# Master of Information Systems – Digital Business Systems

## Innovation during the Covid-19 crisis: an in-depth study of eight companies

MS403 Master Thesis

Student number: 1067

22/05/2022

A report submitted in partial fulfillment of the requirement for the degree of Master of Information Systems - Digital Business Systems

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# Abstract

Over the years, researchers in the field of innovation have debated whether recession and crisis have given organisations opportunities, or limitations for growth. The Covid-19 crisis has now given a unique opportunity to study this in more depth. Using a theoretical framework of transitional technology (Geels 2002), representatives from eight companies were interviewed in depth to examine whether the Covid-19 crisis accelerated innovation of their products, services or work processes. The findings showed that changes in the external sociopolitical landscape induced by the crisis, created windows of opportunity for some of the companies that had products and services that solved issues arising from the secondary effects of the lockdown and enforced lack of contact between individuals. Other companies were forced to adapt to the same situation using new products, and experienced beneficial changes in work processes that represented new value for their organisations. The companies that experienced the least benefit from the crisis had a lack of industry diversity in their product portfolio and were not able to use the opportunities presented in a productive way. The aftermath of the crisis means the secondary effects of the crisis have lasted longer than the health-related effects of the primary crisis, and digitalisation of products and services has been accelerated in many ways. All the interviewees perceived that learning had occurred with regard to new ways of working and the flexibility of hybrid working. The importance of understanding how individuals dealt with the crisis has meant that large changes have occurred in the area of company culture.

**Keywords:** Covid-19, crisis, business continuity, innovation, new value

# Acknowledgements

With delivering this thesis I celebrate the closing marks of the incredible two-year master journey in Digital Business Systems at Kristiania University College. This master experience has been a digital experience for me, but I have learned so much along the way and it has truly opened up new interests for me. As I started a new job alongside writing this thesis it gave me the opportunity to truly see the value of the courses in real life applications and I am very grateful for the knowledge I have received from this master.

I want to express my greatest appreciation to my supervisor Roksana Moore for good advice and inspiration during this process. Thank you for being available in times of doubt and sharing your priceless knowledge with me that has helped me reflect upon my work.

I would also like to give a major thanks to all the interviewees for sharing your time, and willingness to open up and share your experiences that have been crucial for this thesis.

Lastly, I want to thank my friends and family for all the support and understanding to what has been a challenging process at times.

Thank you to all the people involved and for this amazing learning experience.

22.05.2022

Vibecke Sundt

**Word count:** 19774

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# 1. Introduction

To choose to write a research paper about a global crisis, especially about Covid-19, is a risky undertaking - knowing whether this crisis is actually over, or whether one is merely in the eye of the hurricane is hard to ascertain. Looking back on the past two years, the ups and downs of the pandemic show one thing - never underestimate the unexpected. Few people were able to imagine the devastating effects of a bat-to-human virus, and by March 2020 we were living with a global pandemic. Almost every country was placed in a chaotic situation with restricted access to international travel, businesses were struggling to keep up with rules and regulations that changed continually, and governments asked the population to voluntarily stay in isolation for long periods of time. This is a unique event in human history. At the same time the situation exposed weaknesses in organisations and with the way society was organised. These weaknesses however opened up for new products and processes to fill the new needs. As Winston Churchill famously said during the Second World War: "Never let a good crisis go to waste" demonstrates the opportunities that can arise from such devastating situations. It created a global experiment for researchers in almost every academic field, including those working with business technology.

The general consensus in popular media was that the Covid-19 crisis had devastated business around the world. Governments were generously offering financial support to many companies, in perhaps what seemed from the outside, an ad hoc way in order to help them survive. At the same time, crisis literature had for many years advocated "resilience" as a preparation for crises (Martin, Sunley & Tyler, 2015). Resilience to crisis was seen as anticipating and limiting possible risk factors, and at the same time business continuity plans meant businesses could recover from crisis quickly (Niemimaa et al., 2019). Innovation researchers on the other hand have debated amongst themselves for many years as to *when* conditions are most optimal for innovation. Whether innovation happens during a recession, whether it happens when the economy is in a growth phase, or whether there are certain organisational characteristics that encourage innovation in any situation (Lien & Timmermans, 2021). The intention of this thesis is to examine in more detail whether the crisis presented possibilities for innovation (and creation of new business value in general terms), and what type of innovation took place.

Researchers in both crisis management and innovation have already started producing literature about the pandemic. Some research has examined sectors that were deeply affected by the crisis (Alonso et al., 2020; Krammer, 2022), others have made comparisons to the Great Financial

crisis of 2008, and to the Second World War (Roper & Turner, 2020). Several papers have presented large quantitative studies (Margherita & Heikkilä, 2021; Lien & Timmermans, 2021) giving the possibility to generalise about innovation trends during Covid and possible areas for further research. In contrast, this thesis attempts to look closely at the personal experiences of eight individuals working in eight different companies during the pandemic and examine in detail the strategic choices they made specifically with regard to innovation. Capturing their experiences, while they are still fresh and reasonably clear in the memory, is an important addition to the body of Covid-19 research.

I have therefore concluded the following hypothesis:
*The covid-19 crisis accelerated innovation in companies.*

To examine this in further detail I have chosen two additional research questions:
RQ1: *How can crises generate opportunities to create new business value?*
RQ2: *What innovations took place?*

The thesis is structured as follows. First, I will start by having a closer look at previous research done in the field of crisis theory and innovation theory (2), then I will discuss my chosen method of data collection and how this was collected (3). I will then present the findings (4), followed by a discussion of the findings (5). Lastly, I will present my conclusion (6).

# 2. Literature review

In this section I will present key research within crisis theory, innovation theory and discuss what can influence innovation during a crisis.

## 2.2 Definition of crisis

Although there are many definitions of a crisis, I have included two possible definitions of crisis here. The first is a definition of an organisational crisis - that is an event affecting businesses that is unforeseen and as having a limited time period. The second is a sociopolitical definition of crisis and offers a perspective on aspects of Covid-19 that have occurred in the aftermath of the crisis.

"*A crisis is an event that 1) threatens the high priority values of the organization, 2) presents a restricted amount of time in which a response can be made, and 3) is unexpected or unanticipated by the organization*" (Hermann, 1963, p.64 found in Fleischer, 2013, p.314).

"*A crisis arises from a breakdown in shared meaning, legitimization, and institutionalization of socially constructed relationships*" (Pearson & Claire, 1998, p.7).

In the case of Covid-19 it is possible to state that what was initially seen as a short-term, time-limited crisis turned into a two-year saga of restrictions and policy changes by multiple governments. The level of uncertainty and instability created on every possible plan for the whole of the period was unprecedented, apart from perhaps the Second world war and the global financial crisis of 2008 in later times (Roper & Turner, 2020). During the period of 2020-2022 a complete realignment of the way individuals and companies interact occurred and this is the foundation on which this research is carried out.

## 2.3 Early crisis management approaches

Much of traditional crisis management literature has focused on crisis management as a single critical event, with emphasis on how individual companies have dealt with "crisis *outcomes*, including stakeholders' perceptions of organisational reputation, trust, and legitimacy" (Bundy, Pfarrer, Short & Coombs, 2017, p.1662). The classic business school case of the Johnson & Johnson Tylenol scandal in 1982 is described in numerous studies and generally describes the

outcome and positive legacy of how a crisis was handled (Pearson & Clair, 1998). Gradually a more multidisciplinary approach improved crisis management understanding and in a widely cited model proposed by Pearson and Clair (1998), companies were challenged to think of a crisis as a situation that will not necessarily happen but is useful to prepare for. In turn, research began to emphasise *processes* that contained learning and feedback from critical situations so that organisations were prepared for the next possible crisis. Companies aimed to become resilient.
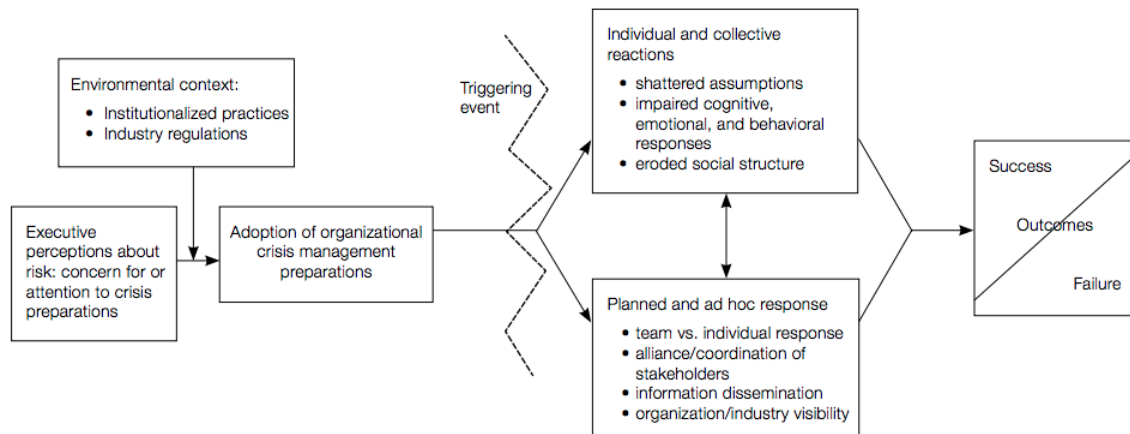


**Figure 1.** "The Crisis Management Process" (Pearson & Clair, 1998, p.66).

## 2.4 Crisis management evolves to crisis resilience

As companies have become more aware of the potential cost of the aftermath of a crisis, a resilience approach has grown in favor and dominates crisis management thinking. In other words, companies have moved from a pure event-based management of crisis, to being prepared for a never-ending circular task of dealing with risk, and preparation for the next possible crisis. For example, from a business perspective losing reputation would be a high risk, so that branding strategies and PR departments would be focused on preparation for quickly building trust when it was challenged. Within IT-departments focus on reduction of system weaknesses to prevent security breaches, and quick recovery should this happen, are of utmost importance. In all areas of the business, various environmental contingencies may threaten the business continuity and evaluating the resilience of the business model against these contingencies should therefore be a central part of business continuity planning (Niemimaa et al, 2019). A typical model used in research and development of resilience looks like this example:

**Figure 2.** The Operational Resilience application (ServiceNow, 2022, p.1)

Dobrowolski (2020, p.804) points to the "natural human tendency to focus on moving on from the crisis as quickly as possible and returning to former conditions", but also a growing awareness on how to identify any signs to avoid a crisis. Dobrowolski (2020) therefore argues that working with threats to systems in an agile way is the best prevention in situations of rapid change. He explains further that a crisis is more often than not a multifaceted problem: "it is highly unlikely that problems will be solved at a single stroke or by ad hoc action. It leads to the assumption that despite the urgency of the crisis, the situation demands management and solving-problems from a three-dimensional perspective, which includes organisational, managerial and political issues" (Dobrowolski, 2020, p. 800).

## 2.5 Strategic responses to crisis

During Covid-19 the length of the crisis meant that a simple business continuity response soon became challenging. In the initial phases of a crisis there is a focus on quick recovery, but when the length of the ongoing situation is unknown, risk assessment is difficult, and the path forward is more uncertain.

Fleicher (2013) talks about the idea of subjective and objective perceptions of time during a crisis, but most importantly the concept of "quantic time". This refers to an "irreversible break" with what went before and the heralding of a new era (Fleicher, 2013). When organisations perceive an irreversible break with what went before a strategic response is a necessity.

Krammer (2022) bases his Covid-19 research on a model of strategic crisis responses from

Wenzel et al. (2020). He presents four main strategies under crisis: retrenchment, persevering, exit and innovating (Krammer, 2022) and these are useful to examine in more detail.

**Retrenchment**

Retrenchment is a strategic response that involves reduction of costs, assets, and products by reducing normal activity in the market (Pearce & Robbins, 1993; Krammer, 2022). Though such measures can potentially narrow business activities, some scholars highlight that it can stabilise business-decline through increased focus on already existing activities, and therefore be an important basis for strategic renewal and recovery (Pearce & Robbins, 1994; Wenzel et al., 2020). For many, this response is seen as necessary and "an almost unavoidable ad-hoc response to a crisis" (Wenzel et al., 2020, p.9). However, when a crisis lasts for a longer period of time it may negatively affect a firm's valuable resources, capabilities and culture (Wenzel et al., 2020, p.9).

**Persevering**

Persevering is aimed at sustaining a firm's activities and maintaining the status quo during a crisis. This strategic response is seen especially effective when a crisis changes on a day-to-day basis (Wenzel et al., 2020). This reduces exposure to risk and failure in uncertain times (Krammer, 2022).

**Exit**

An exit strategy may be an unavoidable response to a crisis when other responses fail. It may also occur from the disbelief that other responses will help the organisation survive the crisis (Wenzel et al., 2020, p.12). However, it is not necessarily caused by bankruptcy and can be a valuable strategic decision. For example, Dai, Eden, and Bemish (2017) argue that choosing an exit strategy in war-afflicted areas can help protect at-risk resources that may be hard to replace.

**Innovating**

Wenzel et al. (2020), argue that innovating during a crisis might be unavoidable for a firm's survival if a crisis lasts for a longer period of time, by forcing companies to look for alternative sources of revenue. Although a crisis can have devastating consequences for a company, it also opens up possibilities for strategic renewal by relaxing normal decision-making constraints, thus opening doors to what might earlier have been sin as unfeasible (Wenzel et al., 2020, p.11).

## 2.6 Cognitive aspects of crisis

As discussed above, crisis management literature has often focused on the organisation's response and resilience to crisis. It is very easy to forget when reading this literature that organisations are to a large extent theoretical entities. In reality they consist of a network of individuals who work together, ideally to achieve goals set by the management of the organisation. Although crisis literature has written extensively about the psychological aspects of crisis management, the "underlying assumption is that cognitive limitations are inherent in individuals and that organization-based solutions constitute the primary method for overcoming or minimising these limitations" (Person & Clair, 1998, p.5). However, as the authors also point out, after an organisational crisis has occurred individuals "may not only collectively question their personal assumptions about themselves and the world but also question cultural assumptions, structural relationships, and role definitions within the organization" (Person & Clair, 1998, p.6). The authors therefore included the importance of "individual and collective reactions" to crises in their model (figure 1) and propose the idea of "psychic reorganisation" after a crisis. Pearson & Clair (1998, p.7) also quote Habermas (1975) who explains how a "prolonged crisis of rationality triggers a "legitimacy crisis," where followers withdraw support and loyalty to key decision makers and replace it with questioning of the current social structure and institutions".

In summary, crisis management theory and literature give a good framework for examining the organisation's approach to a crisis. However, much crisis research has focused on short-term, disconnected crisis events and patterns of recovery. It is therefore necessary to examine innovation theory itself to give perspectives on strategic choices for continuity or growth that companies face during and after a crisis. This is especially relevant with regard to the competitive or broader business environment companies exist in.

## 2.7 Innovation theory

Innovation research and theories has evolved from seeing innovation as a linear explanation of diffusion of inventions in the 1930s and 40s, to a far more complex system approach from the 1980s onwards. Key concepts that influenced the literature of innovation are the discussions around supply-push versus demand-pull in the early literature to an increasing focus on how external, macroeconomic forces can influence the individual company (Greenacre et al., 2012). Schumpeter's theory of creative destruction describes how 'the old' is constantly replaced by 'the new', and accounts for at least 50% of productivity growth (Schumpeter, 1942). Greenacre

et al. (2012), states: "Innovation involves complex interactions between a firm and its environment (...). On one level, there are interactions between a firm and its network of customers and suppliers. The second level is wider, involving broader factors shaping the behaviour of firms: the social and cultural context, the institutional and organisational framework, infrastructures, the processes which create and distribute scientific knowledge, etc." (Greenacre et al., 2012, p.40).

Another important and often discussed criteria which influences the rate of innovation, is market uncertainty and the risk of failure. When the potential of a particular innovation is uncertain, the risk of failure increases (Greenacre et al., 2012). Uncertainty is particularly relevant regarding innovation concerning emerging technologies, where uncertainty represents a dilemma between possible opportunities and being unable to determine whether a technology path will fail or succeed (Greenacre et al., 2012). Given that most firms do not have access to full market insight they have limited or "bounded rationality" and this in turn creates a barrier to innovation. The barrier to innovation is strengthened further by the concept of a "dominant design" (Geels, 2002). A dominant design occurs when a technology, institution or way of operating becomes established as "the norm" (Utterback, 1994). A dominant design is further reinforced when increased returns of adoption are in play. Greenacre et al. (2012), describe the work of Brian Arthur and Paul David in the 1980s and 90s (David, 1985; Arthur, 1994) who discussed the idea that the innovation and take-up of a new technology depends on the path of its development, the "path dependency approach". As a technology becomes increasingly adopted, the cost of adoption declines, as well as levels of uncertainty. Potential technological inertia can follow, and new innovation tends to be incremental rather than radical. Geels (2002) points out that this inertia can cause a "lock-out" of more radical or disruptive innovation which creates "relatively rigid technological trajectories" (Greenacre et al, 2012, p.40). In this phase "most competition focuses on improving components rather than altering the architecture and thus like their predecessors, such firms become institutionally embedded" (Greenacre et al., 2012, p.12). Interestingly Greenacre et al. (2012), points out that "path dependence explains how the set of decisions faced by an entity (individual, firm, institution or whole system) for any given circumstance is limited by the decisions made in the past, even though past circumstances may no longer be relevant" (Greenacre, 2012, p.10).

## 2.8 Innovation in a crisis

Further innovation research has looked into the transition phase between dominant technologies and new technologies, with special focus on disruptive technology. The work of Geels (2002) builds on the idea of creative destruction from Schumpeter (1942), and as this seems particularly relevant to my hypothesis, I will examine it in more detail. Geels (2002) proposes a multi-level framework with three symbolic levels of interaction between elements in a system: "The different levels are not ontological descriptions of reality, but analytical and heuristic concepts to understand the complex dynamics of socio-technical change" (Geels, 2002, p.1259).
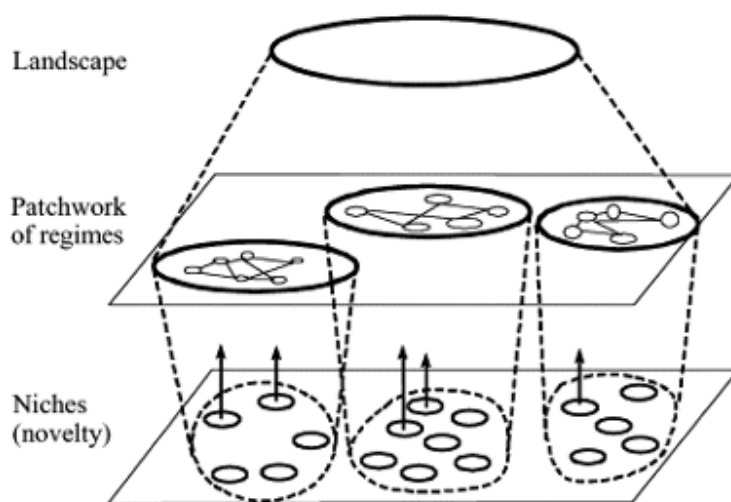


**Figure 3.** Multiple levels as a nested hierarchy (Geels, 2002, p.1261).

At the lowest level of the hierarchy exist "niches" of networks where participants work on radical innovation. The work they do is not coordinated with each other, nor is it guaranteed of success. In certain circumstances the innovations they work with can be transferred to the next level and become part of the dominant design (Geels, 2002).

The dominant design is based on a "patchwork of regimes". These regimes are more or less aligned with each other and are coordinated in terms of using a consistent technology or understanding of norms if the regime is institutional - "The stability of established sociotechnical configurations results from the linkages between heterogeneous elements" (Geels, 2002, p.1259). In other words, there is a mutual understanding of how things work. Technological innovation within the patchwork of regimes often moves in the same direction and "technological regimes create stability because they guide the innovative activity towards incremental improvements along trajectories" (Geels, 2002, p.1259).

The regimes exist in a socio-technical landscape, "consisting of a set of deep structural trends" that frame the external infrastructure in which users operate and interact. "The macro-level of landscape consists of slow-changing external factors, providing gradients for the trajectories. The micro-level of niches accounts for the generation and development of radical innovations" (Geels, 2002, p.1261).

In response to criticism of his initial model (Geels, 2002), Geels and Schot (2007) presented a more detailed model in order to give more insight into how his model could be used empirically. The version of the model presented below gives insight into how radical innovation can occur.
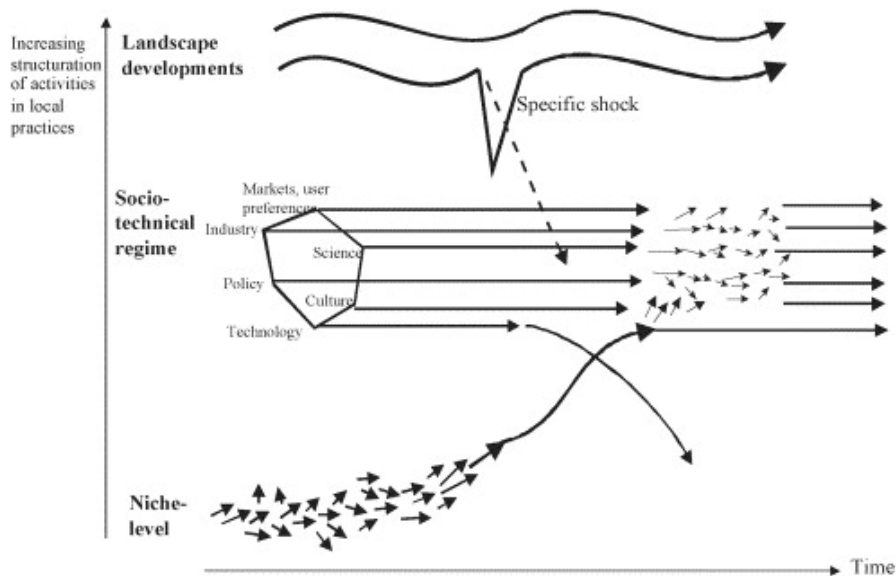


**Figure 4.** Technological substitution pathway (Geels & Schot, 2007, p.410).

Figure 4 shows how a specific shock in the social-technological landscape affects the current regimes. The existing niche-level companies seize a window of opportunity and are able to break the entry barriers to the existing dominant design with products that did not fit into the previous dominant design. After a length of time a new dominant design is established and itself is open to new threats.

It is also important to note that many global companies who realise the cyclical and destructive nature of innovation have created sub-departments, or even separate companies, that challenge *their own* core business model. This can be seen as a form of creating resilience within the company, because if and when the core business model (or regime) is challenged they will be better equipped to be part of the disruption. In this way companies that have chosen this strategy can be said to operate at multiple levels within the nested hierarchy (figure 3). Google is a well-

known exponent of this strategy, and their CEO Google Eric Schmidt has talked about allocating resources between "the core", "the adjacent" and "the innovative stuff" as a survival strategy (Kylliäinen, 2018). This strategy gives resilience at all levels, from major changes in the operational landscape, from small incremental breakthroughs within the existing socio-technical regime, and from niche level companies who radically challenge the existing dominant design.

Greenacre et al. (2012), describe many other theoretical models of how innovation occurs but Geel's model (Geels, 2002; Geels & Schot, 2007) seems to be the most appropriate to interpret and judge the way innovation has happened during the pandemic. One important point, which will be discussed in more detail later is the difference between *suppliers* of innovative technology and *adopters* of the technology. Companies that have been operating at niche level, who suddenly have opportunities to enter the dominant technological design have usually already conducted innovative work pre-crisis. Other companies that buy or use the innovative products have not per se conducted innovation but have adopted it and in that way have not innovated themselves. If these opportunities are used to *create* new value for the company as opposed to *removing* value from the company (Margherita & Heikkilä, 2021), then an expanded definition of innovation will include adding "new strategic value" to the company and will be used here.

Finally, strategic choices around accelerating or breaking the use of resources are, naturally, determined by the assessment of potential returns on investment. Both crisis and innovation literature show how companies are heavily influenced by risk assessment during a crisis. Larger companies with enormous budgets often have to justify how capital is invested to shareholders and therefore can be held back by risk aversion. In smaller companies, the potential to act freely can be restricted by limited funds (Magnusson, Koutsikouri, & Päivärinta, 2020), so in itself, access to capital does not ensure innovative placement of investments. Decisions about when and how to use company capital to expand or retrench are vital for company survival. These decisions are part of everyday business strategy but are more difficult in a crisis when uncertainty is higher than normal. Empirical research from the early stages of Covid-19 indicated that it was primarily healthcare companies that had invested in innovative strategies (Am, Furstenthal, Jorge & Roth, 2020). However, as the crisis moved on to be a permanent state of affairs, new opportunities arose for different companies.

# 3. Methodology

In this section of the thesis, I will discuss my chosen research and research design. I will also elaborate on how data was gathered and how reliability and validity was taken into account.

## 3.1 Research Method

The two most common approaches to conducting research are quantitative and qualitative methods. By anticipating what type of data is most needed to respond to the research question, the researcher is better able to choose the most appropriate method. For instance, if numeric and systematic descriptions of trends and attitudes of a population is needed, quantitative methods may be the best approach. However, if in-depth textual data is needed a qualitative method may be best suited. A mixed method approach is also common, if both numeric and textual data is needed (Williams, 2007, p.65).

As the purpose of this paper is to develop a greater understanding of how companies operated during the Covid-crisis, as well as uncovering possible innovation during the pandemic, I found a qualitative approach the most suitable. Qualitative method is a holistic approach that involves discovery and is used to get deeper understanding and insight of a topic. In addition, it is used to explore a subject there is limited information about (Willams, 2007). As the pandemic is still fresh, there is limited research on the topic of crisis and innovation during Covid-19. Therefore, I found interviews to be a good way to go in-depth of people's experiences, and thereby adding to the body of Covid-19 knowledge.

## 3.2 Research Design

One of the earliest choices one has to make is the decision of what research design to use. Research design is the overall approach to what, where and how the research problem is to be answered and it is therefore important to have a clear plan from the start (Askheim and Grenness, 2019).

According to Askheim and Grenness (2019) there are three main research designs to choose from: explorative, descriptive and causal. In this qualitative research I found an explorative approach to be most relevant, as this approach is commonly used to explore subjects where the approach of analysis is less clear. Askheim and Grenness (2019) also mentions four sub-

categories of exploratory design: Phenomenology, case study, grounded theory and ethnography. For this study I will follow a phenomenological design.

A phenomenological research design is used to explore and describe people's experiences with a phenomenon from a first-person point of view (Smith, 2018). This approach was found the most appropriate, as I wish to explore experiences different companies had through the eyes of the individual - even though many questions are directed at the company they work in as a whole. This way I will be able to capture what worked and not from a personal and emotional perspective and get a better understanding of their experiences during the pandemic. By using this research design, it is important to set aside prior assumptions, and focus on the experiences of the interviewees to best capture the data objectively (Delvetool, n.d).

## 3.3 Data collection

### 3.3.1 Primary and secondary data

Data can either be collected through primary or secondary sources. Rabianski (2003) defines primary data as data gathered by the researcher first-hand, and secondary data as data gathered through secondary sources such as published or unpublished articles based on primary sources.

In this thesis secondary data was collected mainly through articles found on Google Scholar and The Kristiania University online Library. To find the most relevant articles I used keywords such as: crisis management, business continuity, Covid-19, innovation and new value. I also used a combination of these to find more specific results. When choosing what articles to include, I started by looking at the title and then read the abstract. If this was found relevant, I would move on to read both the introduction and conclusion, before reading through the body. This allowed me to save time while reading through hundreds of articles. I also found relevant articles through the references of others when found important. Since Covid-19 is a relatively new area of research it was naturally easier to find more relevant articles when those keywords were included. However, I made sure to look at articles written before this time to include more classical theories on subjects such as crisis and innovation.

The following themes and secondary sources were found the most important in structuring interviews and organising the data.

- Business continuity versus business expansion and innovation during crisis (Niemimaa et al., 2019, Margherita & Heikkilä, 2021)
- Strategic responses to crisis (Krammer, 2022; Wenzel et al., 2020)
- Chronological and financial perspectives with regard to a strategic evaluation of uncertainty (Fleicher, 2013; Magnusson et al., 2020)
- Technological transition (Schumpeter, 1942; Geels, 2002; Geels & Schot, 2007)
- Psychological aspects of crisis (Pearson & Clair, 1998)
- Empirical research (Microsoft 2022; Am et al., 2020)

My primary data has been collected through eight interviews. Each interview was with one person from eight different companies (more below).

### 3.3.2 Interviews

To gather my primary data, I conducted in-depth interviews. This approach encourages the interviewees to share their own thoughts, feelings and opinions about the topic. In addition, the interviews were conducted in a semi-structured approach, where the interview guide was flexible in order to make the conversation flow naturally. Even though most questions were asked to all of the interviewees, not all questions were equally relevant to all, and some interviewees answered more than one question naturally through another question. I also made sure to follow-up with questions where further elaboration seemed necessary.

All data collected from the interviews are anonymized. This includes all personal data, such as the name of the interviewee, their role and the company they work for. This was emphasised to the interviewees when asked to be interviewed and before the interview started. The reason for anonymizing the data was based on two reasons. Firstly, I wanted the most honest answers I could get, and since they are answering several questions on behalf of their company this was an important factor. Secondly, it did not add any relevance to my thesis to include this data. Therefore, only the industry and focus area of the company is used.

All of the interviews were done through digital communication tools between February and March 2022, and each interview lasted an average time of 45 minutes. All of the interviews were also voice-recorded with permission from the interviewees (as well as NSD in advance). This allowed me to relisten and transcribe the interviews afterwards, which contributed to reducing misinterpretation and misunderstandings of their answers. As seen in the findings section I also included several quotations from the interviews in order to further retain validity

of the answers. The quotes used were approved by the interviewees, and as several interviews were conducted in Norwegian, some of the quotes needed to be translated. The translations were also confirmed to make sure their opinions were not distorted.

### 3.3.3 The interviewees

When choosing what people to interview, I started by looking at my own network. I wanted a diverse portfolio of companies in different industries, but it was equally important to find the right people to interview within those companies. By using my network as a starting point, I was able to share information easily to help pinpoint the correct people to talk to. The criterias for the interviewees was that they have had to be working at the company they are interviewed in throughout the whole pandemic, and they had to have an above average understanding of their companies activities during the pandemic. Both criterias were naturally found through the pre-interview face where I was guided to the most appropriate person. This communication was done through e-mail.

In total eight interviews were conducted. Originally the number of interviews was planned to be higher, but after eight interviews there was more than enough information to process and present. In addition, two extra company cases were presented by one of the interviewees (as they were clients), and they were found to be relevant to include. These extra cases have been approved by the companies to be discussed. I therefore found that if I had carried on with more interviews then the original intention of an in-depth study would be lost, as I would have less room and time to properly investigate and present the data without diluting it.

## 3.4 Reliability and validity

It is important to take the concepts of reliability and validity into consideration as it helps determine the quality and objectives of the research (Poblete & Grimsholm, 2010).

### 3.4.1 Reliability

Reliability is used to measure the consistency of the data and helps understand whether the results can be trusted (Middleton, 2022). When there is high reliability, the answers from the same respondent should theoretically be the same when asked repeatedly, or if asked by others under similar circumstances.

Bryman and Bell (2007) introduce the concepts of internal and external reliability, where internal reliability looks at the consistency within the result, while external reliability looks at how consistent the results can be replicated.

Internally there was high consistency across the answers of the interviewees, especially regarding positive and negative effects regarding home office. Other additional questions showed high consistency as well. Still, more company specific questions showed some diversity as hoped for, to capture the broader experiences and strategies different industries had. External reliability on the other hand, is something Bryman and Bell (2007) highlight as rather difficult to achieve in qualitative studies, as it is harder to freeze the initial social and environmental circumstances of the study (especially in ethnographic research). Subsequently, to achieve high external reliability in this thesis, I have provided detailed descriptions of how I gathered my data in this chapter, in addition to how the interviews were conducted (Grimsholm & Poblete, 2010). The interview questions are also attached in the appendix. One unavoided factor here is the freshness of the covid-pandemic which might affect how well it replicates in later years.

### 3.4.2 Validity

Validity tells something about the accuracy of the data (Middleton, 2022). Factors that contribute to answers diverging from its true value reduces the validity of the result and it is therefore important to have this in mind when conducting interviews. This can happen before, during and after an interview, where factors such as too guiding questions during the interview or wrong interpretation of the answers after the interviews can reduce the validity of the data (Middleton, 2022). To retain validity, I made sure that all interviewees had a good understanding of my hypothesis before the interviews, and made thurow notes during the interviews, in addition to transcribing and categorising the data after the interviews.

Similar to above, Bryman and Bell (2007) discuss internal and external validity. Internal validity looks at how well the results match the theoretical observations developed throughout the research, while external validity tells something about how the results can be generalised across social settings.

In terms of how well the data from the interviewees match observations made in the theoretical section of this thesis, I would say there is very high validity. I was almost surprised how well theory from decades ago could describe some of the experience's interviewees had during the

pandemic so accurately. The external validity of this thesis is somewhat harder to capture as the intention of this thesis from the start, was not to make a general observation across social settings, but to go in-depth of the experiences of a handful of companies. However, this thesis could be a useful contribution for later external validity confirmation for future research that aims to generalise similar findings.

# 4. Findings

In this section I will present the findings from the interviews conducted. To help structure and classify the data I have used Margherita and Heikkiläs (2021, p.687) "framework of Covid-19 response actions" as an inspiration. In their research they present quantitative research from over 700 international companies and their response to Covid-19. This was helpful as a basis for both creating an interview guide and to classify the different answers in this chapter.

I will first give a brief presentation of the interviewees and the industry their company operates in, then I will move on to present the findings under the following sections:

- Operations management
- Leadership and change management
- Customer experience
- Workforce and human capital

## 4.1 Presentation of the interviewees

| Interviewees | Industry | Strategic response (Wenzel et al., 2020) | Interview language |
|---|---|---|---|
| Interviewee A (/company A) | Airport meteorological observation systems | Retrenchment | Norwegian |
| Interviewee B (/company B) | Social welfare and benefits to unemployed | Perseverance | Norwegian |
| Interviewee C (/company C) | Consultant service for e-commerce and digital tools | Innovating | English |
| *Client C-1* | *Interior and homeware retailer* | | |
| *Client C-2* | *Furniture retailer* | | |
| Interviewee D (/company D) | Digital assessment solutions | Innovating | Norwegian |
| Interviewee E (/company E) | Cable and optical fibre industry | Perseverance | English |
| Interviewee F (/company F) | Computer software systems and applications | Innovating | Norwegian |
| Interviewee G (/company G) | Food wholesaler to restaurants | Retrenchment | Norwegian |
| Interviewee H (/company H) | Industrial data digitalisation | Innovating | English |

(**Table 1.** Presentation of the interviewees, industry, strategic response and interview language.)

## 4.2 Operations Management

The most significant observation with regard to operation management were the changes in demand that instantly affected some of the companies. Some had an increase in demand, some had a decreased demand, while some were more stable in demand due to contractual obligation that stabilised risk. In addition, supply chain issues are discussed.

### 4.2.1 Increase in demand

Margherita and Heikkilä (2021, p.687) state that in the first stages of the Covid-19 pandemic most companies discussed and evaluated "shifts in customer demand and the impact on the supply chain, which brought companies to identify and measure risks, and to envision a possible future". This is mirrored in the interviews where one of the main topics was regarding the changes in demand for products and services. Several of the companies interviewed had a significant increase in demand for their products, one had no change and the remaining two had a reduction in demand.

Interviewee B: Increase in number of users applying for social help
Interviewee B mentions that they saw an increase in demand immediately and they had to scale up systems that allowed them to communicate with users more effectively.

*"We almost immediately had too much to do and we had to borrow caseworkers from other public offices to help us. We also hired several consultants from the IT-industry to help us and develop new services to be able to solve the tasks we were given. (...) It was urgent, because people were suddenly sitting there without money and companies that were using foreign employees suddenly had restricted access to them and we had to find alternative resources for the authorities.*

*(...)*

*We already had a CV-database aimed at people looking for a job, but we had to reverse the logic and try to get hold of people who had the necessary qualifications but were already working part-time and hadn't necessarily considered working more, such as nurses. So we made a campaign to recruit students and retired nurses who maybe were willing to work more than they had done - signing up for duty as it were! Just getting hold of them was a challenge but some were willing to contribute as it was a very special situation. We couldn't just take people from one branch and move them to another because of the different*

*competencies needed so in addition to having an overview of who was available we had to know what they could do."* - Interviewee B, translated

For company B the massive increase in demand combined with an immature digital competency meant the changes made within the first month contributed to an acceleration in innovation in work processes and communication.

Interviewee C - client C-1) helped rapid launch of website

One of the companies that used Company's C consulting services had been planning the launch of an e-commerce site for several years but had not managed to prioritise the actual launch. As physical shops started to close, the client decided within weeks of the shut-down that they had to go live with the website as soon as possible, and this created a new demand for digital processes and development from Company C.

*"My CEO rang me at the end of March and told me that client C-1 wanted to go-live with their site as soon as possible. His actual words were that they wanted it up within a week! I didn't know how we were going to make that happen as they had been trying to launch for at least 2 years and kept encountering internal logistical problems that meant we couldn't go live. Usually, we use at least 6 months to launch a new site so this was really not normal. (...) I tried to get a new team to see this as positive as at least we had work, whereas a lot of other people were being furloughed."* - Interviewee C

A big problem for interviewee C was that as the launch had been delayed numerous times, they did not have the a team readily available to carry out the work:

*"We had to use developers who had not worked together on this project before. Everything was done at ultra-high speed and lots of the quick fixes involved manual procedures for the client just so we could launch. For example, posting of accounts was not done in the way the client's Finance department wanted, so this had to be done manually for at least one year after launch. In fact, the e-commerce manager ended up with lots of manual routines that had to be done each day as the integrations with other backend systems were not in place."*
- Interviewee C

Interviewee C saw the short-term and intense focus of finalising a project that had been in the pipeline for a reasonably long time as both positive but also stressful. The crisis accelerated

the development but at a price to themselves.

Company C - client C-2) demands that appeared over time

After the first weeks of lockdown were over, new demands appeared from client C-2. The first spring/summer (2020), when stay-at-home holidays were necessary because foreign travel restrictions, the market for garden furniture exploded and was sold-out everywhere:

*"It was complete madness, all their [C-2] garden furniture was sold-out by May [2020] and the second-hand market on Finn.no [a Norwegian online marketplace] exploded. The client told us they saw second-hand products selling at a higher price than the new ones because that was the only way to get hold of them."* - Interviewee C

This change in demand was an unexpected benefit and gave the client a welcome increase in turnover that enabled them to lift the value of the e-commerce site internally. In addition, it means they had to make their product available through different channels as physical stores were closed:

*"Suddenly the focus of the client's boss moved from the stores, where 95% of the turnover had been, to the online store. All eyes in the management team were suddenly on him [the ecommerce manager], as the demands about what we should deliver in terms of new features grew every day."* - Interviewee C

In other words, there was an accelerated focus on e-commerce because it was obvious that as a channel it met the new demand criteria better than physical stores. The department received increased budgets and gained more power internally.

Interviewee D - Major increase in demand for digital assessment tools

As schools and universities across the country had to find alternatives to physical exams, due to restrictions and social distancing, Company D suddenly found their portfolio highly relevant. Almost overnight many customers who had been uncertain about choosing their products decided to go ahead and implement their solutions.

*"Of the services we provided in the market, basically our entire portfolio became more relevant, and that change happened overnight. It was also the case that universities and colleges etc. did not quite know what to do when this happened, so one thing is that several*

*people used this opportunity to start digitally partially, but very many used the opportunity to*
*check out what it was and what opportunities the digital tools provided."* - Interviewee D,
translated

In addition to focusing on improvement of existing solutions, this increase in demand sparked an opportunity to develop a new remote proctoring solution that would allow teachers and examiners to better assess cheat prevention through cameras and monitoring. This product had already been on the roadmap but was given higher priority. Even though the interviewee said that video monitoring was hard to implement in Norway, it was a major success in other countries and quickly became one of their flagship products.

*"An area that we were quick to develop, it is something called remote proctoring [video*
*monitoring of exams]. And it is an area that consists of several things, but it is about different*
*tools to be able to operate remotely, that is - run exams remotely that prevents cheating. In*
*Norway, there was a lot of opposition to using this type of technology, but in several places in*
*the world, it was a good addition to our portfolio. [...] And it has become one of our flagship*
*products."* - Interviewee D, translated

As demand increased, they saw the opportunity to expand further, and had already a big focus on new country expansion which they decided to go ahead with. However, this imposed some challenges as travel restrictions and the different country regulations made it take longer than expected.

So, for company D the increase in demand for existing products accelerated the growth of the business and enabled the possibility of developing new products to a wider market.

Interviewee F - major increase in demand for existing software products
Company F experienced a major increase in demand for their digital communication products. As soon as the news about the pandemic became known, they made a decision to increase server capacity by six times and then in March 2020 they increased it again by another ten times. The interviewee remembers that the first weekend of lockdown was incredibly stressful as they prepared to meet the increased demand from customers. The use of one of their products increased 600% in the first weekend with only minor problems, so the foresight from the datacenter had paid off.

*"In the first 2 months of the pandemic we saw that we had achieved more in terms of digital evolution that normally would have taken 5 years to implement. It is hard to put an exact figure on how long it would have taken under normal circumstances to get people up as digital as they are today, but we have accelerated with multiple years. We've been on a learning curve on steroids, and we've really opened our eyes to what this means."*
- Interviewee F, translated

Even though the workload increased, interviewee F discussed how they did not employ more people to deal with this increase in demand:

*"We had so much to do - and I think that applies to quite a few in the IT-industry really. But I do not think we employed that many more, because we don't get new headcounts so easily in this company. There is a longer process for it. So it was more that we were more efficient and worked more efficiently, in an attempt to support the growing demand that was out there."* -
Interviewee F, translated

The amount of new work meant that the company could have easily employed more people. However, judging the permanency of an opportunity is an important criteria when deciding to employ new people. Given the uncertainty of the situation, and the length of time it takes to recruit new employees, existing employees were called on to work harder to meet the demand.

Interviewee H - also experienced that it was easier to sell their products
Company H was in a similar situation to company D and F because the products they called their "*bread and butter suddenly became a way of life*" (Interviewee H). The innovation was speeded up on the client side with existing products from their company. Interviewee H mentioned an especially large interest in their robots and digital 'twin technology'.

*"During those first couple of months we were able to talk to our customers about our robotics division, as the robots can perform some of the feats that humans can't. For example, we can send a robotic dog offshore to oil rigs to check on things. And in Covid times, if a person can't go, the robot can read the gauges. And so our robotic solutions became a lot more popular and interesting due to the fact it's focused on everything being done remotely and digitally.*

*(...)*

*It's been on the radar of customers for some time [twin technology], but they didn't know how important it was going to become. Now it's a part of every conversation, whereas before it was like, 'that would be nice to have', or 'that will probably happen in the future'. Now*

*there's not even a discussion that it has to be included in what they do. It accelerated the importance of it, because the pandemic made them realise they can't operate without it. Before they might have thought it was a good idea and have seen and known about it. It's not a new concept, but suddenly everybody needed a digital twin."* - Interviewee H

## 4.2.2 Loss of demand

It is interesting to look at the two companies whose market suddenly disappeared and who faced a loss in demand. When the strategic response to a crisis was retrenchment what was the rationale behind this and did they see alternatives looking back?

Interviewee A - industry shut down

Interviewee A discussed how their main market was airports that had been mostly shut down, and who themselves were facing cost-cutting strategies. Consequently, there were no new airport customers interested in discussing future contracts. The company therefore had one goal in mind - to survive the crisis:

*"We actually had a large budget and plans for expansion in 2020. The possibilities we had disappeared overnight and the company became entirely focused on survival. (...) and by surviving it really means just getting through this crisis which ultimately ended up lasting for 2 years."* - Interviewee A, translated

To achieve this, they had three distinct focus areas during the pandemic; 1) to take care of existing customer relations, 2) take care of the equity, through furloughs and cost cutting, 3) try to take care of, and maintain the organisation. After that,

*"(...)we then stopped completely with trying to expand the market, that is, finding new customers, because they were simply not there. And it was out of necessity. Our customers were the airports and there were no planes. You have probably seen pictures from the busiest airports, and it is completely still. And then there was no willingness to invest. And then there were many of our contact points that were furloughed, so there was no one to call either. So therefore the focus was simply and only on surviving, and setting everything that was about sales and marketing to a minimum level. So there was no room for expansion, we did not have the muscles and in 2020 there was no one to call. They had closed the doors and gone home."*
- Interviewee A, translated

In theory Company A could have used the period of quietness in the market to plan new strategies, and perhaps use his workforce to create new products. In reality the uncertainty the company was facing made such an investment too speculative. Even if Company A had alternative products to spread risk they would have had to produce products that were relevant to a completely different market, such as the private domestic market. The fact that they had to furlough many of their key staff meant this was not an option that was explored.

<u>Interviewee G - lost potential?</u>

Company G's main market was selling specialised food and wine directly to restaurants and niche stores and this disappeared overnight for them. In theory one could have said that there was an increase of demand for one of their key products - wine to be drunk at home. However, the only company allowed to sell wine directly to consumers in Norway is the Vinmonopolet [wine monopoly] who themselves had an increase of sales of 40% during 2020 (Vinmonopolet, 2022). However, the law in Norway does not permit sale of wine to private persons and Company G were only able to sell some wine to private persons in Christmas hampers purchased by companies. The Company G could have achieved more sales directly to consumers, but as their customers had only been restaurants, they had no platforms to reach the end users. This is an example of a company that was in a somewhat neutral position. The actual branch that they worked with was hit negatively, but they did not have the resources or capacity to break through into a new business area by reaching a whole new customer base.

## 4.2.3 Contractual obligations reduced demand-based focus

Some companies were not affected directly from changes in demand and sales loss because of contractual agreements that were honored by their customers. There was some reorganisation involved but generally the companies experienced little changes in the demand.

<u>Interviewee E- long term contracts</u>

Interviewee E represents one of the companies that did not experience a big change in the demand for their products. That is not to say that there was not a change in workload, but as the work they carry out is based on long term contracts then the demand for their products during Covid remained stable, although the company had to reorganise in order to prioritise the most important customers.

*"We have long-term contracts with our customers so we talked to them about what would be the delivery of the projects. There were lots of legal meetings to see if we were going to*

*activate the force majeure or not. Some customers issued force majeure themselves so we worked a lot with the contracts and legal clauses. Also, we looked at the contracts according to which ones we would prioritise regarding projects and production.*" - Interviewee E

Interviewee A - Contracts enabled survival

Another company that used long-term contracts as a basis for financial survival was Company A.

"*When we enter into contracts for large delivery systems such as what we do, the contracts are divided into three payment phases. When you sign the contract it typically triggers 40% of the contract amount, phase two is when you have built the system, but still not shipped it to the customer, then you do a so-called FAT - factory acceptance test, and in the process there it triggers capital injection, we can invoice, so an important element in this, is that when we signed a contract - we had already done that before the crisis began - it triggered a 40% payment. And then you get a cash injection that you can eat off to get through.*"
- Interviewee A, translated

The contracts gave them partial stability and was an important survival factor for Company A. This meant a strategic strategy of retrenchment was possible, through higher focus on delivering already existing contractual obligations when the market was not there.

## 4.2.4 Supply chain - logistic flows

Another area highlighted by Margherita and Heikkilä (2021) is Logistic flows and manufacturing processes.

Interviewee E:  moved production to Norway to secure contractual obligations

One of the companies that had a clear plan for handling crises was Company E. As soon as the pandemic became a threat, they made the decision to move their production to Norway and shut down production in other countries, such as Africa, in order to secure materials to Norway. The interviewee noted, with slightly tongue-in-cheek,

"*We had a very nice year in terms of sales and cash flow. Better than the year before and we received no grants, except for a social security grant that the government gave in April [2020], I think.*" - Interviewee E

However, for this company the actions taken at the beginning of the crisis were very much in the business continuity area, rather than innovation.

Client C-2: Lack of products in their webshop

The supply chain issues around import of furniture quickly became an issue for one of the clients of interviewee C. Many of their products were ordered as made-to-measure products and imported from abroad so there quickly became a shortage of beds, sofas and garden furniture. Company C was employed to develop features on the website about stock availability in their stores and developed a click and collect solution in the early autumn of 2020. This became very popular and by the end of 2021 accounted for almost 50% of online sales. The issue of Covid was exacerbated in 2021 because of the cargo shipped that blocked the Suez Canal in March. This created a double-crisis as the availability of garden furniture once again became a problem that summer.

Interviewee F - hardware chip shortage

Company F is a major player in the PC market, but even they suffered from limited access to components. This was an issue before Covid but was made worse when the demand for PCs rocketed. As the interviewee stated size of the company helped them ensure access to parts:

> *"Yes, our hardware business struggled. We sell PCs and there, in line with all the other suppliers of chips from the automotive industry, whatever it may be, we struggle to get components. We had challenges like many others. But we had a good system and had secured many devices, so it could certainly have been much worse than it was, but we were also affected by the lack of equipment that came. And what has happened in our datacenter to update servers etc. I do not know, but they have probably had their challenges to get enough hardware, but they have obviously solved it in a good way."* - Interviewee F, translated

Interviewee H - showing empathy and opening doors

Even though company H did not experience any significant supply chain issues themselves, many of their customers did. Company H had clear plans for business continuity but due to the nature of the virus the plans to support and show empathy were as much door openers for new business:

> *"...we contacted them to let them know that we understood and led with empathy, that we understood things were changing on their end, whether it was oil and gas. I mean, think about*

*what was happening there. Planes weren't flying, manufacturing goods, you know, were not being delivered. Power and utilities were threatened and people were worried about their electricity grid working from home. So very real problems were happening to our customers and we were there to say we're not going anywhere. We've got you. And here are some loose solutions if you haven't thought about them."* - Interviewee H

In the area of Operations Management, the massive changes in demand heavily influenced many company's experience of the pandemic. The supply chain issues experienced were also significant for the companies involved but this created both limitations and opportunities.

## 4.3 Leadership and change management

With regard to the hypothesis of how a crisis can contribute to innovation there was an expectation from my side that the interviews would highlight the differences between different management approaches to innovation and crisis. This was especially with regard to the issue of timing. It was expected that the perspective of uncertainty and risk would be relevant, and that it would be interesting to see how management techniques differed.

### 4.3.1 Strategic responses

In fact, the top-level strategic responses from the different companies seemed to bear a tight correlation to the position the company found themselves with regard to demand for their products.

Interviewee A - management lead retrenchment
Company A was drastically affected by the Covid lockdowns because their primary market was meteorological tools for airports and travel was severely restricted across the whole of Europe. The contracts ensured some initial income up front, but they were not able to complete work and therefore the strategic response was one of survival or retrenchment. The main shareholder insisted on cost-cutting and not growth and this affected the choice of strategy:

*"We had guarantees from the owner, that as long as we had control over the costs and scaled down the company the main shareholder would guarantee the equity. That is, if we had run out, the main shareholder would have gone in with minimum capital."* - Interviewee A,
translated

<u>Interviewee B - agile response from the employees</u>

The initial strategic response from Company B was immediate, because the increase in the number of users was so drastic that they were forced to find solutions to cope with the demand for help.

*"When the pandemic occurred, there were very many who became unemployed at the same time (in Norway). We had never "planned" for it, but overnight, well over a three-week period, 400,000 CVs were submitted to our database. And it was everything from people who were furloughed and people who were laid-off from their jobs. And it was pure luck that our systems did not break down. There was no plan in place to account for the fact that something like this was going to happen." - Interviewee B, translated*

Because of the immediacy of the problem the development team initiated a quick response to cope with the changes themselves. The interviewee explained that their team had been working with agile project methods for some time on another project, so this made it easier to create a solution. The management became involved with different initiatives, but at a later date. During the acute crisis of the first days, it was the team that came with solutions.

<u>Interviewee C - non-coordinated expansion</u>

Company C quickly received more work from clients wanting to implement changes that had been on the roadmap, but not prioritised.

*"We have maybe 15-20 clients and each project team had to fend for themselves. There was a lack of common coordination, and no-one [from management] said 'now you have to think like this or that' with regard to risk. Our boss just got more and more assignments and we just had to accept more and more and more. Many big assignments came in, and the companies wanted us to urgently implement things that had been in the planning stage for quite some time. And it was very overwhelming, and some people ended up on sick leave because it was too much." - Interviewee C*

The teams themselves were left to deal with the increase in demand and despite the need for more resources the company did not employ more people during the early part of the crisis for reasons not known to the interviewee.

Interviewee D - management-led growth

The management of Company D were very aware that a crisis of this nature could drastically increase their customer base and started following developments very early on.

*"We started to follow the pandemic in December, mid-January [2019/2020] as we could see what was about to happen. We had intel that said that this was, as many call it, a Black swan, so we started monitoring developments. There were several in the management team who were prepared for this to happen, but we did not know the full extent of it."* - Interviewee D, translated

Because the company was working remotely already, this aspect of the change did not affect the ability of the management team to respond and seek new investors to finance the potential growth they immediately saw.

Interviewee E - business continuity

The strategic response from the management in Company E was very much along the lines of business continuity. The company supplies products and services to a variety of sources and therefore had a healthy spread of investments. Their markets were not adversely affected and in addition had fixed contracts to create a stable source of income.

*"Our group CEO had done some research and he was talking about W-waves from the flu epidemic very early on and therefore we were all ready for a 24-36 month crisis, and it was crisis-mode from day 1. The first decision was that only Norway would not stop any industrial production because of possible limited access to raw materials. The management was under crisis mode, but we already had procedures in place. So we activated the procedures and there were a lot of meetings. Our CEO and management, not just Norway but from the whole group participated, and everybody had to comply. It was decided that we in Norway had to accelerate. Which the rest of the company did not have to."*
- Interviewee E

In other words, Norway which was the most profitable country, received prioritisation with regard to the resources that were available.

When discussing whether the management team saw potential for more innovation, the contract-based nature of the business was mentioned again. In addition, they have global R&D

departments with over 900 employees, and this was seen as a stable, long-term source of innovation and there was not any focus on either cuts or new roadmaps under Covid.

In summary, there were a variety of managerial or strategic responses to the Covid-19 crisis. The four strategic choices described in the literature review (Wenzel et al., 2020), seem to be useful to describe these responses. From the interviews undertaken there does not seem to be evidence for management-led innovation for products that were not in demand. When demand appeared, management encouraged the opportunities but how well the expansion was managed varied.

## 4.4 Customer Experience

Margherita and Heikkilä (2021) found another major area where activities took place was around interaction with customers. In the interviews digital communication with customers was a recurring theme and relevant to my examination of increased value to stakeholders.

### 4.4.1 Communication with customers

One of the changes that nearly all interviewees reported as giving increased value was the transformation of customer-client communication. Several companies reported that pre-covid much of the communication with clients had been face-to-face and although this had been often necessary and positive, it was time-consuming, ineffective and in some cases costly.

Interviewee C - increased use of video meetings
In pre-covid times Interviewee C felt it was sometimes awkward to suggest that video-conferencing sufficed as a form of contact:

> *"We often didn't want to suggest this to customers ourselves as some of them weren't equipped for this and at the same time we didn't want to imply that we didn't want to meet them at their offices. Sometimes clients chose us because we had a local presence in Norway and by meeting with video conferencing, we would have maybe lost that advantage." -*
> Interviewee C

They had been using video meetings extensively for internal communication as they had offices in other countries so it was positive for them that they could carry over this form of communication to their clients.

<u>Interviewee D - in expansion phase and would have liked to meet new customers</u>

As company D was under expansion during Covid they were somewhat reliant on meeting new customers to create more sales opportunities. Both interviewee D and interviewee A talked about the positive and negative sides regarding customer communication.

*"The challenges are that, for new customers, you never get to meet the customer face-to-face. It often works to meet once, and then you can be digital afterwards, but we did not have that opportunity. But I think that we have actually got a much more efficient communication with the customer now." - Interviewee D, translated*

However, the change in communication methods was not without pain. As interviewee A put it:

*"The downside is that it is very difficult to run good sales processes when you can never travel to a customer. And we have also seen that a negative effect of it, you must have the opportunity to visit a customer because it has something to do with relationships and communication. You can do a lot on Teams and e-mails and similar tools, but then you also have to get in the car or the plane and go to a customer." - Interviewee A, translated*

### 4.4.2 Use of digital tools for communication

Interviewee C gave an example of how there was conflict between "rival" tools for digital interaction between companies. If clients were using Microsoft Teams it was almost a mental barrier to get them to use Google alternatives and therefore, they had to install and follow-up a number of new Apps and packages on their PCs. This was not a big problem but there were multiple communication channels to engage with and increased stress levels for project managers.

Digital tools for holding workshops with clients also became necessary, as there were no physical meetings and "the infamous Post-it notes and a whiteboard" (Interviewee C) were no longer possible to use. For Company C, this has paid dividends post-covid so that online workshops have now become a valuable tool in their consultant toolbox. Process innovation was more prevalent than product innovation here, although online workshops in itself could be classified as a product for them.

<u>Interviewee G - lacking basic digital communication tools</u>

*"We sent some mail, explained the situation but we did not have a database of [end customer] mail addresses we could use. It is a bit like the stone-age the way we run it - which is actually quite comical. So all orders are still on paper and we use mail and the phone, we have very little automated. So if we had had the online stores or if we had social media up and running, we could have communicated more, but it wasn't possible. We have a lot of phone calls talking to our customers every day, so there is a very close, personal dialogue."* - Interviewee G, translated

However, after the interviewee had been furloughed the interviewee received a subsidised educational course in running social media, paid for by the government. This was of great value to the company and to the interviewee, and an Instagram account has been up and running since the end of 2020.

To summarise, within the area of customer experience the new processes involved with the digitalisation of customers communication was initially a cause of stress but has opened up new possibilities for nearly all the companies interviewed.

## 4.5 Workforce and human capital

The area of how the workforce and human capital was affected by the crisis was discussed in all the interviews. Many of the interviewees reported an increased stress level for both the management and the employees, that was a subject of concern for their management.

Below are the findings of how companies were affected by their employees working from home (all the companies interviewed had this policy), and how this triggered related issues such as cyber-security and challenges regarding company culture. In addition, the findings show that many of the companies had business continuity problems regarding recruitment and onboarding of new employees.

### 4.5.1 Working from home

The initial situation surrounding the lockdown and working from home was elevated to a crisis, not by the number of people who were ill, but by the drastic measures enforced by governments across Europe. A few countries, such as Sweden, had a far softer transition phase, but in Norway everyone working in offices was recommended to work from home.

Most of the interviewees had worked occasionally from home, but the situation where the whole workforce was working from home at the same time was new for everyone. The companies who had an international presence such as companies A, C, D, E, F, and H were more prepared for remote working than those who did not. In retrospect the interviewees (speaking as individuals) all viewed the flexibility and advantages of working from home as a valuable outcome of the crisis.

## 4.5.2 Cybersecurity

One of the initial concerns during the first weeks at home was cybersecurity. This was mentioned as a contributing factor to the fact that many companies did not actively encourage working from home before, even though it had been fully possible for years. All the respondents mentioned security to some degree, but only interviewee F discussed security as a focus area during the pandemic because they develop and sell security solutions as part of their portfolio. They have had more focus on this post-pandemic and have had a much easier time selling this message to new customers.

*"We spend huge sums on further developing our products in security and we make huge investments in these areas which means that we differentiate ourselves from many of our competitors and get ever better and better security solutions. But for those of our customers who had not used these solutions, because there were many of them, they needed help." -*
Interviewee F, translated

Cybersecurity products had been part of the company's portfolio prior to the pandemic and the interviewee stated that the company has invested in this area more than competitors. When security became an issue for home-office work their company was prepared to sell products to meet the demand that working from home generated. However, many of their customers were not so well prepared and the initial period of implementation involved a number of quick fixes to help customers up and running with their home offices. Companies that had previously operated with employees behind firewalls were the ones that experienced the most difficulties according to the interviewee.

*"Very many actions were made in a hurry and not necessarily as carefully planned and thought through and tested as they should have been, which in turn meant that there were security lapses at the customer that may not have been discovered, which in turn made the company vulnerable." - Interviewee F, translated*

Generally, the other respondents felt secure with their company's level of security two years after the start of the crisis, despite the increase in cyberattacks in the first six-months. Statistics have shown that users constitute the biggest risk to a company's security systems. For example, one statistic claims that "Human error was a contributing cause in 95% of all breaches." (IBM, 2014, p.3) and with that in mind several companies had extra training courses for their home-office users, for example Company D:

*"We have spent a lot of time on securing internal solutions and everyone has been through security certification internally to be aware of all the things one has to think about regarding PCs, networks and firewalls and what not. We have taken into account that we have a remote situation to a much greater extent." - Interviewee D, translated*

Several companies (Company A, D, F, H) concluded that because of Covid, *awareness* of cybersecurity risks within the company had increased and it was possible to get more attention from users and management with regard to cyber-security issues. This can be defined as increased value for these companies.

### 4.5.3 Employee productivity

The initial worry for many managers was that there would be a drop in productivity when the employees started working from home. This may have been the case for some employees during the first weeks, but several of the interviewees reported the opposite effect. During the early stages of the pandemic, when it was seen as a short-term crisis, working long hours became normal for a number of companies. When this was combined with an increase in demand this was especially prevalent.

*"In the beginning we had no weekends and nothing. For the management it was hell. We worked 7 days a week, probably 12-14 hours each day. It was difficult." - Interviewee E*

However, as time passed it was clear that the pressure and for example the number of meetings continued to increase as people became more comfortable with video-conferencing. In other words, the hybrid method of working increased the opportunity for productivity and possibly innovation, but was not necessarily the best work-life balance for those engaged in this form of work.

*"The number of meetings was often extreme. Everyone called each other into video meetings all day long as we had no other way of contacting each other. It was extremely exhausting, and we were not used to it - we were used to some remote work, but not to that degree. (...) People went without food because we were not used to planning that much. We wanted to take the opportunities that arose, and it was perfect for the company, but it soon became too much of a good thing." - Interviewee C, translated*

Company F also experienced the stress of working from home:

*"When you sit in back-to-back meetings and work around the clock for a long time, especially the challenge of separating work and leisure becomes more blurred when you are at home. When your job is that the PC and mobile are on, then it is very easy to be online, so it becomes more difficult to distinguish between work and leisure that made many people feel digitally exhausted." - Interviewee F, translated*

In cases where demand in the market had completely been eliminated, the opposite scenario was the case. At Company G, the employees became furloughed quite quickly, and however many opportunities could/should have been explored, productivity was completely cut:

*"It wasn't so bad for me, it was like a holiday, except with a pay-cut." - Interviewee G, translated*

Company A also furloughed a number of employees:

*"People became insecure really quickly and started looking around for other jobs, and the consequence of that was that the company lost a number of core employees. They panicked because of the furloughing - they didn't like losing the office culture or contact with their colleagues. The panicky approach to covid from the authorities also made more employees insecure and started looking around and working in several larger companies and other branches. It was a big problem for the company that we lost core employees. In retrospect one might consider using less furloughing to ensure that people did not quit."*
*- Interviewee A, translated*

Both companies C and F were supportive of hybrid working before and after Covid. However, interviewee F saw however that:

*"[working from home] has its advantages from an efficiency perspective, but from an innovation and creativity perspective it is more difficult. Because those things typically happen when you talk to people you do not usually talk to; in the kitchen, in the canteen, in the hallway when you are at work. You get inspiration and creativity because you get information and perspectives from people you do not usually talk to. That was more difficult to get from a home office."* - Interviewee F, translated

Interviewee F discussed the management now had more focus on how they can encourage the best of both environments.

### 4.5.4 Company culture in a hybrid workplace

Company culture appeared as another challenging area for several companies and after two years of lock-down one which needed addressing and improving.

During the initial phase of the crisis Company H saw the need to create a common connecting culture for the individuals that were working from home:

*"...we implemented a Global Radio program that connected all of the countries around the world during the pandemic. It was for people that work at the company and was not music, but it was ´what's happening at your Home Office? What client did you talk to today? ´ And we interviewed the CEO for example. We had things called 'show us your home'. And so, everybody felt the humanity and the being connected because we were all isolated at home, so that this radio show happened daily during our workday, so that everybody knew that we were all still a part of one big team. It was informational but also very human and lovely."*
- Interviewee H

Not all companies managed to create the culture necessary to carry them through the crisis in a positive way. Company C relaunched an internal aim of being one of the best places to work in Norway, after an internal survey in 2021 revealed that they were in danger of losing key employees due to lack of focus on key issues and weak company culture. They had tried to create different connection points during the lockdown but admitted that these were not always successful. The new processes will contribute to making the company more resilient during new crises.

As the interviewee from Company F states:

*"We are in totally unchartered water as nobody has really done this before. We need to shape this journey together and really make this work."* - Interviewee F, translated

## 4.5.5 Recruitment issues in a hybrid workplace

During Covid-19 Company D experienced a major increase in demand and needed more employees. The processes around this changed, but they could not point to any specific innovations made to improve the process of recruitment. They already had very well documented onboarding processes, but these were based on a physical presence.

*"We have run quite heavy recruitment during this period, and in periods we do not have the opportunity to meet people face-to-face, but we have still hired people. So the process of verifying reference points and getting a feel for the person sitting on the other side, that's one thing that's been challenging. And not least on-boarding of new people has been super challenging - getting them up and standing and ready to work."* - Interviewee D, translated

Company E also experienced difficulty with recruiting online, not least in evaluating the quality of candidates:

*"We had a lot of people who left, and we had to hire, it is not so easy to hire people through the pandemic, with people working from home, so that part I think is difficult. It remains difficult, because we did not necessarily hire the right people."* - Interviewee E

Focus during recruitment has also changed. Now that hybrid work has become the new normal, interviewees reported that new employees are expecting flexibility in the workplace. This will be an important factor in hiring processes and without this it will also be hard to keep people in key positions. This is especially important in industries with high demand in skills such as technology and development where there is a general shortage of labour. Interviewee E mentioned that they have seen a definite change in how candidates evaluate working for them:

*"I think also for the younger generation it is one of the first questions they will ask me: how many days home office can we have? That is something very important, which is something that has changed very recently- you need to have at least two days of home office, before you even consider going for an interview at all."* - Interviewee E

In the area of work location there has been a complete change in the way many of the interviewees see "going to the office". The changes that point to an increase in flexibility give added value to many individuals that were not present before.

### 4.5.6 Improved internal communication

One clear result of the enforced lockdown was that full digital communication was finally a possibility, despite it hovering on the sidelines for many years.

Interviewee B - new ways of working
One of the companies that experienced the most significant changes in communication was Company B.

> *"Working from home was not normalised, but we had made technical arrangements for it. Everyone had a laptop, and in the office, you could have meetings with other people elsewhere for example. But it was not very normal with a home office, and then suddenly overnight everyone was working from home." - Interviewee B, translated*

Pre-covid the interviewee admitted that they did not actively use resources from their regional offices, but now due to improved communication they now can work with them, both in the normal working day and during future crisis situations. The interviewee attributes this to their digital tools making them more flexible. There is however an understanding that it is the Head Office asking the districts for help, and not vice versa.

> *"We have locations in many places. The fact that we can all now work digitally with Office 365 has made us more flexible to use resources that live elsewhere in the country and put more people in tasks when there is a crisis than we could have done if everyone had to work where they lived. And the way we have collaborated has changed a lot and we now have something called the contact centre and it is they who receive calls from those who call in from different places." - Interviewee B, translated*

Interviewee F - internal communication has become more democratic
The sentiments expressed by interviewee B are backed up by respondent F, who explicitly mentioned that communication has become more democratic. Company F is a global company and employees were actively using internal digital communication. They have now had an

increasing focus on rules and etiquette during digital meetings and the interviewee sees it as a positive contribution to all video-based meetings that the company holds.

*"It is not always as easy to solve things over Teams when you do not know who people are. But as I said, it worked very well with meetings and in a way, we learned how digital meetings could be a democratic force. Previously it was the case that 6 participants sat in a meeting room and there were maybe 1 or 2 'outcast' employees who sat through some link and they were like second degree citizens, they were not really part of the meeting. They might not always be heard, and they may not have heard everything that was said. But during the pandemic, everyone was treated equally. When everyone sat at home on their PC, everyone had the same video and everyone was seen, heard and could comment just as much. All were equal participants in that meeting. So in that way we learned how to make digital meetings work."* - Interviewee F, translated

The interviewee also discussed how they are working to *maintain* this democracy after Covid as it has had a positive effect on company culture.

# 5. Discussion

In this section I will discuss the findings with focus on testing my hypothesis and research questions:

Hypothesis: *The covid-19 crisis accelerated innovation in companies.*

RQ1: *How did Covid 19 generate opportunities to innovate?*

RQ2: *What type of innovation took place?*


In order to answer the hypothesis of whether the Covid-19 crisis accelerated innovation, I will first discuss how it generated opportunities for the eight companies discussed in the interviews and look at the two research questions.

## 5.1 RQ1: How did Covid-19 generate opportunities to innovate?

In order to answer *how* Covid-19 generated opportunities to innovate I have drawn extensively on Geels' theory of transitional pathways of innovation (Geels, 2002; Geels & Schot, 2007). This framework appears to be extremely relevant for interpretation of what happened, and I have therefore chosen to divide the responses into three main categories, the first two of which fit clearly into this theoretical model.


1. Companies were given "a window of opportunity" (eg "niche-level" who became part of the dominant regime)
2. Companies that were forced directly or indirectly to adapt products and process to new methods of working (companies who were part of the dominant regime who transitioned to using new technology)
3. Companies that changed their ways of working but did not have room to innovate


### 5.1.1 Companies who were given a "window of opportunity" (1)

In terms of a theoretical framework the experience of the companies who had products that became more relevant can be compared to the niche-level companies who experience a "window of opportunity" in the market that enables them to sell their products to the dominant market (Geels, 2002).

This group of companies includes C (consultancy in ecommerce), D (digital assessment solutions), F (computer software systems and applications) and H (Industrial data digitalisation) and their experiences are extensively described under the Findings. They were all operating and selling products within the field of digitalisation.

A window of opportunity truly opened up for these companies when the lockdown occurred, and they all immediately experienced an explosion of opportunities that was almost impossible to manage. The relevance of their products changed drastically overnight and instead of having to hard-sell to customers the situation reversed, and the customers were asking for their products.

*"Whereas before it was like, 'that would be nice to have', or 'that will probably happen in the future', now there's not even a discussion that it has to be included in what they do."*
- Interviewee H

The companies selling these products had *already* invested in innovation through many years and whilst there had been a market for their products they were having to fight for attention. In the terms of early innovation theory, the demand changed from push to pull overnight (Greenacre et al., 2012). When interviewing these companies, the same narrative of, "it's finally happened" appeared, and the feeling that interviewee's companies were riding a wave of opportunity was very strong.

Company D was thoroughly aware of the situation and the management board knew that "this was their time". The additional sales contracts that were signed gave them the opportunity to tweak and make additions to their product portfolio. These were improvements that had been on the product development roadmap but had not been prioritised due to financial restraints. Once a major new investor came on board the improvements became possible, however overall the focus was on "sell what you have".

At the date of interviewing (spring 2022) the demand for the products from these companies had increased even more and none of the interviewees felt that this would be reversed.

### 5.1.2 Companies that were forced to adapt (2)

It is possible to say that *all* companies (including those in the groups 1 and 3) were forced to adapt how they worked during the pandemic because of governmental restrictions. However, the predominant innovation for this group was the *digitalisation* of processes that had previously been manually or semi-automatically dealt with.

In terms of Geels' model (2002) the companies in the group experienced drastic changes to the existing working landscape and this forced them to be adopters of products from the niche level. As an example, the communication tools sold by Company F were used by Company B in a way that they had not envisioned before and completely changed the way they communicated with their customers and colleagues.

In terms of actual products and markets most of the companies in group 2 carried on selling the same products as before, but the *way* they worked changed in order to maintain business continuity. For Interviewee E this was something that they had not reflected on in terms of innovation. It became obvious when they started trying to recruit new employees who insisted on hybrid working solutions that the ground rules had changed. So the interviewee from company E did not necessarily think that innovation had occurred in the company ("that happens in the R&D department"), but paradoxically saw that they had changed ways of working without defining it as innovation. The interviewee believed that they had focused mostly on a strategic choice of "perseverance" (Wenzel et al., 2020).

Company B was the company that transformed its working methods most dramatically. They already had the infrastructure, hardware and software in place for allowing employees to work from home, but had not encouraged this, despite the obvious advantages it may have given. Within a relatively short time the whole company managed to adjust to the new way of working because of these digital foundations and they now build further upon these. Post-covid they have carried on working in a new way and it is possible to use the term "digital transformation" in terms of before and after the pandemic.

### 5.2.2.1 The role of timing and uncertainty

The ambiguity of the situation was especially potent for this group and influenced the timing of innovation. For those wanting to get back to 'business as usual' the lack of insight into the continually new restrictions was the greatest source of difficulty. The decision about whether

to change ways of working permanently would not have been an issue had the lock-down lasted only a few weeks. All the respondents mentioned this as one of the most confusing aspects of the crisis and for those companies that suddenly had no customers it was the ambiguity that caused the most stress.

The key issue regarding the length of time that ambiguity would last, was whether to assume that a pre-covid "normal" situation would return soon or what would have to be done next to meet continually new rules. This was especially true with regards to rules for working from home but also how the company worked with processes around customers and employees and with products. Those with physical stores (C-1 and C-2) needed to change the way they sold products. Each company at some point made the subjective decision that now was their "irreversible break" when there was no going back (Fleicher, 2013). For example, interviewee E said:

*"When I talked to other people, they always referred to the pre-covid period, like 'when are we going back to our previous life?' For me it has been a long time since I decided that there will be no previous life, this is life."* - Interviewee E

Once the decision had been made that there was no-going back, then more companies started to invest especially in processes regarding the changing work environment. For example, many of the companies (e.g., B, C, E and F) started work on improving company culture to support new ways of working because it was clear to them that there was no going back to full-time office work. Company C re-arranged their offices so that some areas were made specifically for larger physical workshops, as space became available for this (as less people have returned to working at the office). The concept of "before" and "after" an irreversible break was clearly seen during the pandemic, with references to timeline now commonly referred to as either "before-" or "after covid".

### 5.2.2.2 The role of financing

It was interesting that both the small and larger companies felt they suffered from uncertainty. The larger companies were very careful to reduce risk because their shareholders and business continuity was their main focus. The medium-smaller companies did not have unlimited funds, so risk was a real factor for them when making decisions about expansion.

Company C had several clients in the retail industry and these clients lost a lot of money during 2021 and therefore liquidity and payment could have been a serious issue for them, but again the opportunities were perceived as greater than the risks, so they continued to work for these clients. They were also used to working remotely and with rapid development of technological solutions, but some of their clients were not. One of their retail clients, with shops in Norway, Sweden and Denmark, *"went into panic mode. They wanted us to implement systems that were not ready, so we had to go in and literally take over some of their internal processes"* *(Interviewee C)*. They had also placed a high percentage of their employees on furlough schemes: *"That's why they hired us, the people that were there were not prepared for that kind of [technological] challenge. (...) Our company didn't dissolve, but theirs did in a way"* *(Interviewee C)*.

In summary, business continuity occurred for these companies with regard to what they sold, but innovation occurred by means of changes in processes and ways of working. They had the potential to make these changes before but the "shock" (Geels, 2007) that occurred at the landscape level meant that there was an acceleration in development.

## 5.2.3 Companies that changed ways of working but did not innovate (3)

The two companies that had limited innovation were affected by a lack of trading possibilities (companies A and G). They were forced to change to a more digital way of working (innovation 2) but were hindered from having basic business continuity because of strict market regulations that gave them little room for manoeuvre. The fact that both the companies were reasonably small meant they had to adopt a classic retrenchment strategy whereby further innovation stopped.

### 5.2.3.1 Spreading risk

What became apparent during the interviews was that a company's vulnerability increases during a crisis if they are operating in a specialised market with only one core product or market. This is just as true for small companies as it is for large ones. When, or if, the demand for a core product changes a company has a choice of survival strategies if they have other products or services to build upon. However, diversifying into new segments can be good, but if the financial or market situation does not allow this then the company has a high-risk profile. Krammer (2022, p.3) states, *"Having complementary assets provides firms with alternative business segments or niches that can provide 'escape routes' for innovating firms".*

In this situation the model expounded by Google would be ideal to give a company a better chance of survival, but this is perhaps a strategy only larger companies can afford to work with. "*…the creation of diversified and modular product/service portfolios and adaptable business models that can support a faster recovery*" was also one of the main recommendations from research carried out by Margherita & Heikkilä (2021, p.693).

Company G did have products that could have been sold in the private market during Covid but there was too much uncertainty for them to change channel strategy. As most of their workforce was furloughed, they did not have the manpower to do this either. The company managed to survive through Covid and they have now chosen to diversify a bit more than before:

*"We focus more on stores now to have a slightly larger spread, because the stores were open [and restaurants closed]. We now sell to some online stores as there were a lot of those who kept working through the crisis, so we will focus a little more on them in future." -*
Interviewee G, translated

Whether these companies could have cooperated with external actors, such as Innovation Norway, is speculative, but at the time they did not have the financial backing or strategic focus on expansion. Research undertaken by Filippetti & Archibugi (2011) describes how companies are less willing to start innovation during a crisis, but during the Covid crisis, given the fact the government was already paying wages of employees, then it could have been possible to help these companies become more resilient and by spreading risk.

## 5.2 RQ2: What type of innovation took place?

The original hypothesis is that the Covid-19 crisis accelerated innovation in companies and in order to answer this I need to describe *what type of innovation* took place. I have used the extended definition of innovation to include new value to organisations and I have divided the observations from interviews into three main groups:

1. Digitalisation tools for communication became acceptable
2. Accelerated digitalisation in the aftermath of Covid
3. New ways of working

## 5.2.1 Digitalisation tools for communication (1)

If one thinks back to how we communicated internally and externally in February 2020 and compare it to how we communicated in February 2022 there is a massive difference. The majority of white-collar workers were commuting to their offices and face-to-face communication was normal. The majority of meetings occurred in a physical meeting room. If someone joined a meeting from outside it was often with an audio microphone (several interviewees mentioned using Jabra speakerphones) and as one interviewee said, the person was treated "*like a second-degree citizen, they were not really part of the meeting*" (Interviewee F, translated). It was normal to call customers, but not to video-call them, in fact if you had video-called a customer it would have been a surprise for the other party as video-calling was mostly reserved for family and friends.

When the lockdown of March 2020 occurred several of the interviewees recalled how uncomfortable they had been seeing themselves on video and believed video meetings were treated as a novelty that would hopefully disappear soon. There were exceptions to this - technology companies with offices in different countries were far more used to using digital communication tools (e.g., Companies A, C, D, F, E, H), but for example for Company B, who had many regional offices in Norway, this was still not a normal way of communicating despite the obvious advantages, and company G did their business by phone and email.

In the Findings the changes that the interviewees experienced, both with internal and external communication, have been described in detail. The interviewee from Company F, whose company sells digital communication tools, claimed that this change accelerated the business by at least five years. Post-covid video-communication has become normalised. In physical meetings, if they occur, participants still bring their own PC because sharing screens and info in the chat panel is now so common. Interviewees report that it is now normal to have video-meetings with customers. According to an article written in McKinsey's B2B Decision-Maker Pulse survey, "...96% of businesses have changed their go-to-market model since the pandemic hit, with the overwhelming majority turning to multiple forms of digital engagement with customers. Sales coverage has been *completely redefined* as companies discover that virtual technology allows them to do things that were nearly impossible previously, such as assembling the "perfect team" of experts for every sales pitch. In this digital sales sphere, smaller firms can often "match up" to even their biggest competitors (Am et al., 2020, p.5, emphasis added).

Company B is for example now using its regional competence in a more active way by trying to break down silos between its head office and regional offices.

*Acceptance* of the use of digital communication is therefore one of the biggest values companies experience from Covid-19. It was entirely because of the lockdown that this form of communication accelerated so fast and was forcibly accepted as a viable form of communication.

## 5.2.2 Accelerated digitalisation during "the aftermath" (2)

The Covid-19 was initially a medical crisis. Many governments of the world chose to isolate their population to stop the spread of disease. The demand for medical and sanitary equipment led to a massive demand for products that were perceived as limiting contamination. There were many jokes in the early stages of the pandemic that it would be a good time to buy shares in companies producing facemasks, but two years on this is not so true. The *primary crisis*, and the resulting reactions, caused *secondary changes* that changed the paradigm of how the world communicates and interacts when physical contact is restricted.

The aftermath and the secondary changes will have a far more long reaching effect on which products and services are developed. The crisis exposed the structural weaknesses of a global system dependent on human intervention. For a world with 7 billion people, having limited access to a supply of manpower was a surprising event. Automation of services was a trajectory that was already being powered by cost-saving efficiency, but this became strengthened further when human interaction was limited. The crisis exposed this fragility, and a number of opportunities are now appearing for companies selling products that deal with forms of contactless technology, for example "twin technology" from Company H.

An example is increased investment in driverless vehicles (Feiner, 2021) - the sudden shortage of lorry drivers, bus drivers etc during Covid-19 increased awareness of the vulnerability and has spurned new interest in this form of transport - for example in January 2022 the UK passed a new law to reduce uncertainty around legal issues here (Kojouri, 2022).

Other structural weaknesses that became obvious were for example the amount of unnecessary business travel which has had an effect on the event industry, the hotel industry and the restaurant industry. Several of the interviewees mentioned they had a different evaluation of when it was necessary to travel to a customer, which they will continue to do even after travel

restriction are lifted. A result of this is the growth of emerging technologies such as digital meeting places (i.e., the metaverse) and use of avatars to enhance the feeling of being together even though people are apart. Even though these technologies are not fully developed, or adopted, the pandemic has accelerated the acceptance of these technologies especially for the younger generation. For example, 51% of Gen Z and 48% of Millennials "envision doing some of their work in the metaverse in the next two years" (Microsoft, 2022, p.27).

Many of the ripple effects of the crisis still lie in the future, but it is true to say that the aftermath of Covid is a world where digitalisation of products, services and processes has received increased prioritisation.

### 5.2.3 Innovation with new ways of working (3)

Working remotely has been a technical possibility for white-collar workers for many years, but the cultural norm for employees in Norway was to meet up at the company's offices every day. As described earlier, the "landscape" framework of the dominant regime (Geels, 2002) was one where it was generally assumed by management that anything other than working in an office environment was inefficient. For the *individuals* travelling to the offices, it was inefficient in terms of hundreds of unproductive and expensive commuting hours a year. This all changed under Covid, when individuals were forced to try alternative workplaces that suited many people much better than the existing one. Many of the interviewees believed that the change to a hybrid working environment was the most important innovation resulting from Covid, for both themselves and their customers.

Why this innovation did not occur earlier is interesting. One can speculate that perhaps because the cost of the system inefficiencies was not borne by organisations there was little incentive for them to change the existing regime. There had been an implicit understanding that if you, as an employee, choose to live far away from the office, then it was your choice and your burden. Despite the massive cost to society, infrastructure and the environment (funded by government) this had been such a taken-for-granted habit that it had almost gone unquestioned and no change or innovation happened in this area. As noted early the digital tools that enabled the change to happen have existed for some time at a niche level (Geels, 2002). In Norway, companies were digitally "ready" for the change, but still it had not happened. As one interviewee said, "*we have been on the cusp of this shift to hybrid for quite some time but it's now at an inflection point where we are starting to see how this works in real life, how this works in practice*" (Interviewee F, translated).

In addition, a change in practice had not already happened because management in many companies have not been supportive of home offices because of fears of lack of productivity. Several interviewees mentioned that they had been sceptical regarding how productive employees actually were when working from home. In Norway there is a relatively high trust between employees and management, but even here, at the start of 2020, there had been relatively few changes in the percentage of people working from home. Statista (2022) presents numbers showing that of "office staff" less than 4% were working from home in early 2020, whereas executives had around 15% sometimes/occasionally working from home. Immediately in March 2020 this number increased to nearly 60% and has levelled off now at around 30% in February 2022 (Statista Research Department, 2022).

Despite some weeks of adjustment, it was clear within a short period of time that the fear of low productivity when working from home was not a problem. Many interviewees reported that they went into a hyper productivity mode in the first stages of lockdown:

*"It worked too well in a way. We had every opportunity to grow and it worked very well, but it was like we were on steroids. We invoiced lots of hours and we could have grown even more, but we did not have enough people and not enough hours in a day to grow more"*
- Interviewee C

One interviewee said everything became more effective with regard to how much time was used in actual meetings, instead of commuting to work, moving around at the office, going to meeting rooms, working in open office environments, and then having to commute home again. However, a criteria to be able to work effectively from home offices is that the individual has a *network* of co-workers that they can contact to make progress on their tasks. For junior staff, or people that are new to a company, not knowing who to contact was reported as an issue (eg by Interviewee D, E & F). Participation in teams that rarely meet physically has been reported as difficult (Microsoft, 2022). Company B created their new tool for users in record time because they had been used to working with agile methods from before. Networking and meeting new contacts from a home office was reported as difficult by interviewee F:

*"...I saw in my own work pattern that when I sat in the home office, I had a much closer and larger dialogue with those I already worked closely with, and a much less dialogue with those I did not talk to very often, which made my network - not exactly shrink, but it did not get*

*bigger. I did not get to work well enough with my network building, which then became a challenge"*- Interviewee F, translated

What has become clear however, is that post-covid employees want to have the flexibility to determine themselves when they are in the office and when they are at home. Several interviewees saw that if their company was able to offer new employees hybrid workplaces this would be a competitive advantage and something that management will have to support.

*"Many old school leaders force people into the office because they want to keep an eye on what's actually happening. In my book, they are leaders who are going backwards into the future, they need to be re-trained, because that is not the way the world is anymore.*
*I tend to say that the vast majority of companies need to think more about how they are going to get out of this pandemic than how they got into it. We are in a new age now, we have learned new things and we cannot unlearn what we have learned. If you make the wrong move now, then you may not exist in 5 years. Because competition is so tough, talent can go where they want to work".* - Interviewee F, translated

The changes or innovation that happened with regard to hybrid ways of working were entirely due to Covid-19 restrictions. External factors and not management-driven innovation were the source of the change. Whether management accepts the changes or tries to reverse them remains to be seen.

### 5.2.3.1 The culture of hybrid work and innovation

A number of different media har reported employees becoming "disconnected" from their colleagues and the organisation they are working for. All interviewees talked about high levels of fatigue from the combination of overwork and disconnection. There have been discussions of a trend some call "The Great Reshuffle", whereby many employees are not returning to work, or resigning from jobs they do not see as attractive anymore, in order to seek out more fulfilling roles with higher flexibility (Edmond, 2022).

In addition, many younger people are now reportedly looking to create value directly for themselves outside their workplaces, with as much as 70% of Gen Z and 67% of Millennials saying that they want to earn additional income besides their day jobs (Microsoft, 2022). Reading Pearson & Clair's (1998) work on psychological aspects of organisational crises, the following sentence seems to be extremely relevant: Crises may make individuals "*not only*

*collectively question their personal assumptions about themselves and the world, but also question cultural assumptions, structural relationships, and role definitions within the organization*" (Person & Clair, 1998, p.6). This was not the main focus of the interviews, but all the interviewees saw it as important that their companies were now consciously rebuilding company culture as a way of securing loyalty. This could be classified as a form of business continuity, or a return to pre-covid culture, but it seems to be more of a realisation that company culture had an intrinsic value that maybe have not really been appreciated before and that during a crisis, loyalty to the organisation is something that needs to be in place in order to withstand the hard pressure individuals are under.

An interesting perspective on this is from a comparative study by Trachsler and Jong (2020) of city mayors in the Netherlands from 2019 and 2020. They state that "crisis teams tend to rely on procedures and responsibilities but largely underestimate the importance of the mindset of individual participants. We posit that crisis management should be regarded as an elite sport and adopt insights from that field accordingly" (Trachsler & Jong, 2020, p.1). They further argue that for the mayors they studied, "the parallel combination of uncertainty, limited control and high expectations" left individuals quite unprepared for the pressure that can occur and recommended insights from sport psychology as a way of preparing leaders for crisis (Trachsler & Jong, 2020, p.1).

All in all, there have been significant changes with regard to the culture of work. Employees who had disadvantageous working situations with regard to commuting and travelling for work have questioned the value of meeting at offices. Employers are trying to find ways of encouraging them and give them reasons to come back into the office, or other ways of creating more loyalty to the organisation. The increased value of individuals in the workplace is also a form of innovation.

At the same time there is a paradoxical (but perhaps directly related) move to create new products and services that *remove* the reliance on "humans" (see the point regarding innovation in the "aftermath"). It could be that different departments (HR and R&D) of an organisation are working at odds with each other, or it may be that somehow these two conflicting changes will find a way of resolving themselves. This chapter is by no means finished and it will be interesting to see if this new way of working will stick in the future.

## 5.3 Limitations and future research

**Limitations**

The natural limitations of qualitative research apply here. The number of interviewees was limited, and the seeming consistency across interviewees might have been misleading, compared to another eight interviewees. In addition, with only one representative for each company, it is not necessarily the case that they know all actions undertaken during the pandemic, especially in the larger global companies. However, most of the interviewees seemed to have a clear idea of their company's main strategic directions and core reactions to Covid.

The intention of this research was to capture a moment in time, immediately after the Covid crisis had occurred, and even though generalisations are not possible, contributing to the body of knowledge was as important as the possibility of drawing conclusions. The fact that the interviews were anonymous made them very honest but challenging to share the full value of the respondents' answers.

**Future research**

It would be interesting to test the hypothesis on a larger scale. The impact of a secondary wave of innovation, after an initial crisis, is especially interesting. The structural weakness that a crisis such as Covid-19 exposed could be the true benefits for companies.

The research also showed how important, and to some extent how weak, an individual's attachment to the organisation is. Given the statistics published by Microsoft (2022), the attitude of younger people to organisational loyalty and where innovation takes place could be a critical area to follow-up. The culture of individual start-ups, already seen during the boom of the early 2000s, and mimicked in TV series such as Silicon Valley, is not a trend that is disappearing and worth investigating further.

The changing communication methods of business, for example through the Metaverse and the use of avatars in interpersonal communication would be worth following closely as the implications could be enormous.

External "rule-setting" and guidelines by state and local governments could have helped the vulnerable companies far more by creating a safe investment environment and a stability that the crisis undermines, and this is something that would be important to follow-up.

The Retrenchment/Exit strategy of companies would be interesting to investigate further, especially with regard to acquisition of small and vulnerable companies during Covid.

It would be interesting to examine new innovation during the crisis (as opposed to new use of existing products) to confirm whether this is really new innovation or just transformational technology. It seems that much of the new innovation occurred in the medical industry which was out of scope for this paper.

To build further on my research it would be interesting to compare companies within the same industry to see how the opportunities offered were managed differently. This could be done with a geographical angle - such as comparing regional success or even how different countries reacted.

# 6. Conclusion

*Hypothesis: The Covid-19 crisis accelerated innovation in companies.*

My conclusion, based on my primary qualitative research, is that it is true to say that the *use* of innovative products and services and *development* of innovative processes were accelerated under Covid-19. This was especially true within the areas of digital communication, digital products and services that focus on eliminating human contact, cybersecurity and new ways of working. Fundamental changes to the operating landscape meant that a transition of technology occurred. The forced two-year lock-down of individuals provoked a paradigm shift in the way a large majority of the population worked. In addition, restrictions regarding human contact over a long period of time mean that companies selling products that replaced human contact with digital contact experienced growth. Companies selling niche digitalisation products and services were able to break into the dominant regime and offer existing tools to solve new problems.

At the same time individuals working in the dominant regime welcomed innovative tools and processes that gave them the opportunity for more flexibility than before. They have continued to use these, even though lock-down measures have ended, because of the advantages that new ways of working offer to themselves and their colleagues. This way of working has proved so popular that organisations not accepting this new technological regime will have difficulty recruiting new talent. However, after seeing individuals so easily disconnected from their teams during a crisis, organisations are having to find new ways of creating organisational cultures that will withstand new crises - especially now with regards to retention and recruitment of talented employees. The hybrid working model, where employees can have flexibility between working at home and the office appears to be an optimal balance with regards to maintaining creativity, networking, and informal exchanges of information. Management must learn to trust employees' own judgement about where they can be most productive, and for many this appears to be at home.

The aftermath of Covid-19 has initiated a new landscape for technological transition. The further digitisation of products and services will have been accelerated by many years, with special focus on services that reduce human contact. The paradox of seeing how organisations are dependent on the loyalty and involvement of individuals, at the same time as digitalisation attempts to remove dependency on humans, will be a tightrope to cross in the coming years.

The idea that a crisis gives a company that has been "immobilised" the motivation to make new innovative products "from scratch" in a risk-free vacuum seems to be false. Companies that do not have a diversified product portfolio reduce their risk-resilience significantly and during a crisis is not an optimal time to change this. Retrenchment was a strategy contemplated by the two companies in this position, but of course given the small number of interviewees it is not possible to generalise here.

The momentum and changes that occur during Covid-19 forces companies to find alternative ways of doing business internally and externally. The new dominant landscape will continue to offer many new opportunities and technological transitions in an aftermath that will last a long time after the pandemic is officially declared over.

# References

Alonso, A. D., Kok, S. K., Bressan, A., O'Shea, M., Sakellarios, N., Koresis, A., Solis, M. A. B. & Santoni, L. J. (2020). COVID-19, aftermath, impacts, and hospitality firms: An international perspective. *International journal of hospitality management*, *91*. https://doi.org/10.1016/j.ijhm.2020.102654

Am, J. B., Furstenthal, L., Jorge, F. & Roth, E. (2020). Innovation in a crisis: Why it is more critical than ever. *McKinsey*. Retrieved from: https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/innovation-in-a-crisis-why-it-is-more-critical-than-ever

Askheim & Grenness. (2019). Kvalitative metoder for markedsføring og organisasjonsfag. *Oslo: Universitetsforlaget.*

Bundy, J., Pfarrer, M. D., Short, C. E., & Coombs, W. T. (2017). Crises and crisis management: Integration, interpretation, and research development. *Journal of management*, *43*(6), 1661-1692. https://doi.org/10.1177/0149206316680030

Dai, L., Eden, L., & Bemish, P. W. (2017). Caught in the crossfire: Dimensions of vulnerability and foreign multinationals' exit from war-afflicted countries. *Strategic Management Journal, 38*(7), 1478–1498. DOI: 10.1002/smj.2599

Delvetool. (n.d). *Phenomenological Research Design.* Retrieved from: https://delvetool.com/blog/phenomenology#:~:text=Phenomenological%20research%20design%20requires%20the,those%20who%20have%20experienced%20it.

Dobrowolski, Z. (2020). After COVID-19: reorientation of crisis management in crisis. *Entrepreneurship and Sustainability Issues, 8*(2). http://doi.org/10.9770/jesi.2020.8.2(48)

Edmond, D. (2022). Explainer: What is the Great Reshuffle and how is it affecting the jobs market? *World Economic Forum.* Retrieved from: https://www.weforum.org/agenda/2022/02/great-reshuffle-jobs-market-resignation/

Feiner, L. (2021, June). Alphabet's self-driving car company Waymo announces $2.5 billion investment round. *CNBC*. Retrieved from: https://www.cnbc.com/2021/06/16/alphabets-waymo-raises-2point5-billion-in-new-investment-round.html#:~:text=Google%20sibling%20company%20Waymo%20announced,Alphabet%2C%20Andreessen%20Horowitz%20and%20more

Filippetti, A., & Archibugi, D. (2011). Innovation in times of crisis: National Systems of Innovation, structure, and demand. *Research policy, 40*(2), 179-192. https://doi.org/10.1016/j.respol.2010.09.001

Fleischer, J. (2013). Time and crisis. *Public Management Review, 15*(3), 313-329. DOI:10.1080/14719037.2013.769852

Geels, F. W. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research policy*, *31*(8-9), 1257-1274. https://doi.org/10.1016/S0048-7333(02)00062-8

Geels, F. W., & Schot, J. (2007). Typology of sociotechnical transition pathways. *Research policy*, *36*(3), 399-417. https://doi.org/10.1016/j.respol.2007.01.003

Greenacre, P., Gross, R., & Speirs, J. (2012). Innovation Theory: A review of the literature. *Imperial College Centre for Energy Policy and Technology, London*. https://www.imperial.ac.uk/media/imperial-college/research-centres-and-groups/icept/Innovation-review---ICEPT-working-paper-version-(16.05.12).pdf

Grisholm, E. & Poblete, L. (2010). Internal and External factors hampering SME growth -A qualitative case study of SMEs in Thailand. *Gotland University*. Retrieved from: https://uu.diva-portal.org/smash/get/diva2:323837/FULLTEXT01.pdf

IBM. (2014). IBM Security Services 2014 - Cyber Security Intelligence Index. Retrieved from: https://i.crn.com/sites/default/files/ckfinderimages/userfiles/images/crn/custom/IBMSecurityServices2014.PDF

Kojouri, K. (2022). New regulations to govern driverless cars in the UK. *Mayor Brown.* Retrieved from: https://www.mayerbrown.com/en/perspectives-events/publications/2022/03/new-regulations-to-govern-driverless-cars-in-the-uk

Krammer, S. M. (2022). Navigating the New Normal: Which firms have adapted better to the COVID-19 disruption?. *Technovation*, *110*. https://doi.org/10.1016/j.technovation.2021.102368

Kylliäinen, J. (2018, September). Key Innovation Management Models and Theories. *Viima.* Retrieved from: https://www.viima.com/blog/innovation-management-models

Magnusson, J., Koutsikouri D. & PäivärintaT. (2020) Efficiency creep and shadow innovation: enacting ambidextrous IT Governance in the public sector, European Journal of Information Systems. DOI:10.1080/0960085X.2020.1740617

Margherita, A., & Heikkilä, M. (2021). Business continuity in the COVID-19 emergency: A framework of actions undertaken by world-leading companies. *Business horizons, 64*(5), 683-695, https://doi.org/10.1016/j.bushor.2021.02.020

Martin, R., Sunley, P. & Tyler, P. (2015). Local growth evolutions: recession, resilience and recovery. *Cambridge Journal of Regions, Economy and Society, 8*(2), 141–148, https://doi.org/10.1093/cjres/rsv012

Microsoft. (2022). Great Expectations: Making Hybrid Work Work. *Work Trend Index 2022.* Retrieved from: https://www.microsoft.com/en-us/worklab/work-trend-index/great-expectations-making-hybrid-work-work

Middleton, F. (2022, February). Reliability vs. validity: What's the difference? *Scribbr.* https://www.scribbr.com/methodology/reliability-vs-validity/

Niemimaa, M., Järveläinen, J., Heikkilä, M., & Heikkilä, J. (2019). Business continuity of business models: Evaluating the resilience of business models for contingencies. *International Journal of Information Management*, *49*, 208-216. https://doi.org/10.1016/j.ijinfomgt.2019.04.010

Pearce, J. A., & Robbins, K. (1993). Toward improved theory and research on business turnaround. *Journal of Management, 19*(3), 613–636. DOI: 10.1177/014920639301900306

Pearce, J. A., & Robbins, K. (1994). Retrenchment remains the foundation of business turnaround. S*trategic Management Journal, 15*(5), 417–417. DOI: 10.1002/smj.4250150507

Poblete, L., & Grimsholm, E. (2010). Internal and External factors hampering SME growth: A qualitative case study of SMEs in Thailand. Retrieved from: https://uu.diva-portal.org/smash/get/diva2:323837/FULLTEXT01.pdf

Rabianski, J. S. (2003). Primary and secondary data: Concepts, concerns, errors, and issues. *The Appraisal Journal, 71*(1), 43. Retrived from: https://www.proquest.com/openview/68bfe6580297494936f0126ed5d3d017/1?pq-origsite=gscholar&cbl=35147

Roper, S., & Turner, J. (2020). R&D and innovation after COVID-19: What can we expect? A review of prior research and data trends after the great financial crisis. *International Small Business Journal, 38*(6), 504-514. https://doi.org/10.1177/0266242620947946

ServiceNow. (2022, February). Understanding Operational Resilience. Retrieved from: https://docs.servicenow.com/bundle/sandiego-governance-risk-compliance/page/product/grc-operational-res/concept/what-is-opres.html

Schumpeter, J. 1942. Capitalism, Socialism, and Democracy. *New York: Harper & Bros.*

Smith, D. W. (2018). Phenomenology. *The Stanford Encyclopedia of Philosophy* (Summer 2018 Edition), Edward N. Zalta (ed.), Retrieved from: https://plato.stanford.edu/archives/sum2018/entries/phenomenology/

Statista Research Department. (2022, March). Share of Norwegians who are primarily working from home from 2020 to 2022. *Statista.* Retrieved from: https://www.statista.com/statistics/1218063/share-of-norwegians-who-are-primarily-working-from-home-in-2020/

Trachsler, T., & Jong, W. (2020). Crisis management in times of COVID-19: game, set or match?. J*ournal of contingencies and crisis management, 28*(4), 485-486.

Utterback, J. M. (1994). Mastering the Dynamics of Innovation. How companies can seize opportunities in the face of technological change. *Harvard Business School Press, 16*(1). https://www.proquest.com/openview/abd2a8a9ac681f31a7954f042bcae461/1?pq-origsite=scholar cbl=1816411

Vinmonopolet. (2022). Vinmonopolets salgstall. Retrieved from: https://www.vinmonopolet.no/salgstall

Wenzel, M., Stanske, S., & Lieberman, M. B. (2020). Strategic responses to crisis. *Strategic Management Journal*, *41*(7/18). DOI: 10.1002/smj.3161

Williams, C. (2007). Research methods. *Journal of Business & Economics Research (JBER), 5*(3). Retrieved from: https://clutejournals.com/index.php/JBER/article/view/2532/2578

# Appendix

## Appendix 1: Interview guide

| Interview guide |
| --- |
| |
| • *Ask for permission to record* |
| • *Inform about anonymity* |
| • *Make introduction (introduce hypothesis and interview layout)* |
| • *Ask for questions* |
| |
| |
| **Company questions** |
| |
| First, can you tell a little bit about the company? (*how are you set up? how many people work there?)* |
| |
| How long have you worked there? (*Did you work for the company during the pandemic?*) |
| |
| **COVID EARLY (2020)** |
| |
| Let's start with the time when Corona first came to Europe in early March 2020, can you tell a little about how it was for you and the company you work for? What kind of problems did you have to deal with? |
| |
| Did you have any crisis management strategy at the time? (*what was in place before?*) |
| |
| What actions did you take externally because of Covid? (*how was communication to the customer? / customer experience, Did you get any extra funding / support?*) |
| |
| What measures did you take internally because of Covid? (*home office? Were anyone furloughed?*) |

| |
|---|
| Was it normal to work from home before? (*used to digital communication?*) |
| |
| From a time perspective, how long did you envision the Covid-crisis was going to last initially? (*did you make big changes from the start or did you wait? At what time did you make changes?*) |
| |
| Were there aspects of the business or services you provided that suddenly became more relevant? (*were you already positioned / or did you have to position yourself? Did you have the necessary resources in place to do so?*) |
| |
| Did you experience any supply chain issues? (*any bottlenecks because of covid?*) |
| |
| How did your company position yourself with regards to security? (*did you have any training? Did you do any changes with regards to home-office?*) |
| |
| **MID-COVID (2021)** |
| If we move a little later in the pandemic when the pandemic became more "normal" and the initial chaos had calmed down a bit. |
| |
| Did any new products / services / solutions come from you because of Covid? (*Was it seen as a high risk? Did you make any changes to the business model because of Covid?*) |
| |
| What in your company worked and what did not work in the pandemic? (*Positive / negative aspects of the pandemic*) |
| |
| **"AFTER" COVID (2022)** |
| |
| Have there been any new business values from Covid that you continue to use? (*Do you do anything different today because of covid?*) |

| |
|---|
| What have you learned from the pandemic? (*is there anything you should do differently / how do you deal with a new crisis?*) |
| |
| **OTHER** |
| Is there anything you feel has not been asked that you would like to comment on or add? |