one9s attitude or decision-making approaches as there were more pressing issues at that time. Another comment from the same entrepreneur further supports this assumption of there being other priorities to stay financially afloat: *<I survived because I got a second job= (P8).*

Another observation is that financial resources play a significant role in terms of implementing change, especially at the organizational level. An entrepreneur stated: *<The profit which a company should somehow generate, was close to zero or negative= (P2)*. Another agreed: *<We naturally cut back on investments during this time. We have really only bought what was necessary for treatment= (P3)*. Another entrepreneur highlights the difficulties when serving a small market: *<If you have a small company and only three customers and two of them might close down, it becomes very difficult= (P11)*. The comments of the entrepreneurs whose businesses serve larger markets (>500k revenue) agree with the above-outlined assumptions. They report about their freedom to adapt and make decisions with fewer constraints, as their financial resources create a buffer, even if the uncertain business situation still affected most of them. One entrepreneur states: *<At some point, we simply decided to close down ourselves because we didn9t know what would happen= (P6)*. Another reported: *<We cut the salaries of the high earners a little over this time of three months. We were then able to compensate for*

this later= (P11). More revenue also enabled the organizations to plan and pay in advance: *<These were things we had to pay in advance= (P3)*. Another entrepreneur stated: *<I also ordered vehicles early on that might arrive in two years= (P1)*. This allowed them to stay in operation and focus on, for example, digitalization. Digital transformation was easier to engage in as an organization with higher revenue. An entrepreneur of a company with larger market size stated: *<We bought even more laptops, and then we also had to adjust the access= (P1)*. Another mentioned: *<We were very well prepared because we had already done our homework about digitalization before the pandemic= (P4)*. Interestingly, the most extreme case of individual- and organizational-level change and retention was shown by an entrepreneur of a smaller company (<10 employees) with a high revenue (>500k). They stated: *<If we hadn9t changed our business model 100% at that time, the continuation of the business would not have been possible= (P4)*. These statements indicate that higher levels of change are possible with sufficient resources.

Figure 22 represents the qualitative and quantitative analysis findings summarized in a framework. The grey boxes are the aggregate dimensions, and the white boxes within the grey boy are the second-order codes. A more detailed overview of the insights and codes from the interviews can be found in **Figure 15.**

Figure 22: Change Framework



4.7 Correlation between Firm and Market Size

With the following figures, I explore whether there are any change patterns related to the ratio of revenue per employee. Especially because serving a large market with a small employee number is likely to come with unique challenges that companies with many employees serving small markets do not experience. The median was calculated from the existing data set in the quantitative analysis. A ratio below the median suggests that an organization has more employees handling its revenue streams, and a ratio above the median indicates that an organization has fewer employees who generate high revenue.

Figure 23 and ***Figure 24*** show the relationship between individual-level and organizational-level change during (left) and after (right) the pandemic. The colors of the data points represent the revenue-per-employee ratio. During the pandemic, companies with fewer employees, which generate high revenue (red), show more extreme variation in change responses. They show a more scattered pattern, with either very high or low changes at individual and organizational level. The blue dots, representing a lower revenue per employee ratio, show more consistent and balanced change responses. The data points are mainly clustered in the middle area of individual and organizational-level change. When looking at the figure presenting the response patterns after the pandemic, companies with a high revenue per employee show a more consistent change pattern than during the pandemic but still scattered responses. The companies below the median level also show lower but more consistent patterns after the pandemic and a gradual increase in organizational and individual-level change.

Figure 23: Scatterplot of Revenue per Employee During COVID-19

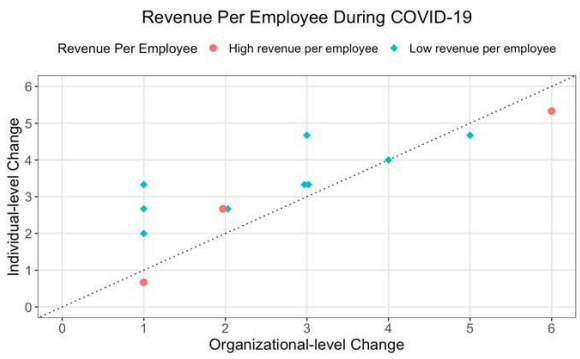
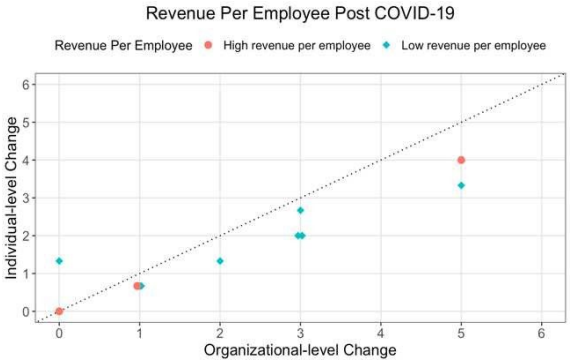


Figure 24: Scatterplot of Revenue per Employee Post COVID-19



5. Discussion

In this thesis, I investigated the effect of firm size, measured in the number of employees, and market size, measured in revenue, on change in the context of a crisis, both in the short- and long-run and at multiple levels. These relationships are explored in the context of the COVID-19 pandemic. I particularly identified an effect of crisis experience and industry on this relationship, as organizations and individuals might be affected differently by a crisis in terms of scope and magnitude.

5.1 Theoretical Contributions

The findings show that individuals changed more during the crisis than their organizations. The unexpected situation and challenges require quick responses to minimize harm and keep the business running. Fast responses are more possible on the individual level, as organizational-level changes are more challenging and time-consuming in their implementation and involve more stakeholders (Teece, Pisano & Shuen, 1997). This aligns with what Meyer & Rowan (1977) explain about the two contexts in which organizational structures arise. During a crisis, the first context becomes relevant, which involves quick responses without changing formal organizational structures, which aligns with quick individual-level responses during COVID-19. Still, the analysis of the post-crisis data indicates that the changes on the organizational level have been better retained than the individual-level changes. Here, the second context explained by Meyer and Rowan (1977) becomes relevant. More fundamental organizational changes are implemented, which are perceived as the correct approach and procedure, more official and formal. Individual-level changes lack this institutional embedding. They are faster to revert if there is no structural support for the change. For example, suppose only the entrepreneur changed their decision-making approach, but the other employees did not, and no structural changes to support this were implemented. In such cases, the change is most likely not sustained, and the individual will revert to their initial approaches (Feldman & Pentland, 2003). This is reflected in the lower retention rates of individual-level adaptations observed in the findings. However, changes in organizational structures are more complicated to reverse and become more embedded, which aligns with the higher retention rates of organizational-level changes seen in the post-COVID-data (Sydow, Schreyögg & Koch, 2009).

The size of the firm and the market have shown significant effects on individual and organizational changes. Firm size and change have a positive relationship, which supports the the arguments of Damanpour (1992), Moch & Morse (1977), and Haveman (1993). Market size

also has a positive relationship with change, which aligns with the arguments of Haveman (1993), Huang & Knight (2017), and George (2005). There is one exception in the data, which contradicts the conclusion that smaller firms have lower levels of change, as this participant with a smaller firm size demonstrated the highest levels of organizational and individual-level change and retention. However, this participant was in the category of higher market size. This indicates that the size of the market served has a more substantial impact on change patterns than the firm size.

The qualitative analysis adds interesting insights to explain the relationships and the difference in the effect of firm and market size. It becomes apparent that the number of employees influences the perception of urgency and risk for the entrepreneur on the individual level, as they are responsible for their employees. This responsibility and pressure seem to increase simultaneously with the number of employees. However, the entrepreneurs showed differing insights, as some mentioned it being easier for smaller-sized firms to react to the challenges, implying a more manageable approach to organizational-level change. However, others stated that operating in a small firm causes the entrepreneur to have different priorities, such as damage control, rather than engaging in new opportunities or investing in new technologies. The reason firm size has a positive relationship with change but is not as high in magnitude as market size can also be derived from the qualitative insights. Entrepreneurs indicated that a larger firm size might allow for more change but simultaneously requires more coordination, costs, and cooperation, possibly hemming the extent of the effect.

The size of the market served has a slightly more prominent effect than firm size, as it provides more financial resources that must be managed but can be more directly utilized to implement and retain change. Firms serving a more extensive market are, therefore, better able to implement change and invest in new digital products, for example. The entrepreneurs also often mentioned having to purchase supplies in advance and having high costs, which is only possible if the organization has enough financial resources. In terms of individual-level change, the size of the market served, and the increased financial resources exert a certain level of pressure and responsibility to adapt to keep the business running. Companies serving a smaller market might not have enough external pressures to motivate the change.

Furthermore, the results indicate industry-specific effects influencing the general sample analysis. COVID-19 has impacted many sectors in different ways, resulting in various

challenges and different levels of response patterns. The healthcare deep dive conducted to analyze the relationship between size and change without the industry effect revealed the same change and retention pattern as the analysis of the broader sample. The data also indicates the same positive relationship between size and change but with a different magnitude than the general sample. Size might have a less significant effect on the change in the healthcare industry due to its high regulations and professional standards, which equals larger and smaller companies and makes the impact less visible.

The findings further suggest that an organization with fewer employees managing its revenue streams shows more random and less predictable change patterns during the pandemic. This might be due to the stress of having fewer human resources to manage the challenges, making the responses more random. Organizations with employee numbers relative to their market size show more consistent adaptation patterns. This is likely because they can better distribute the work across their employees, thereby reducing pressure and enabling more planned and structured responses to challenges.

In the literature review, I presented two perspectives of resilience: one as an organization returning to the same status as before the crisis and one as growth and development through the crisis (Lengnick-Hall, Beck & Lengnick-Hall, 2011). This thesis demonstrates that size affects this distinction, as smaller firms with a smaller market size show lower levels of change retention after the crisis, aligning more with the definition of rebounding to the previous situation. Larger firms with a larger market size engage more in growth through the crisis.

5.2 Managerial Implications

This thesis's findings enable managers to better understand their organization's change needs and patterns based on their characteristics. The understanding can support in building and strengthening resilience for the next unexpected event. Managers need to be aware that without a support system, the individual-level changes developing during a crisis will not be retained, and the opportunity for growth through crisis on an individual level will be lost. This emphasizes how critical organizational-level changes are in building resilience, as individual-level changes are faster to revert. Managers of larger companies should understand that their human and financial resources offer a great foundation, especially for organizational-level changes and building resilience if managed efficiently. They also have a better chance of implementing individual-level changes as they have sufficient resources to create the needed

support system. The qualitative data shows that managers of smaller firms are more pressured to manage their human and financial resources effectively in times of crisis. They should focus primarily on organizational-level changes as they are more likely to be retained. Change requires resources, and if the change is not maintained, the efforts and investments involved are lost. For companies of all sizes, staying up-to-date is essential to engage in change faster and more effectively as soon as challenges occur. According to the interview response, the company that adapted and retained the most changes was able to do so due to being well-prepared. Generally, larger companies can pursue growth and development during crises, while smaller companies should concentrate on keeping their operations running and allocating resources to ensure stability.

Another essential finding for managers is the industry effect. When planning resource allocation, it is crucial to research industry-specific news and information, as the challenges and required changes might be industry-specific. The findings also show that industries with high regulations, like the healthcare industry, should focus on changes required by regulations. They should not invest in change based on their firm or market size.

Managers should also recognize how revenue per employee influences change. Maintaining a high employee-to-revenue ratio is crucial as it ensures that the change implementation and retention are more consistent and predictable, which enables the efficient allocation of resources.

5.3 Limitations and Further Research

This thesis has several limitations in the sample and the research design. The sample, consisting of 12 data points and interview answers, is adequate for the qualitative analysis; however, a larger statistical quantitative analysis is necessary to identify a significance among the theorized relationships. This limitation becomes even more prominent in the healthcare sample, which includes only six data points. As such, the quantitative findings are analyzed in combination with the qualitative findings, but future research should expand the quantitative analysis of this study by extending the sample size. Another limitation can be seen in the interviewee sample. All 12 participants belong to a similar age group, which is not necessarily a limitation, but it offers an opportunity for future research to conduct the study with another age group or across age groups. Additionally, all participants are based in Germany. This is a relevant limitation due to the crisis context in which this study is based. The consequences and regulations of the

COVID-19 pandemic differed significantly between countries. Furthermore, there is no cultural variation in this sample, which can also affect the generalizability of the results, although comes with the benefit of a narrow scope accompanying the qualitative analysis. This leaves an opportunity to conduct multi-cultural research across other countries. A deep dive into other industries apart from the healthcare industry can be interesting for further research as well.

There are certain limitations regarding the research design. One critical limitation is that the answers, especially regarding the individual-level change, might be affected by self-report bias, as the statements on which the ratings are based are self-reported. Further research could eliminate this bias by including more data or using a different research design. The time frame also poses a limitation, as the data in this study was only taken at one point in time due to time constraints. Especially in terms of change patterns, it would be highly interesting to look at data of the same organizations and individuals at different points in time to see the development of change retention. A longitudinal study could help future research understand the long-term effects and patterns better. It would have also been interesting to interview the participants during the crisis to get real-time impressions, as recall or retrospective bias might affect the answers taken after the pandemic. Lastly, future research can consider other measures of individual and organizational change. This thesis used a specific measure developed through qualitative data for organizational change and the IEO framework to define individual change. Defining individual and organizational change in other ways could offer deeper insights into the research.

6. Conclusion

In this thesis, the impact of size on individual- and organizational-level change in the context of COVID-19 is analyzed using a qualitative approach with additional quantitative data. The study focussed on firm size, measured by the number of employees, and market size, assessed through the organization's revenue. The thesis aims to provide insight into the relationship between these variables through a lens of resilience, taking into account the perspective of a crisis before, during, and after. The findings highlight the phenomenon of some firms reverting to their pre-COVID-19 state while others develop and become more resilient in the long term, depending on their resource availability. The results reveal a significant positive relationship between size and change, indicating that individual-level changes are more prominent during the crisis. In contrast, organizational-level changes are more effectively retained afterward.

Additionally, the research examines the perspectives gathered from interviews with entrepreneurs, offering insights into their challenges and responses. This leads to another finding of this thesis: industry-specific effects. The crisis experience varies among individuals and organizations, but specific industry differences influence the magnitude of the effect of firm and market size on change. The thesis concludes that organizations and individuals must recognize that resource availability, in terms of employees and revenue, significantly impacts the change patterns of organizations and individuals. There is also an emphasis on the industry effect and the revenue-per-employee ratio, enabling firms to adapt and sustain changes adequately.

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Appendix

Appendix A: Interviewee information entrepreneurs and organizations

ID	Age Group	Gender	Employees	Revenue in ¬	Industry
P1	51-60	M	21-50	>1.000.000	Electro technology
P2	>60	F	1-10	10.000-50.000	Healthcare
P3	51-60	F	11-20	>1.000.000	Healthcare
P4	41-50	M	1-10	500.000-1.000.000	Consulting
E5	51-60	M	1-10	100.000-500.000	Healthcare
E6	51-60	F	21-50	>1.000.000	Transport
E7	51-60	F	1-10	100.000-500.000	Healthcare
E8	51-60	F	0	10.000-50.000	Real Estate
E9	41-50	F	1-10	100.000-500.000	Finance
E10	51-60	M	1-10	>1.000.000	Retail
E11	>60	F	21-50	>1.000.000	Healthcare
E12	>60	M	21-50	>1.000.000	Healthcare

Appendix B: Survey

Dear participant,

Welcome to my survey as part of my Master's thesis. The aim of this survey is to understand how individual entrepreneurial orientation has developed as a result of the COVID-19 pandemic. The survey will take about 5 minutes. Your answers are anonymous and will be treated confidentially. Participation is voluntary and can be cancelled at any time without giving reasons. By clicking 8Continue9, you agree to participate in this study and consent to your data being used for analysis in this paper.

Thank you for your support!

Yours sincerely,

Leonie Rosenlöcher

Católica Lisbon School of Business & Economics

Question 1: What gender identity do you have?

Female

Male

Diverse

Question 2: Which age group do you belong to?

<20

21-30

31-40

41-50

51-60

>60

Question 3: What is your highest school or university qualification?

No degree

Hauptschulabschluss

Realschulabschluss

High School Diploma

Fachhochschulreife

Bachelors Degree

Trainee

Masters Degree

Promotion

Question 4: What is your current employment status?

Employeed

Self-employeed

Other

Question 5: In which industry is your business active?

Retail

Catering and hotel industry

Health and care

Consulting

Information technology

Finance

Production

Transport

Real Estate

Eletro technology

Others

Question 6: Does your business focus on product or service?

Service

Product

Question 7: How many employees does your company have?

1-10 employees

11-20 employees

21-50 employees

50-100 employees

>100 employees

Question 8: What is the revenue of the business

10.000-50.000 ¬

50.000-100.000¬

100.000-500.000¬

500.000-1.000.000¬

>1.000.000¬

Question 9: Was your company founded before the COVID-19 pandemic (before 2020) and were you already working for the company at that time?

Yes

No

Thank you very much for taking part in this survey!
Your answers are of great importance for my master's thesis and will help me gain valuable insights. If you have any further questions about the survey or the research, please feel free to contact me at any time.

Contact information:
Name: Leonie Rosenlöcher
E-mail: l.rosenloecher01@gmx.de
Phone: +49 170 8866404

Appendix C - Interview Script

Introduction

Hello, my name is Leonie Rosenlöcher and I would like to thank you for participating in this study as part of my Master's thesis. The aim of my research is to gain insights into entrepreneurial perspectives and adaptations to change through Covid-19. Your experiences will help to develop a better understanding of entrepreneurial responses to challenges. Please feel free to share your thoughts openly; there are no right or wrong answers. I want you to know that your interview will be kept private and stored in accordance with the DSGVO. Are you comfortable with the use of this data?

Answer of Participant

Perfect! Firstly, I would like to know a little more about you and your company. Can you briefly describe what you and your company do?

Answer of Participant

Wie lange haben Sie bereits Ihr Unternehmen? / Wie lange arbeiten Sie bereits in dem Unternehmen?

Answer of Participant

Part 1

Have you observed a change in your customers' behaviour during the Covid-19 pandemic? If yes, how has this affected your business?

Answer of Participant

To what extent was your business affected by the physical restrictions during COVID-19? How and why?

Answer of Participant

To what extent was the business continuity of your company affected during COVID-19? How and why?

Answer of Participant

Can you tell me about any other significant challenges you have faced during this time?

Answer of Participant

Part 2

Please think about the two biggest challenges during the Covid pandemic.

What decisions did you make in response to the challenges, or how did you react?

Answer of Participant

What about your processes and employees? Were these areas affected? Can you give me examples that go beyond digital changes?

Answer of Participant

How difficult were these 2 biggest challenges?

Answer of Participant

What factors led you to make these decisions or have these responses?

Answer of Participant

How effective was your organisation's response to the challenges? Why?

Part 3

Did you take a similar approach to making decisions and developing strategies to overcome the challenges as you did before the pandemic, or did you have to develop new approaches?

Answer of Participant

Was your approach to recognising and preparing for the challenges different than before the pandemic?

Answer of Participant

How has your confidence in your ability to predict the outcomes of your decisions changed?

Answer of Participant

Were you able to make decisions based on known methods or did you need to take a more flexible approach?

Answer of Participant

Part 4

Interesting answers about reactions and adaptations.

Is there anything that you have started or adopted during the Covid pandemic that you continue to maintain?

Answer of Participant

Is there anything your organisation has introduced during this time (e.g. innovations, new processes, etc.) that will continue?

Answer of Participant

Appendix D - Organizational Change Scoring Framework

Key Principles for 0-3 Points

1. **Depth of Change**

- 0 Points: No organizational change/return to previous structures
- 1 Point: Modifications to existing processes/structures
- 2 Points: Significant operational/structural changes
- 3 Points: Complete transformation of business model/operations

2. **Language Indicators & Evidence Types**

For 0 Points:

- "wieder wie früher" (back like before)
- Evidence: Return to previous processes
- Discontinued new practices
- Removed new structures

For 1 Point:

- "angepasst" (adjusted)
- "erweitert" (expanded)
- Evidence: Modified procedures
- Added options to existing processes
- Single process changes

For 2 Points:

- "standardmäßig" (standard procedure)
- "grundsätzlich geändert" (fundamentally changed)
- Evidence: New standard processes
- Multiple integrated changes
- Substantial investments

For 3 Points:

- "komplett umgestellt" (completely changed)
- "völlig neu strukturiert" (entirely restructured)
- Evidence: New business model
- Transformed operations
- Systematic overhaul

Personality Change Scoring Framework

Key Principles for 0-3 Points

1. **Depth of Change**

- 0 Points: No change in behavior/mindset
- 1 Point: Adjusted attitudes/minor behavioral changes
- 2 Points: Notable changes in decision-making/approach
- 3 Points: Fundamental shift in mindset/behavior

2. **Language Indicators & Evidence Types**

For 0 Points:

- "denke wie vorher" (think like before)
- Evidence: Same decision-making approach
- Unchanged attitudes
- Return to previous mindset

For 1 Point:

- "ein bisschen vorsichtiger" (a bit more careful)
- "manchmal anders" (sometimes different)
- Evidence: Slight modifications in approach
- Occasional new behaviors
- Situational changes

For 2 Points:

- "deutlich anders" (significantly different)
- "grundsätzlich überdachter" (fundamentally more considered)
- Evidence: Regular new behaviors
- Changed decision-making patterns
- New risk perspectives

For 3 Points:

- "völlig neue Denkweise" (completely new mindset)

- "fundamental anders" (fundamentally different)
- Evidence: Transformed worldview
- New value system
- Complete behavioral change

Appendix E: Rating Exceptions

ID	Category	Initial Rating	Claude9s Rating	Final Rating
P1	Individual-level Change (during)	4.67	3.33	3.33
P2	Individual-level Change (during)	4.00	2.67	2.67
P4	Individual-level Change (post)	2.67	4	4
P6	Organizational-level Change	3	1	1
P7	Individual-level Change (during)	1.33	3.33	3.33
P12	Individual-level Change (during)	5.33	3.33	3.33

The ratings in the category of individual-level change are already adjusted from the maximum scale of 9 to the maximum scale of 6.

Appendix F: Data Tables

General Sample

	Org Change - (during)	Org Change (post)	Individual Change (during)	Individual Change (post)	Number of Employees (1= above 10; 2= below 10)	Revenue (1= above 500k; 2= below 500k)	Revenue per Employee (1= above 54,545; 2= below 54,545)
P1	5,00	5,00	4,67	3,33	1,00	1,00	2,00
P2	3,00	2,00	4,67	1,33	2,00	2,00	2,00
P3	1,98	1,00	2,65	0,67	1,00	1,00	1,00
P4	6,00	5,00	5,33	4,00	2,00	1,00	1,00
P5	2,02	1,00	2,68	0,67	2,00	2,00	2,00
P6	0,98	0,00	2,00	0, 00	1,00	1,00	2,00
P7	1,00	1,00	3,33	0,67	2,00	2,00	2,00
P8	1,02	0,00	2,67	1,33	2,00	2,00	3,00
P9	3,02	3,00	3,35	2,00	2,00	2,00	2,00
P10	1,00	0,00	0,67	0,00	2,00	1,00	1,00
P11	4,00	3,00	4,00	2,67	1,00	1,00	2,00
P12	2,98	3,00	3,31	2,00	1,00	1,00	2,00

Healthcare Sample

	Org Change (during)	Org Change (post)	Individual Change (during)	Individual Change (post)	Number of Employees (1= above 10, 2= below 10)	Revenue (1= above 500k; 2= below 500k)
P2	3,00	2,00	4,67	1,33	2,00	2,00
P3	1,98	0,98	2,67	0,67	1,00	1,00
P5	2,02	1,02	2,67	0,67	2,00	2,00
P7	1,00	1,05	3,33	0,67	2,00	2,00
P11	4,00	3,00	4,00	2,67	1,00	1,00
P12	3,00	3,00	3,33	2,00	1,00	1,00