Inland Norway
University of
Applied Sciences

Katrine J. S. Arnkværn & Heidi S. Ekse

Master thesis

Crisis management during COVID-19 and the attitude towards future technology acceleration in the accounting business

Master of Science in business administration – major digital management and business analytics

2022

Samtykker til tilgjengeliggjøring i digitalt arkiv Brage JA ☒ NEI ☐

Acknowledgment

The writing of this thesis marks the end of our Master of Science in business administration – major in digital management and business analytics. We have put lots of effort in writing this thesis, and we would first like to express our thankfulness to our supervisor Afra Koulaei-Van Oest for good discussions and helpful advice along the way. We are grateful for all the support our co-workers have shown us through this process, especially Katrine's employees at Vekstra PeTo AS, for helping us in our pre-study. We also want to express our gratitude to Duett, Sticos, Sparebank1 Østlandet and Vekstra for helping us distribute our survey to relevant respondents in the accounting business.

Furthermore, thanks to Katrine's husband and kids for their understanding and support. Finally, we will express our gratitude to Håkon Storsand Ekse, for his insightful comments and help on the early draft of this thesis.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

This master thesis entitled *"Crisis management during COVID-19 and the attitude towards future technology acceleration in the accounting business"* aims to study how the crisis management during the COVID-19 pandemic has affected employees in the accounting business' view of future technology acceleration. The development of the study is based on the increased digital presence among employees during the pandemic. Preliminary, the thesis presents a relevant theory on the subject before moving forward with a questionnaire survey based on existing theory. The sources of the data gathering were employees in the accounting business. Through this survey, we measured the digital technology level in the accounting business, how they managed the crisis, and their attitude towards future success and future technology acceleration. Our findings reveal that when the employees in the accounting business experienced good management during the crisis, it also increased their attitude towards future technology acceleration. In our study, this link is further mediated by the perception of future success affected by the same experience. An interesting finding was that current technology adoption only moderated the effect of crisis management on future technology acceleration when the current level of technology adoption was high, but a low level did not. We conclude that the quality of the crisis management and the existing technology adoption are strongly linked to the perception of future technology acceleration and market success in the accounting business.

This study is limited, but we think this subject is interesting to study further. In our chapter *"limitations and future research,"* we present several angles to take this further. First, we find it interesting to compare the technology adoption level in the accounting business before COVID-19 to the level during COVID-19 and after to find out if the pandemic, in fact, was an accelerator. Second, we recommend that future research take the client's perspective into account because accounting is dependent on collaboration with clients. Finally, during the work with this thesis, we found it interesting to see if the willingness to change among the employees in the accounting business has changed based on the sudden forced change the COVID-19 pandemic brought upon them and how different personality traits affect this.

Keywords: Accounting business, COVID-19, digitalization, technology adoption, crisis management

1. INTRODUCTION

1.1 BACKGROUND

One of the writers of this thesis is the CEO of a small accounting firm in Norway. During the COVID-19 outbreak, she experienced that they had to make changes to several work processes in their office to cope. The workplace had to facilitate for the need for increased digital collaboration internally and between employees and clients. The employees were required to start communicating via digital platforms as a result of social distancing and office restriction, and the interaction between the employees and clients needed to change from physical office time to collaborative platforms in new systems. She observed that even though some of the employees had been reluctant to new technology in the past, they had a lower threshold for accepting the changes when forced to it due to a situation that affected the whole society. We started discussing this phenomenon and found it interesting to further examine if the handling of the COVID-19 pandemic and technology adoption would influence how the employees will receive the future of the business, in terms of marked success and future technology acceleration.

1.1.1 The COVID-19 pandemic

The COVID-19 virus discovered in China in 2019 rapidly spread worldwide, and societies were forced to take various actions to tackle the new situations that would arise from the threat. While some countries chose to achieve herd immunity and avoid lock-down and disrupting people's daily life, others decided to take other substantial measures. Norway decided to close schools, shops, and restaurants, all culture and sports events were canceled, borders were closed, and even cabin trips outside own municipality were prohibited. The pandemic turned the everyday life and sense of freedom of Norwegian citizens upside-down, but it also revealed an ability to rapidly adapt, an observation which can be used for future reference.

1.1.2 The COVID-19 pandemic and business environment

As a result of the lock-down, offices were forced to move into the employees' homes, and all client and colleague communications were transferred to digital platforms. A survey done by the Norwegian Central Bureau of Statistics found that in early 2020, 8.9% of full-time

employees had a clause in their employment contract outlining the possibility to partially work from home (*209 000 ansatte med avtale om hjemmekontor*, 2021). Still, FAFO - Norwegian independence social science research foundation - found that this number increased to 50% (Nergaard, 2020) throughout 2020.

As evident in existing research, the pandemic that the world experienced in 2020/2021 accelerated the digital transformation in business operations and communication (Soto-Acosta, 2020). With the substantial change in working environments, digital collaboration and value chain processes became even more necessary for businesses´ survival across all segments (Hanelt et al., 2021). The pandemic has introduced a type of disruption to organizations that led to an accelerated digital transformation in businesses in general (Kudyba, 2020).

This disruption lead firms worldwide to think of new ways to interact with colleagues, clients, and suppliers because they no longer have the possibility to meet each other like before. Some former manual processes and routines were forced to move to digital platforms. Everyday conversations such as chatting with colleagues in the hallway have been replaced with chat in Teams or Zoom calls.

The rapid changes that happened due to the COVID-19 pandemic raise a question of how organizations adapted their culture and organizational behavior in a period of lock-down and social distancing. The shock that the pandemic introduced did in fact lead to organizational transformation, for instance the change from open plan workspaces to workspaces where Perspex screens and protective equipment are the new normal, this is a change in a well-known symbol of organizational life (Spicer, 2020). Furthermore, the pandemic brought innovation and development of new products, and companies made greater use of existing products and tools that before the pandemic, might have been unprioritized.

1.2 RESEARCH CONTEXT

The digital transformation in the accounting business has primarily concerned the increased investments in digital technologies to increase internal efficiency and be compliant in adapting new laws and regulations (Gherman et al., 2021). Even though the development of new technologies and digital strategies can optimize accounting operations to a much greater extent

than what has been done in the accounting business, Gherman et. al. (2021) point to a lack of the real and profound renewal of digital technology and services.

The continuous digitalization processes of the economy in general are a known phenomenon (Gherman et al., 2021), which has presented both challenges and opportunities for accounting firms. An example of how the digitalization of accounting services has changed the processes in accounting firms is online accounting services, which creates an environment where the client and the accountant can collaborate more efficiently (Schiavi et al., 2020). The strategic advantage of moving to digital solutions is accessibility and agility for both clients and firms (Schiavi et al., 2020). For accounting firms, digitalization has opened the door for more, and new competition, new technology has over the years replaced several manual tasks. This new competition is now in fact a real threat to the accounting business and being in front of such developments gives the individual company a competitive advantage (Gherman et al., 2021). In the last couple of years there has been launched and developed several new "do it yourself" solutions for accounting, e.g., "Tripletex", "Fiken", "Conta", "Centega", "bank + regnskap", either of these solutions might be a real threat to accounting business if the business does not keep up on the speed of change in digitalization. Accountants can see this change as a challenge or as an opportunity to launch new advice services. To do this, it is important for accountants, according to accounting skills, to acquire competencies in these new technologies (Gherman et al., 2021).

Even though digitalization in accounting is not a new development, the pandemic made the increased use of home office the new normal, which is one of many examples of how the pandemic have introduces changes that might continue. In accounting, this happened in the busiest time of the year, where most of the clients contact usually takes place. When accountants had to work from home and could not meet the clients, new solutions that are mainly important for workflow and internal efficiency had to be put in place.

1.3 PROBLEM STATEMENT

The development of the research question started with the idea of the increased digital presence after the COVID-19 outbreak, and how this affected the employees, the clients, and the digitization process in the accounting business. One of the writers of this thesis is as already mentioned the CEO of an accounting firm and she had seen some elements of this development in her office. She saw that the relationship between accountants and clients becoming more digital, and the employees started to collaborate in digital solutions as Teams more than they did before the pandemic. Furthermore, she observed that the employees had a more positive attitude towards implementation of new technological systems to cope with the challenges introduced by the pandemic than what she had experienced when new technologies were introduced in regular situations. When the pandemic affected the attitude towards the rapid implementation of new technologies in the workplace, how will it affect the overall attitude towards future technology implementation? Will the crisis management process affect how the employees view the future success and competitiveness of the business, and consequently the attitude towards the acceleration of technology?

To understand the importance of attitudes towards future digital acceleration it can be useful to study some factors that may have an impact on such attitudes towards a firm's performance. Research showed that employees' attitudes toward an organization's performance are related to the organization's market and financial performance (Schneider et al., 2003). For instance, positive employees' attitudes toward a firm's performance are negatively associated with employees' turnover rates and positively associated with client satisfaction (Schneider et al., 2003). This suggests that employees' attitudes toward a firm can play a significant role in how successfully or unsuccessfully a firm can perform in the market.

One challenge that a firm may face during a pandemic is managing and coping with the new changes, such as the increased need for digital technologies. This was the case that we observed in our workplace, and especially one in an accounting firm. How well a firm can manage the unexpected changes during a pandemic (or crisis) can impact employees' perceptions of the firm's future performance (Pearson & Clair, 1998).

Hence, the research question we will seek to answer, is:

How will the crisis management during the COVID-19 pandemic in the accounting business affect the employees' perception of future technology acceleration?

1.4 IMPLICATIONS

The findings in this thesis will contribute to the existing research of digitalization and technology in the accounting context. Furthermore, it will contribute to research on crisis management strategy and shine light on the conditions under which perceptions of crisis management leads to positive attitudes towards a firm's performance. More specifically, the interplay between crisis management and the level of technology adoption during the pandemic indicate the critical role of technological preparedness in averting the crisis and, hence, increased confidence in employees towards a firm's future performance. Our thesis will discuss four personality traits that will be used for controlling the relationships between crisis management and attitudes toward future performance, and the results might contribute to understanding and what personality traits increase positivity towards the digital change induced by the crisis, which can further add to studies of digital change management in rapidly changing environments. Furthermore, the findings on the success of crisis management during the pandemic and the attitude towards success of digitalization for the future, will give indications on how this experience will affect the positivity towards digitalization for the employees in the future. These findings will contribute to the research on what factors can positively trigger change and how short-term experience of sudden change will affect the attitudes for future performance. Finally, we hope that the results can contribute to the understanding of the digitalization process in general in accounting offices and similar companies.

1.5 THESIS STRUCTURE

The thesis is structured as followed: we will first present our literature research process, and present and discuss the relevant theories used as a framework for our research model. The theory chapter will conclude with our hypotheses based on the presented theory.

Second, we will elaborate on the chosen methodology and describe the rationale behind our research model, before elaborating the process of research and survey. We will describe the steps of our conducted pre-study followed by research design and our data collection. We will in our methodology chapter, present a description of our main constructs and control variables.

We will then move on to analyze and present our data analysis before moving forward with presenting the hypothesis testing process. All results of our research will be presented in light of relevant theory.

Finally, we will discuss our findings in our analysis and findings section, before moving forward with presenting the limitations, and relevant elements for future research, before presenting our conclusion for this thesis.

2 LITERATURE REVIEW PROCESS

2.1 LITERATURE RESEARCH

The literature review of this thesis aims to provide scope and definitions and build relevant theories to support our model. In this thesis, we reviewed several constructs and terminologies, including digitalization and related terminologies, digitalization in accounting, crisis management, change management, technology adoption, readiness, and pandemic. Digital transformation and associated subjects are phenomena that spread across multiple fields (Verhoef et al., 2021). It is thus necessary to consider studies beyond those covering the accounting businesses as the terminology is broader than what can be explained through one field (Loebbecke & Picot, 2015). Moving forward from the concept of digitalization and technology adoption, the review will study literature in connection with the accounting context and in light of the pandemic. The systematic review approach has been chosen as a methodology for the literature review (Tranfield et al., 2003; Webster & Watson, 2002).

After scoping the research question, a research plan was created. The need for research was defined for each component of the research question (Tranfield et al., 2003). Codes were further assigned to each component to be used as identifiers in the relevant passages in the articles (Mayring, 2021). These components were additionally used as categories to group the pieces accordingly. Further, the platforms where the literature search should be conducted were investigated, and a web-based search was determined. Previous subjects during the master course, such as digitalization and change management, business analytics, and data management, were determined to be the base for choosing criteria and research keywords.

Secondly, a systematic literature search in various databases was conducted (Webster & Watson, 2002). We mainly used Oria's university database for our literature research. Using knowledge from subjects attended during the study, keywords for web search were determined: *digitalization, digital transformation, digitization, COVID-19 – digitalization, accounting business - COVID-19, digitalization and change, digital behavior, crisis response, crisis management, technology readiness, technology adoption, technology acceleration, technology implementation processes.* These keywords are widely used in literature, creating thousands available articles in the databases. The abstract was first read for screening purposes to determine adequacy before choosing relevant articles. Other keywords may also be appropriate,

but the keywords chosen should be sufficient (Verhoef et al., 2021). The criteria for selecting the articles were one or more of the following (a) they should provide some defining concepts within digitalization and technological adoption, (b) include change processes in light of the digital age and crises, (c) the trends technological acceleration and digitalization in accounting companies, and (d) the former criteria in the pandemic context.

Finally, after a preliminary search, screening, and reading of articles, the focus shifted to the sources and references used in the articles chosen as relevant for further reading. The references used in particularly relevant sections of the identified articles were found using the exact database search as in the previous steps. By following this literature research process, we ended up reading approximately 90 articles. Based on these articles, we were able to form a good perception of the research context, and it gave us essential knowledge to be used as the foundation for developing the problem statement and research model.

2.2 THE FOCUS OF THE THESIS AND KEY TERMINOLOGIES

The focus of this thesis is to understand how the crisis management during the COVID-19 pandemic affected the attitude towards future technology acceleration in the accounting business. In order to understand this links, it is important to understand all the elements of digitalization and technological adoption, which will be presented in this chapter. Furthermore, we use the elements from Parasuraman's (2000) *Technology Readiness Index* (TRI) as control variables because the personality traits measured in TRI could influence the outcomes from our study.

2.3 DIGITALIZATION AND TECHNOLOGY ADOPTION

This thesis will not focus on digitalization itself but the results of digitalization in a business context. Particularly the focus is on the technological adoption and potential technology acceleration. Digitalization is a term that can easily be mixed with digitizing and digital transformation. One may argue that digitalization changes societies and businesses and causes changes in digital technologies in organizations and operation environments worldwide (Parviainen et al., 2017). Digitalization is a widely used term in academic literature; the definitions that exist in literature are different but contain similar elements. However, it is important to distinguish the different terms to be able to separate the various processes and

understand the mechanisms of digitalization and technological adoption in the firms, including the accounting firms.

Yoo et al., (2010) define digitalization as the transformation in socio-technical structures from non-digital artifacts or relationships to digitized artifacts and relationships, and digitization as the pure technical process of encoding analog information into digital format. This is further supported by Parviainen et al., (2017), who define digitalization as not only a process that exceeds the transformation to digital tools, but rather rethinking current operations from new perspectives enabled by digital technology (p. 74). In other words, the term is in literature often referring to more than the digital transformation, and rather the fundamental change based on adopting new digital technologies (Henriette et al., 2015; Parviainen et al., 2017; Stolterman & Fors, 2004). Shocks like the COVID-19 pandemic can drive technological adoption and digitalization and can result in long-term changes (Fu & Mishra, 2022). For instance, Fu & Mishra (2022) found that there was a sizable increase in the rate of finance app downloads during the lockdown, that the pandemic crisis has led to technological adoption for the users of banking services. This is probably just one example of the increased technological adoption during the COVID-19 pandemic.

The term digitization differs from digitalization in that it describes a more technical view of the process of moving towards digital business. Digitizing is viewed as the process of converting manual and analogue processes to information technology with only the technological aspect being considered (BarNir et al., 2003; Loebbecke & Picot, 2015). This thesis is mostly considering the organizational change of business as a result of digitization, and how the technological adoption in accounting firms has a connection to the crisis management during COVID-19, and as such will this term not be of importance. However, it is important to acknowledge the process as it is the basic accelerator for digitalization. Digitalization, in general, is described by Ignat (2017), as the transformation from non-digital processes to digitalized processes, in other words, he acknowledges that digitization is an important part of digitalization processes within the organization.

Digital transformation might be the result of the digitization of technologies and digital innovation over time because digitalization and digital innovation can fundamentally transform the way a whole organization or even industry works. Digital transformation entails the fundamental change process from traditional to digital business processes, capabilities,

routines, and the businesses' ability to adopt information technology (IT) (Li et al., 2018). Dehning et al. (2003) further describe digital transformation as a process that emphasizes the role of IT on organizational structure and information flow. Fu & Mishra (2022) estimate that the COVID-19 pandemic has led to an acceleration of digital transformation in the finance sector, they estimate that there has been an increase in downloads of finance-related mobile applications by 21 to 26% (p. 1). The digital transformation definition differs from digitalization in that the former relates only to the change of processes and capabilities, whilst the latter to the organizational and cultural change resulting from digitization and digital transformation. In this thesis, we will study accountants' attitude towards future technology acceleration. This may or may not show us that accountants believe that the crisis management during COVID-19 will lead to a digital transformation in the form of a technological acceleration of the accounting business in the future.

Yoo et al. (2010**)** define digital innovation as *the carrying out of new combinations of digital and physical components to produce novel products* (p. 725). From this definition, one can read that digital innovation is the process that combines, develops, and uses digital technology to innovate businesses. Fichman et. al. (2014) further define digital innovation more as the result of the digitization process and define digital innovation as "*… an idea, practice, or object that is attitude towards as new and is embodied in and enabled by digital technology"* (Fichman et al., 2014, p. 333).

Ignat (2017) suggests that digitalization forces new solutions and it is necessary for companies to master the digital transformation. He further argues that robotics technology, artificial intelligence, and Big Data are key technologies to succeed with digitalization processes and networking. In the context of our thesis, these technologies might be significant for handling the COVID-19 pandemic, but it is also of considerable importance in the future because it enables change in the existing product lines. For example, artificial intelligence has already made many transactions digital or even automatic. In accounting firms that already implemented this before the COVID-19 pandemic, it is reasonable to believe that they handled work from home better than firms that have not taken this technology in use. Furthermore, these technologies enable the accountants to increase other services like business consulting to their clients, because they use less time on several accounting tasks. This shows that the digital transformation in accounting business has gone through and will go through in the future enabling innovation of other services. Ignat (2017) further argues that use of modern

technologies such as modern information and communication systems provides new possibilities. For example, in the accounting business, extended use of modern technologies might enable accounting firms to change their regional market coverage because the need to meet the client can be solved through modern communication systems such as Teams.

2.4 TECHNOLOGY READINESS INDEX

Personality traits and subjective perspectives of technology adoption and digitalization will contribute to the processes of technology adoption in the office in normal situations, and the subjective willingness is further based on these traits (Awang et al., 2021). Readiness can be attributed as both being prepared for something and being willing to do something. In this thesis, we are defining readiness in terms of technology and digitalization. Parasuraman (2000), who developed the model to be used for control purposes later in this thesis, defines technology readiness as the openness and willingness to adopt and use new technology in their personal and professional life (p. 308). It is factors such as personality traits, mental motivators, and inhibitors, and experiences a person has that make the level of readiness (Awang et al., 2021).

In general, there are countless factors that affect the digitalization processes over time, from business level factors such as business activities, management orientation, business environment and financial resources, to organizational and employee level factors such as organizational culture and maturity, core values and the individual personalities (Okfalisa et al., 2021; Parasuraman, 2000; Walczuch et al., 2007). We define readiness as how ready an individual is to make use of new technologies and digital tools in its workspace (Agarwal & Prasad, 1999). Parasuraman (2000) stated in his article *Technology Readiness Index* that little study had been conducted concerning the individual readiness to technological change and how aspects of readiness would impact the implementation of new technologies. This view of technology adoption is further supported by researchers (Karahanna & Straub, 1999; Parasuraman, 2000; Parasuraman & Colby, 2015; Son & Han, 2011; Walczuch et al., 2007). To build further on models of services marketing, he searched to describe the interaction between people and new technology, and defined the technology readiness construct as "…*people´s propensity to embrace and use new technologies for accomplishing goals in home life and at work*" (Parasuraman, 2000, p. 308). The TRI defines four different constructs of personality traits, where two traits are motivational factors and the other two are inhibiting. The main traits included in the index, are; optimism (motivational), innovativeness (motivational), discomfort

(inhibiting), and insecurity (inhibiting) (Parasuraman, 2000). The traits are indicators of the individuals' openness to new technology but do not measure whether the individual has the capabilities to use it (Walczuch et al., 2007). The strength of each trait will contribute to the overall technology readiness, meaning that the stronger the score on each component, the more the individual fits into that one construct (Walczuch et al., 2007).

Researchers exploring Parasuraman's (2000) TRI have often used it to understand the adoption and implementation of new technologies, both pre-and post-adoption, and that technology readiness impacts not only the adoption of new technologies but also the post-adoption behavior (Son & Han, 2011). The above-mentioned findings are based on digitalization as a result of new requirements, technology development, and general business environmental and technological development, and thus measures processes that can be directed through managerial tools. However, the personality trait elements in TRI have not been researched in light of crisis management and perception of future success after the COVID-19 pandemic. Our research model is primarily based on the subjective views of technology and crisis management of the employees, and that subjectivity is affected by multiple aspects. To capture other measures that may affect that subjectivity, we will add the elements of TRI as control variables to the model. We found it appropriate to use an established readiness model for such a purpose, namely the TRI.

3 THEORY

In the coming sections, we define the key constructs of our study, explain the proposed relationships between the constructs, and elaborate on our proposed relationships.

3.1 CRISIS MANAGEMENT

In this thesis, the crisis phenomenon is narrowed down to the COVID-19 pandemic, which is an external event that had unforeseen impact on the day-to-day operations of the business and required some kind of response to be able to cope.

Crisis has been defined as "*…a low-probability and high-impact external event threatening organizational viability*" (Jaroensutiyotin et al., 2019, p. 1), emphasizing how the external environment is the accelerating factor. The recession in 2008 is an example of such a crisis, and through studying the factors that led to the global financial crisis, Crespo & Staveren (2011) defined crises as "*memorable events with potentially long-lasting consequences on attitudes and beliefs"* (p. 3). There are multiple responses to be considered in crisis situations, both externally and internally (Coombs & Laufer, 2018). Where the external response refers to media coverage response, public integrity, compensation and actions towards the market, the internal response refers to how the organization manages to adjust to meet the obstacles, changes and developments that rapidly occur as a result of a crisis. A crisis happening is often a turning point for a business, as it creates a shift between "before" and "now" (Calloway & Keen, 1996)**.** New processes and systems are developed as a response to the crisis, for production, service, infrastructure, and communication purposes. Such internal response must be carried by infrastructural systems that facilitate the changes through communication, collaboration, and information (Calloway & Keen, 1996).

For the purpose of this thesis, we attribute crisis management to be the internal actions the management of the accounting businesses had to take to cope with the changed environment during the pandemic crisis. The internal crisis management includes the extended use of existing digital systems, repurposing existing systems and creating or implementing new technologies (Phillips et al., 2021). In the accounting business researched in this thesis, it was mainly extended use of existing and implementation of new digital tools for communication and service delivery that equaled the response to the pandemic crisis. More specifically, we

look at how the accounting firms adopted new and/or accelerated existing technology to continue the service or production during the crisis.

Previous research on topics such as crisis management and organizational change has often made human error and ethics responsible for crises and how organizations choose to adapt. In the pandemic, the crises had an impact beyond the economic and the lock-down forced other types of crisis management (Guo et al., 2020). The pandemic crisis itself threatened the organizations externally rather than economically or internally, i.e., there was not a financial crisis caused by market behavior, but a biological event that triggered a societal response causing change in almost all organizations. The social distancing, border restrictions, lock-down of restaurants, bars, stores, and offices was some of the triggered responses the governments saw necessary to carry out - which further led to making employees redundant, higher unemployment rates, higher export and import prices, etc. Accounting firms are dependent on their clients' success, so even though the accounting business itself managed to handle the crisis, there is a risk of them being affected if the clients cannot handle the crisis economically. From societal and governmental responses to the pandemic, the firms in all markets had to find a way to create their own crisis management plan, which for the accounting business meant to interact with the market on other platforms to keep production going.

The level of success of the response can be measured in objective and subjective ways; where the objective perspective of evaluation, the factor to be measured are concerned with financial data, efficiency reports, tangible effectiveness reports and similar, the subjective perspective will be concerned with the organizational and individual attitude towards success, the individual feelings and attitudes (Zoltners et al., 2021). This thesis is concerned with the latter perspective and will use existing conceptualized models to measure the successfulness.

3.1.1 Crisis management as a trigger for change

The general term change is described as the process when accepting new inputs, such as ideas, strategy, product, policies, and how they are adopted into the environment (Austin & Ciaassen, 2008; King, 1992; Poole & Ven, 2004). The term is not associated with the level of success the adaptation managed, but rather the process and adaptation itself (Austin & Ciaassen, 2008). Existing research often divides organizational change into two main groups: products and process (King, 1992; Poole & Ven, 2004). While product refers to the actual service or goods sold or delivered from the organization to the consumer, process refers to changes in process

that work to increase the quality of the product or service (Austin & Ciaassen, 2008). The changes forced on by the pandemic affected both the product, and process aspects of organizational change, as the product delivered to consumers changed in accordance with the new routines, processes, and habits of the organization.

Weick & Quinn (1999) differentiated organizational change to episodic and continuous change, where episodic change is seen as change that happens because of external events that affect the deep structures and lead to revolutionary change. Continuous change, in contrast, focuses on smaller, local, and endless adaptations (Weick & Quinn, 1999). It is further described how episodic changes might lead to continuous changes and become a constant part of a participating organization (Hanelt et al., 2021). The COVID-19 pandemic was an external event that forced firms, employees and clients to change (Siuta-Tokarska, 2021), and as a sudden, unplanned event it should be considered a crisis that led to an episodic change in many organizations. Furthermore, positive experience of change may create greater openness to change in the future, opening up for the possibility of continuous change (Hanelt et al., 2021), which is the link we want to study. If these changes will be continuous in the future is not possible to know now, but we want to study the accountant's view on this issue. If a high score of success in crisis management correlates with a high score of perception of the future, the findings may contribute to crisis management theories in a digitalization context.

Previous research found correlations between technology acceptance and levels of readiness (Walczuch et al., 2007). Their study showed that a high score on optimism and innovativeness (motivational traits) has a negative impact on basic usage of new technology, suggesting that the basic features of the new technologies bores the open and curious users (Son & Han, 2011). This further suggests that the motivational traits have diverse effects on attitudes and perceptions of new technologies. Nevertheless, when studying the implementation speed and pattern of internet usage, Lam et al. (2008) found that innovativeness and optimism increase the adaptation speed of the internet, while insecurity and discomfort do not necessarily have a negative effect on adaptation time. Drawing similarities from their findings to our research on accounting business gives a base for building our hypothesis because our study adds an element of crisis management and a perception of future digitalization. This is interesting because previous research has shown that crises can accelerate technology adoption and organizational change (Weick & Quinn, 1999).

3.2 ATTITUDES TOWARDS FUTURE TECHNOLOGY ACCELERATION

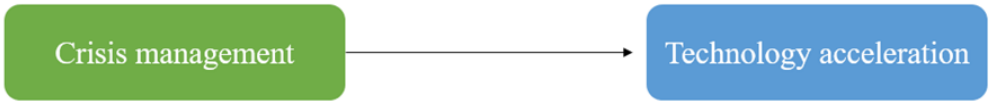
For successful implementation, the attitude towards new technology adoption is an important factor to consider (Elias et al., 2012). Elias et al. (2012) defines attitude as *"…an evaluative judgement, either favorable or unfavorable, that an individual possesses and directs towards some attitude object*" (p. 454). The attitudes of the employees have great impact on the organizational culture and how they will accept and adopt new processes and technology. It will give base to how they view the future of their work life and affects how they will participate in the implementation of new technologies. The attitude of the employees is shaped by factors such as own experience and demography, and workplace environment and others' attitudes (Rice & Aydin, 1991), and can change over time based on events and situations connected to that element, for instance technology (Morris & Venkatesh, 2000). For instance, an employee that has been longing for a new technology to assist in daily operations will in general show good attitude toward implementing such technologies elsewhere (Rice & Aydin, 1991). If the employee has had experiences with technology implementation processes before, regardless the factors that caused the negative result, the employee is likely to project that experience for future processes an add that negativity to the attitude (Elias et al., 2012).

Seeing that experience can affect the attitudes and that the COVID-19 pandemic introduced new technologies at the workplace giving the employees new experiences connected to the rapid implementation of such technologies, it can be interesting to investigate the effects of the crisis management on the attitude of the employees towards technology acceleration in the future. We argue that the crisis management of the accounting firms will affect the employees' attitudes towards future technology acceleration as the crisis management during the pandemic to a large extent included introduction to new technologies and more extensive use of the systems that already exists, but for some reason were not being properly utilized. Therefore, we believe that the increased use of technology in the daily operations and communication over a short period of time will create a different ground for experience that factor into the employees' attitude towards future technology acceleration.

Based on the theory, we argue that successful crisis management involves extended use of such new technologies and/or the implementation of new ones to cope with the crisis in the accounting business.

Thus, we hypothesize that crisis management during the pandemic is positively associated with the attitude towards future technology acceleration:

Figure 1: Hypothesis 1



3.3 EMPLOYEES' ATTITUDES TOWARD FIRMS

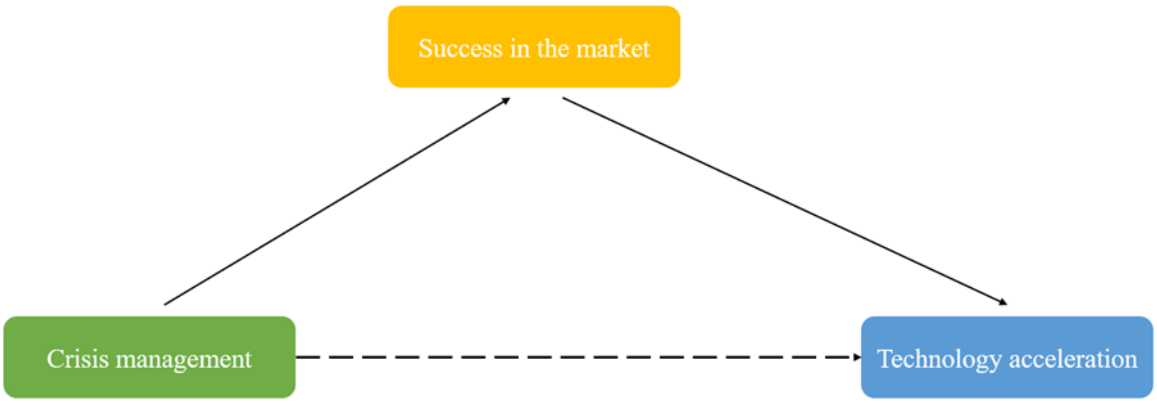
Research show that positive employees' attitudes toward the firm's actions are positively associated with the performance of the firm (Schneider et al., 2003), suggesting the importance of exploring the factors that contribute to employees' positive attitudes towards the firm. For instance, research shows that when employees have positive attitudes towards a firm's attributes (e.g., providing the necessary support to the employees in form of supervision and resources), employees are less likely to leave the firm or organization (Wang et al., 2011). More interestingly, Schneider et al. (2003) showed that positive attitudes toward a firm's actions have been shown to be positively associated with the firm's performance (e.g., increased client satisfaction). Together, these findings point to the crucial role of employees' attitudes toward a firm action. Related to the present thesis, we argue that, during a pandemic, employees' attitudes could be affected by the manner a firm manages a crisis. During a pandemic, a firm's effectiveness in managing a crisis affects positively the reputation and image of the firm in the eyes of stakeholders such as employees and clients (Pearson & Clair, 1998). Furthermore, researchers as such as Ignat (2017) argue that the use of modern technologies provide new possibilities, these new possibilities might be new products and services, or increased regional market coverage. Modern communication systems became widely used during the COVID-19 pandemic, and Regnskap Norge, the industry association for authorized accountants in Norway, argue that this might lead to new business opportunities for the accounting business in the future (Regnskap Norge, 2020).

During the pandemic, as previously discussed, the need for digital transformation increased substantially. Employees were forced to employ more digital technologies in their work processes. As research shows, the current use of digital technology could affect the likelihood of use and adopting technology in the future (Hanelt et al., 2021). We argue that the increased

digital presence enables accounting firms to offer their services to clients in a bigger regional market than before. Furthermore, when a firm is successful in managing the crisis during a pandemic, we believe the employees form positive attitudes toward the future performance of the firm in the market, and such positive attitudes lead the employees to expect that the firm will adopt more digital technologies in the future.

Hence, we hypothesize that the effect of crisis management on the attitude towards future technology acceleration is mediated by attitude towards future success in the market.

Figure 2: Hypothesis 2



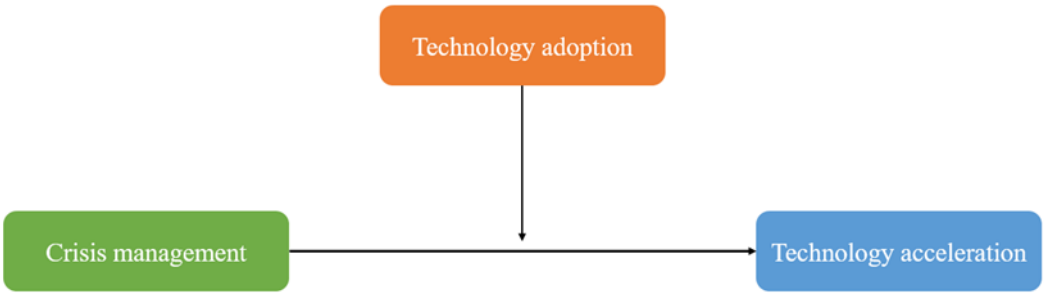
3.4 TECHNOLOGY ADOPTION IN THE FIRM

Awang et al. (2021) argue that the Fourth Industrial Revolution has led to a greater reliance on technologic solutions such as automation of robotic functions, increased use of digital software and increased use of information technology. The accounting business in no exception. Ignat (2017) concludes as mentioned earlier that digitalization forces new solutions and it is necessary for companies to master the digital transformation. There is no doubt that the accounting business for years has been working on their technological adoption; in 2017 Ragnvalg Sannes from the center of digitalization at BI Norwegian Business School argued that *"the technological development creates new opportunities for digitalizing and automation; everything that can't be digitalized will be digitalized"* (Lønneid, 2019). The accounting business has always been adopting new technological solutions, but mainly to serve their main purpose; the accounting services (Regnskap Norge, 2020). Nevertheless, Hans Christian

Ellefsen, leader for technology and innovation in Regnskap Norge argued that there will be a class division in the accounting business, between those who manage to incorporate digital solutions to increase productivity and effectiveness, and they who do not (Lønneid, 2019).

Based on the above, we argue that the level of technology adoption in the firms prior to the pandemic has an impact both on the crisis management itself and the on the attitude towards future technology acceleration. Thus, we hypothesize that the level of technology adoption moderates the effect of crisis management on attitude towards future technology acceleration. Crisis management is positively associated with attitude towards future technology acceleration at a high level of technology adoption but not at a low level of technology adoption.

Figure 3: Hypothesis 3a



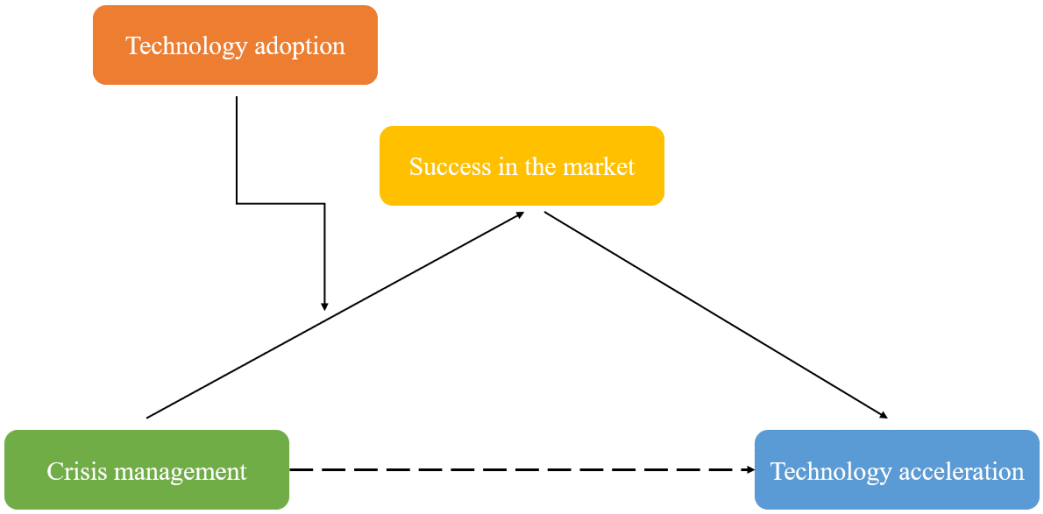
3.5 INTEGRATED RESEARCH MODEL

Hypothesis 1 represent the connection between crisis management and attitude towards future technology acceleration, in hypothesis 2 we added the element that this effect is mediated by the attitude towards future success in the market, and in hypothesis 3 we added a moderator of technological adoption in the firm prior to the pandemic outbreak to hypothesis 1. This leads us to hypothesis 3b that contains all these elements. We argue that the attitude towards future technology acceleration in accounting business after COVID-19 is a result of the successfulness of crisis management, mediated by the attitude towards future success in the market and moderated by the level of technology adoption when the pandemic hit.

Thus, we hypothesize that the positive effect of crisis management on the attitude towards future technology acceleration via the mediator attitude towards future success in the market is

moderated by technology adoption. The effect of crisis management on technology acceleration via perceived future success in the market is more potent at a high level of technologic adoption.

Figure 4: Hypothesis 3b



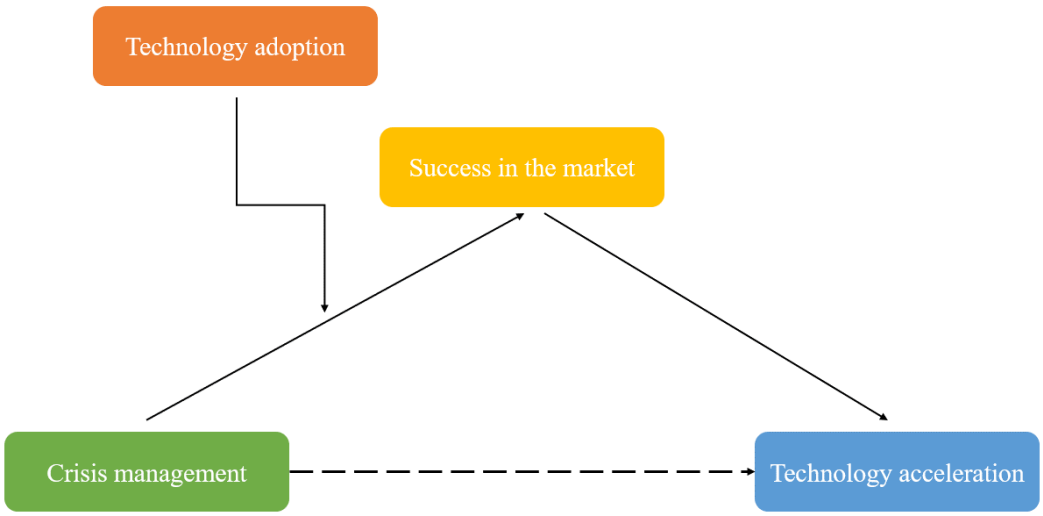
4 METHODOLOGY

In previous chapters, we have introduced our problem statement and our hypotheses to be tested in next chapters. We have outlined our model, which seeks to analyze the possible correlations between crisis management during the COVID-19 pandemic, attitude towards the company´s future performance and the interaction of technology adoption. In the following chapter, we will elaborate on the methodology of our studies, including the chosen research design, the data analysis, and the chosen research model.

4.1 RESEARCH MODEL

Walczuch et al. (2007) found that a person's score on optimism had the highest impact on the openness and positivity to implementation of new IT systems, and optimism as a trait is impacted by experiences, attitudes, personality, social environment, among other. We believe that the positivity to such implementation can be affected by the successfulness of crisis management in our thesis, as the several response measures for accounting firms indeed was implementing new IT structures and systems. The positive effect of crisis management on the acceleration of digital transformation via attitude towards future success in the market is moderated by digital adoption. The product is more potent at a high level of digital adoption.

Figure 5: Final model



4.2 RESEARCH DESIGN

To study our problem statement, test our hypotheses and gain theory knowledge, we decided to perform a cross-sectional study of the constructs. The study qualifies as a case study design, as the subject focus is on a contemporary phenomenon´s (pandemic crisis) effect on one group (employees in accounting businesses), where it is common to conduct surveys in closed environments (Ringdal, 2013; Yin, 2018). The idea is to gather information from a larger group of people in our research context, where we will try to gain enough information to be able to confirm our hypotheses. The research will be conducted through survey methodology. We are interested in finding any associations between the crisis management in the accounting offices and the attitudes of the employees on future performance in terms of future acceleration of technology and future market success. Additionally, will we use control variables for technology readiness to strengthen the internal validity of our model as it will introduce alternative explanations to the correlations and limit the influence confounding variables. Furthermore, we have added technology adoption as a moderator to study any effect current state of technology adoption have on the correlations between crisis management and attitude towards future performance.

We chose survey questionnaire method because such methodology is suitable for instances where one wants to study and explain the relationship between two or more variables. With enough respondents, the survey questionnaire will create a more precise answer set as the questions will be phrased and formed the exact same way to all recipients (Ringdal, 2013). Furthermore, the method also allows the respondent to finish the survey at their own pace, taking the time they need to understand and answer the questions as necessary (Ringdal, 2013). However, because of the generic type, one disadvantage may be that there will not be any opportunities to elaborate on a question if one respondent does not understand, creating a biased answer (Kothari, 2004). The possible biases and how we are minimizing them are further discussed later in this chapter. From the response results, one may either use the entire dataset or a subset for analysis, and the dependent and independent variable(s) are identified and modeled. The survey questionnaire is distributed to more than 1000 employees in accounting, and all data collection is anonymous.

4.2.1 Validity and reliability

Validity and reliability are two important characteristics to use in order to confirm the successfulness of measurement instruments. Where reliability measures the consistency of the measurement, validity is to ensure that the measurement is actually measuring what it is supposed to measure. When a study fails the validity and reliability tests, critical biases may occur. The systematic literature research, as described in the previous section, was one key step to confirm the measurements that have been used in similar research studies. We found extensive studies on crisis management, digitalization and readiness, and to ensure reliability we used questionnaire questions from model constructs from Parasuraman (2000), Guo et. al. (2020) and Walczuch et al. (2007). The following sections we will elaborate on the choices we made to maintain validity and reliability of our research.

The previous research questionnaires have been thoroughly examined and the results has been peer reviewed, which increase the reliability. For our research, it was necessary to ensure that the wording of the questions did not open for misinterpretation after translation. As such, our pre-study was partially conducted to discover such issues.

Cross-sectional survey studies test the causal relationships between variables and are considerably prone to biases and require methods to reduce them and increase reliability (Kothari, 2004). One crucial perspective to notice is the causal inference bias, which relates to ensuring that the independent variable x happened before the dependent variable y. If that condition is not met, the survey will not be able to test the actual causal relationship (Kothari, 2004). The research design process must be built around this perspective to ensure that the causal relationship is being maintained when collecting data. In this thesis, the independent variable crisis management is measured through questions in past tense and is directly related to a certain situation and time, whilst the questions related to our dependent variables future performance was formed with clear expectations for future. The wording of the survey was crucial to ensure that the respondents understood the pre-pandemic, during pandemic and post-pandemic timeline, and which is relatively fair to establish in such a clear timeline based on an event concerning all survey respondents.

After data collection, we will run Cronbach's alpha - a method that is a widely used and acknowledged formula for measuring reliability (Ringdal, 2013). We will further conduct both

an exploratory factor analysis and a confirmatory factor analysis to get a more objective evaluation of the concept validity and reliability of our research.

4.2.2 Questionnaire survey

We have used existing scales to capture our study constructs and ultimately test our model. Using existing validated scales will increase the validity and reliability if it is already appropriate or adapted to our research model. To control for readiness, we are using the TRI (Parasuraman, 2000). The survey to capture the readiness includes the concept questionnaire provided by Parasuraman (2000), which captures the level of optimism, innovativeness, discomfort, and insecurity. It is considered an appropriate scale as its validity is tested by examining the TRI scores of the respondents and other questions related to their perceptions and experience with technology, and test results are evidenced that the main validity concerns were covered (Parasuraman, 2000). To measure the crisis management we have used a concept questionnaire from Guo et al. (2020) that measures two scales: (1) Attitude towards level of digitalization, through asking questions about the firm's degree of digitalization and the firm's degree of technology adoption, and (2) Attitude towards crisis management measured through questions about strategies to resume production, both tested for robustness. Finally, the attitude towards process after COVID-19 will be measured through questions about how they think the firm will change different processes, and if the firm is going to accelerate its digital transformation after the pandemic. The questions are based on those of Guo et. al. (2020). The questionnaires is documented in appendix 1.

We did a subjective evaluation of the appropriateness of all questions in the questionnaire from the previous studies and decided to remove or alter some of them. As we are using the TRI model for readiness. However, the other scales included questions that we evaluated as distracting for our purpose. Questions that are not correctly used may affect the reliability of the survey (Ringdal, 2013).

The questionnaire was originally in English, but to make sure that the respondents understood the questions we translated them into Norwegian. We first translated the questions ourselves into Norwegian. Translating the existing questions to Norwegian may introduce bias if the translation does not reflect the original meaning. For validation purposes, we asked several people to translate our questions back to English. From this translation process we saw that the meaning and the content of the questions was comparable and similar to the original questions.

Through this process we felt certain that the questions were still validated and usable for our survey questionnaire.

We saw it important to address the common method variance (CMV) bias, which is caused by the instrument creating variances in the result (biases) rather than the actual response (Kothari, 2004). This must be carefully considered during the development of the survey questionnaire because the layout and questions might be the cause of bias (Kothari, 2004). The probability of biases occurring will be reduced with higher number of respondents in general, but because we have limited possibilities of increasing the number of respondents for this thesis, we must try to minimize the CMV as much as possible. Studies show that the order of the response alternatives might affect respondents' selection of alternatives (Krosnick, 1999; Krosnick & Presser, 2009). To reduce the risk for this bias to occur we presented the response alternatives with different scaling techniques and with points. We varied the number of points in the Likert-scales (3, 5 and 7) and the wording and order of the scaling anchors (e. g. “totally agree” vs “totally disagree” and “extremely low” vs “extremely high”). This will reduce the bias as the answering of questions will not be based on habit. We carefully decided on what headings to use to reduce biases; for instance, when measuring optimism, we agreed that the positive sound of the word “optimism” would cause the respondent to want to give more (what they perceive as) positive to the questions than they would instinctively answer.

4.2.3 Sampling

The questionnaire was created in Nettskjema.no, which is an approved university site for anonymous data collection. The questionnaire was distributed by contacts of the authors in the accounting business: one accounting chain, several suppliers of accounting systems for them to distribute to their accounting clients, seven independent accounting offices, and a bank for distribution to their partners in the accounting business. The sampling is therefore convenience sampling in that we do not have access to all accountants, and they do not have equal probability to participate in the survey. Such sampling methods may introduce representation bias and thus decrease validity, but by spreading the distribution as much as our contacts reach, and to as many employees as possible, we hope to reduce such bias (Kothari, 2004).

4.2.4 Sampling size

The survey was distributed to over 1000 employees in several accounting firms, we ended up with a responding rate of 13%, and a sample of N = 131.

4.2.5 Questionnaire pre-testing

There are several methods to evaluate questionnaires, one of these methods is pre-testing (Krosnick & Presser, 2009). To ensure that all questions in our survey were relevant and understandable for the respondents, we conducted a pre-test. In addition to the survey being likely to benefit from a formal pre-test before distributing the main questionnaire, pre-testing can also provide valuable assistance in the process of developing the questionnaire (Krosnick & Presser, 2009). It is also a measure we chose to take to increase survey validity. In the preliminary study, the full questionnaire was distributed to 8 respondents. The pre-study was conducted in one day where we got answers from 7 of the respondents. We closed the questionnaire after the 7th respondent so we could move forward with our main study. The pre-test respondents were the employees of one of the writers of this thesis. They had beforehand been informed about the study's goals, and they were asked to answer the first full draft of the survey. In addition to responding to the questionnaire, the respondents were asked for feedback regarding the language in the survey, along with relevance and clarity of the questions. Due to possible biases that might arise from the pre-test respondents being the employees of one of the writers, they are exempt from the final results.

From the respondents of the pre-testing, we got feedback that they used approximately 15 minutes to answer the study. The overall impression was that the survey was clear but that the language was too technical in some questions. Furthermore, we got feedback on the response alternatives, first that "not sure" could be replaced with "neither agree or disagree" and that this answer would make more sense for the respondents on some questions. Secondly, some respondents were unsure what to answer on the scale of 1-10. Lastly, on the questions where the response was "high" to "low", some respondents thought it was strange with that kind of response to these questions.

Regarding the clarity of the language the respondents were not sure what we meant by *business models (forretningsmodeller)* in item "*we fully adopt digital business models*" (DI1), *management models (styringsmodeller)* in item "w*e fully adopt digital management models" (*DI2), *supply chain (forsyningskjeden)* in item "*to what degree do you think your firm will strengthen the application of online office tasks"* (A1), and *gadgets* in items "*You enjoy the challenge of figuring out high-tech gadgets"* (IS4) and "*It is embarrassing when you have trouble with a high-tech gadget while people are watching"* (DC3). Some respondents indicated that they did not quite understand the final two items "*adopt digital platforms, such as digital*

communication platforms" (A3) and "*adopt digital infrastructures, such as digital technology systems"* (A4). Furthermore, the respondents commented that the question "*we fully adopt digital artifacts (products or services)"* (DI3) could be interpreted in different ways, because in some cases the accountants want to fully adopt digital artifacts, but it is not always the case that clients want to do so.

We also received feedback that some of the questions seemed to be directed to the managers of the firm, not for the employees. In our thesis what we study is the attitude towards level for all accountants, this needs to be clearer before distributing the survey to all respondents.

4.2.5.1 Changes in questionnaire after pre-study

In general, the respondents in the pre-study found the language to be too technical. We took this into account when completing the main questionnaire and made sure that all questions with this issue had a clear explanation for what we asked for. We explained the key concepts that the pre-study respondents found challenging, before presenting the questions. In question A3 and A4 we did not have any explanation of the questions in the pre-study, this was added before the main study was conducted. Furthermore, we made it clear that we ask for the employee's view on the different questions, not the expectation of what the management of the company have done or might do in the future. This was also specified in the introduction in the main study. We ensured that the explanation was general so it would not produce any bias. We also added that it would take approximately 15 minutes to complete the questionnaire.

Additionally, based on the feedback from the respondents in the pre-testing of our questionnaire we did some changes in the presentation of some questions. In the digitalization part we saw that most of the respondents answered, "not sure". For the questions with scale response, we emphasized that 1 is extremely low and 10 is extremely high. We also reformulated the questions in DI1, D12, DI5, and DI6 (table 6) without changing its content; the changes made the questions more understandable for the respondents in our main study. We changed the business terminology to more common phrases for clarity. This was verified with the translator that the meaning still is the same and used a business terminology dictionary for basis.

Based on the feedback we also replaced "not sure" with "neither agree nor disagree" as a response alternative where this made more sense for the respondents. In the questions about technology adoption, we experienced from the pre-study that several respondents were not familiar with all the technological concepts. As a result, we made sure that we defined the key

concepts before moving forward with the questions and specified that what we asked for was the adoption of the different technologies, with examples of what these different technologies might be. Furthermore, we also made small changes to the terminology in general, to more common words and used a business terminology dictionary for basis.

4.3 SURVEY INSTRUMENT AND STUDY MEASURES

The following section is presenting the features of the final questionnaire, the procedure for data collection and the study variables along with the measurement model. Furthermore, this section seeks to justify the design of the instruments of the survey to meet the primary goal of trying to explain our problem statement along with the research questions and hypothesis as proposed in the earlier chapters of this thesis.

4.3.1 Questionnaire design, scaling, and structure

The questionnaire was adapted from previous studies, as discussed in previous sections. Because all respondents are Norwegian, we translated the questions to avoid misinterpretation and confusion. The questionnaire created in Nettskjema has a simple design. We decided to have page breaks between sections to make it more comprehensible to the respondent. Each section is divided by the constructs of questions for each variable. First, we start with the questions for the purpose of describing the distribution of the respondents, before continuing with the different categories of questions, in accordance with different constructs of our hypotheses. We kept the introduction brief, and only included a short background for the study, an explanation of how the respondents should proceed, emphasis on anonymity and that it is their perception we are looking for. Furthermore, we included some explanations regarding different technical terms. The pre-study found, as mentioned earlier, that the wording of some questions was too formal, so we added short explanations to those. Regarding the scaling of the questions, it was done differently in the different parts of the survey, more comments on this in the study variables section. The final questionnaire from Nettskjema is presented in appendix 2.

4.3.2 Procedure for data collection and sample characteristics

The questionnaire was distributed to respondents in January 2022 and was active until the first of February 2022. It was distributed by us through Teams channels, relevant social media, and got help distributing the survey from Duett AS that is a supplier of a widely used accounting

system, Sticos AS that is a supplier of a quality management system for accounting and Sparebank1 Østlandet distributed the questionnaire to their contacts in the accounting business. In total the questionnaire was distributed to approximately 1000 accountants. We were aiming for 200 respondents on the survey, but because of the limited time we decided to set an end date to the survey, regardless of the sample size.

4.3.3 Distribution of respondents

Even though our study is not generalizable outside the case itself we wanted to see the distribution of respondents in our survey to ensure that there was a distribution in age, office size and experience that matched the real distribution in the accounting business. These variables are not used further in our research because a preliminary analysis showed no significant correlations between age, experience, and size and our main study variables. Therefore, we will not include them in the main analysis

"Age", "office size", measured by count of employees and "years in accounting business". "Age" (Q1) was measured in the following intervals: 18-24, 25-34, 35-44.45-54 and 55+. "Office size" (Q2) was measured in the following intervals: 0-10, 11-20. 21-30, 31-40 and 41+. "Years in accounting business" (Q3) was measured in the following intervals: 0-5, 6-10, 11-15, 16-20 and 21+. This is shown in table 1.

Table 1: Distribution questions

	Question	**Scale**				
Q1	Age	18-24	25-34	35-44	45-54	55+
Q2	Office size by number of employees	0-10	11-20	21-30	31-40	41+
Q3	Years of experience in accounting	0-5	6-10	11-15	16-20	21+

Variables to illustrate the distribution of employee attributes age, office size and experience

4.3.4 Control variables

The following constructs are based on the technology readiness index (TRI) and are divided into the four constructs "optimism", "innovativeness", "discomfort" and "insecurity" measured by several items. This thesis seeks to use these constructs to control for the possible correlations with crisis management and future technology acceleration.

*4.3.4.1 **Optimism***

The first construct based on TRI is optimism, it is measured with seven questions O1- O7 as referred to in table 2. Furthermore, for this construct the Likert scale is scored from 1 to 5, 5 being “Totally agree” and 1 being “Totally disagree”.

Table 2: Optimism

	Question
O1	Technology gives people more control over their daily lives.
O2	Technology gives you more freedom of mobility.
O3	Learning about technology can be as rewarding as the technology itself.
O4	You feel confident that machines will follow through with what you instructed them to do.
O5	You prefer to use the most advanced technology available.
O6	Technology makes you more efficient in your occupation.
O7	You find new technologies to be mentally stimulating.

Note: response options “Totally agree”, “agree”, “not sure”, “disagree” and “totally disagree” for optimism items

*4.3.4.2 **Innovativeness***

The second construct based on TRI is innovativeness, it is measured with five questions IS1-IS5 as referred to in table 3. These questions seek to find how innovative the respondents are when using technologic solutions. Furthermore, for this construct the Likert scale is scored from 1 to 5, 5 being “Totally agree” and 1 being “Totally disagree”.

Table 3: Innovativeness

	Question
IS1	Other people come to you for advice on new technologies.
IS2	You can usually figure out new high-tech products and services without help from others.
IS3	You keep up with the latest technological developments in your areas of interest.
IS4	You enjoy the challenge of figuring out high-tech gadgets.
IS5	You find you have fewer problems than other people in making technology work for you.

Note: response options “Totally agree”, “agree”, “not sure”, “disagree” and “totally disagree” for innovativeness items

*4.3.4.3 **Discomfort***

Discomfort is the third construct from the TRI model. It seeks to understand if the respondents are uncomfortable when using technological solutions. It is possible to be both optimistic to new technology, be innovative in trying out the latest high-tech products, but at the same time recognize the challenges. It is measured with seven questions DC1-DC7 as shown in table 4. The Likert scale is scored from 1 to 5, 5 being "Totally agree" and 1 being "Totally disagree".

Table 4: Discomfort

	Question
DC1	Sometimes, you think that technology systems are not designed for use by ordinary people.
DC2	If you buy a high-tech product or service, you prefer to have the basic model over one with a lot of extra features.
DC3	It is embarrassing when you have trouble with a high-tech gadget while people are watching.
DC4	There should be caution in replacing important people-tasks with technology because new technology can breakdown or get disconnected.
DC5	Many new technologies have health or safety risks that are not discovered until after people have used them.
DC6	New technology makes it too easy for governments and companies to spy on people.
DC7	Technology always seems to fail at the worst possible time.

Note: response options "Totally agree", "agree", "not sure", "disagree" and "totally disagree" for discomfort items

*4.3.4.4 **Insecurity***

The last construct from the TRI model is insecurity, that seeks to understand if the respondents are insecure when using technological solutions. It is measured with three questions IY1-IY3 as shown in table 5. The Likert scale is scored from 1 to 5, 5 being "Totally agree" and 1 being "Totally disagree".

Table 5: Insecurity

	Question
IY1	Whenever something gets automated, you need to check carefully that the machine or computer is not making mistakes.
IY2	The human touch is very important when doing business with a company.
IY3	When you call a business, you prefer to talk to a person rather than a machine.

Note: response options “Totally agree”, “agree”, “not sure”, “disagree” and “totally disagree” for insecurity items

4.3.5 Study constructs

Because we do not have any historical data, our research is exclusively based on the accountant's response to the survey. We have no data that measures the constructs prior to COVID-19.

4.3.5.1 Digitalization

This variable is measuring the level of digitalization in the firm. It is measured with six questions DI1-DI6 that measure the degree of digitalization as shown in table 6 and was initially measured as a moderator along with technology adoption in our model. The Likert scale is scored from 1 to 5, 5 being “totally agree” and 1 being “totally disagree”.

Table 6: Digitalization

	Statement
DI1	We fully adopt digital business models
DI2	We fully adopt digital management models
DI3	We fully adopt digital artifacts (products or services)
DI4	We fully adopt digital platforms that support digital products and services
DI4	We fully adopt digital infrastructures, such as technology tools and systems
DI6	Firm digitalization relies on external purchases

Note: response options “Totally agree”, “agree”, “not sure”, “disagree” and “totally disagree” for digitalization items

*4.3.5.2 **Technology adoption***

This variable is measuring the level of technological adoption in the firm and works as a moderator in our model. It is measured with seven questions T1-T7 as shown in table 7. The scale is scored from 1 to 7, 7 being "very high" and 1 being "very low".

Table 7: Technology adoption

	To what degree have your office made use of the following technological subject?
T1	Big data technology (such as big database, data analysis technology)
T2	AI technology (such as machine learning)
T3	Mobile technology (such as mobile internet, wireless communications)
T4	Cloud computing technology (such as cloud computing)
T5	IoT technology (such as network distribution technology)
T6	Social technology (such as online commerce, instant messaging)
T7	Platform development technology (such as network platforms)

Note: response options "very high", "high", "somewhat high", "not sure", "somewhat low", "low" and "very low" for technology adoption

4.3.5.3 Crisis management

This variable measure if the firm has adopted new technological solutions to resume production due to COVID-19. It is measured with three questions that are answered on a scale from 1 (extremely low) to 10 (extremely high) as shown in table 8.

Table 8: Crisis management

	During the pandemic, to what extent has your office taken the following measures to keep production level up?
K1	Adopted online telecommuting
K2	Optimized business models to capture new customer needs
K3	Develop marketing channels and remove dependence of offline transactions

Note: response options scale from 1 to 10 for crisis management items

4.3.5.4 Attitude towards future success

These variables are measuring if the respondents' firm will change existing product lines, regional market coverage and external cooperative relations after the pandemic and works as a mediator in our model. It is measured with three questions as shown in table 9.

Table 9: Attitude towards future success in the market

	Do you think your business will make changes to the following aspects:
S1	Change in existing product lines
S2	Change in regional market coverage
S3	Change in external cooperative relations

Note: response options "To a large degree", "to a lesser degree", and "to a small degree" for attitude towards future success items

4.3.5.5 Attitude towards Acceleration of digital transformation after the pandemic.

This variable is measuring potential acceleration in digital transformation after the pandemic. It is measured with four questions and is our dependent variable, questions are shown in table 10. The questions are answered on a scale from 1 (extremely low) to 10 (extremely high).

Table 10: Attitude towards future technology acceleration

	To what degree do you think your business will…
A1	Strengthen the application of online office tasks
A2	Improve the digitalization of supply chain channels
A3	Adopt digital platforms, such as digital communication platforms
A4	Adopt digital infrastructures, such as digital technology systems

Note: response options scale from 1 to 10 for attitude towards future technology acceleration items

4.4 DATA ANALYSIS IN SPSS

Hypotheses 2 through 3b, was tested in a single model using a bootstrapping approach to assess the significance of the indirect effects at differing levels of the moderator and moderator (Hayes, 2015; Maxwell et al., 2017). The dependent variable was attitude towards future technology acceleration and technology adoption was the proposed moderator, and as with the previous models it also included the control variables *optimism*, *innovativeness*, *discomfort*, and *insecurity*. Moderated mediation analyses test the conditional indirect effect of a moderating variable (i.e., technology adoption) on the relationship between an independent (i.e., crisis management) and a dependent variable (i.e., attitude towards future technology acceleration) via potential mediators (i.e., tttitude towards future success in the market). The “PROCESS" macro, model 7 (Hayes, 2013) in SPSS with bias-corrected 95% confidence intervals (n = 10000) was used to test the significance of the indirect (i.e., mediated) effects moderated by technology adoption, i.e., conditional indirect effects. This model explicitly tests the moderating effect on the predictor to mediator path. An index of moderated mediation was used to test the significance of the moderated mediation, i.e., the difference of the indirect effects across levels of Technology Adoption (Hayes, 2015). Significant effects are supported by the absence of zero within the confidence intervals (Maxwell et al., 2017).

5 ANALYSIS AND FINDINGS

The previous chapters of this thesis present the theoretical framework and the literature used for the development of the framework. Furthermore, we have also presented our research design, along with the hypotheses we want to test in the present thesis. This chapter reports the results of the quantitative data analysis. This chapter contains 1) data screening, 2) descriptive analysis for all constructs in the study, 3) factor analysis, 4) reliability and validity testing, and 4) model results. All questions in our survey are listed in table 14.

5.1 DESCRIPTIVE STATISTICS AND DATA EXAMINATION

The complete dataset is composed of 131 respondents from accounting companies. Before we started the statistical analysis of the collected data, we downloaded the data from nettskjema.no into excel to examine the data. In excel we ensured that our dataset did not have any missing values or other errors. This chapter also presents the validation of the survey and the descriptive statistics for all measures used in our study.

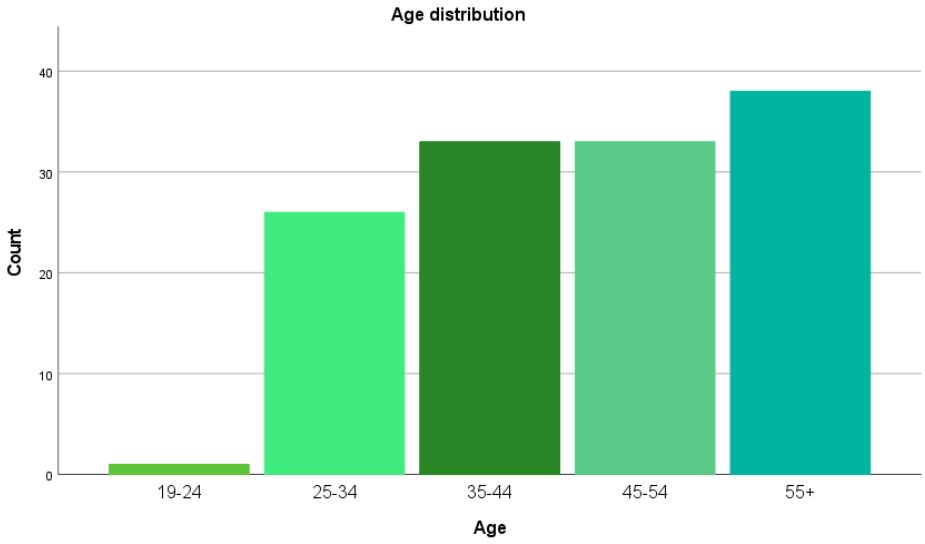
5.1.1 Data screening

After inspecting the survey in excel we imported the data from excel into SPSS for further analysis. We did not observe any input errors or missing variables when we inspected the data in excel. Running descriptive statistics in SPSS showed no outliers or unusable data.

5.1.2 Distribution of respondents

The results show the following distribution of age, experience and office size in employees, even though our results are not generalizable for the accounting business. Because our sampling was not completely random, we compared our distribution of respondents to a study from FOCUS on the accounting business which was done in 2016 (Schei et al., 2016). We did this only to check that our distribution of respondents in the accounting business was somewhat like the actual distribution in accounting. This is not used further in our study.

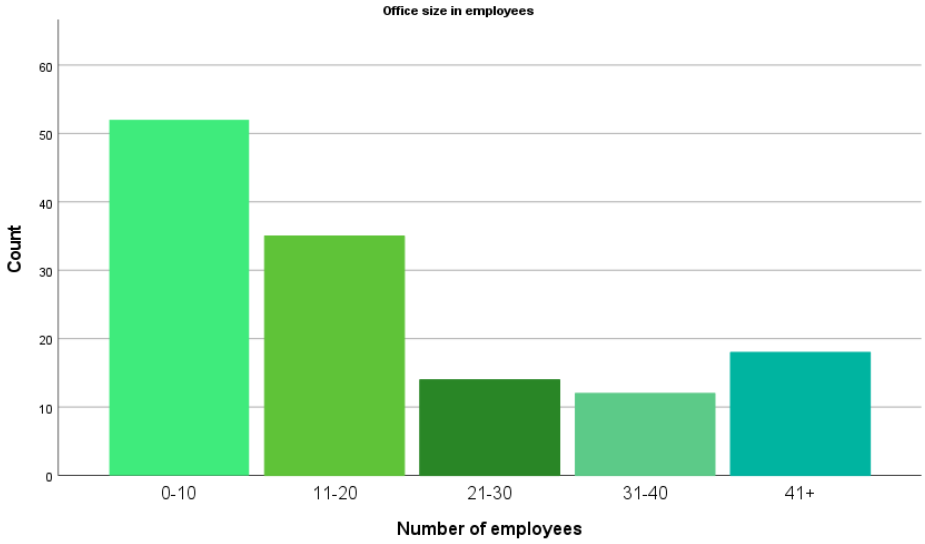
Figure 6: Age distribution



Bar chart showing the age distribution

The age distribution is (mean = 3.62, SD = 1.13). The age distribution in our data is in line with a study on accounting; the FOCUSS study. In the FOCUS study the mean age of employees was 46.3 years (Schei et al., 2016).

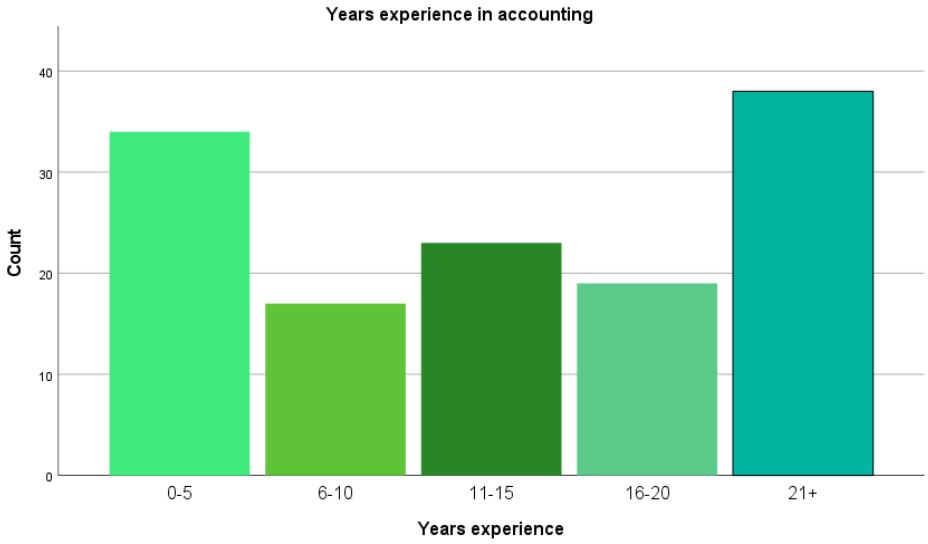
Figure 7: No. of employees in the office



Bar chart of office size based on number of employees

In Q2 we are measuring the office size in the count of employees, with mean = 2.31, SD = 1.42. We can see from the results that the biggest group in office size is "0-10" employees. Compared to the FOCUS study, they found that the mean office size was 7.7 employees, this shows that our findings match their findings from 2016 (Schei et al., 2016).

Figure 8: No. of years' experience in accounting



Bar chart of distribution of years of experience in accounting

In Q2 we are measuring the respondents' years of experience in accounting, with mean = 3.62, SD = 1.13. The results show that the majority of our respondents have more than 21 years of experience, with 0-5 years of experience following closely behind.

5.1.3 Descriptive analysis of the constructs

A descriptive summary of the key constructs and control variables is presented in table 11. Our item scales vary between 5-point, 7-point and 10-point scales, as reflected in the maximum and minimum values. The summary of the descriptive statistics shows that our control variables generally have high means, but a relatively reasonable SD with an observation number of 131 within the same profession. Furthermore, we tested our variables regarding skewness, which is considered appropriate when between 1 and -1, and all our constructs except insecurity has an acceptable value as shown in table 11. As the insecurity construct only used for controlling and the level is marginally over 1, we argue that this value is acceptable as well.

Table 11: Descrptive statistics

	Min.	Max.	Mean	Std. Deviation	Skewness	Std. Error	Kurtosis	Std. Error
Age	1	5	3.6183	1.12631	−0.185	0.212	−1.222	0.42
Office size	1	5	2.3053	1.42447	0.807	0.212	−0.718	0.42
Experience	1	5	3.0763	1.57684	−0.08	0.212	−1.521	0.42
Optimism	1.71	5	4.072	0.70016	−0.743	0.212	0.128	0.42
Innovativeness	1	5	3.742	0.90383	−0.69	0.212	−0.284	0.42
Discomfort	1.57	4.86	3.2443	0.63382	−0.037	0.212	0.008	0.42
Insecurity	2.33	5	4.2392	0.61363	−1.048	0.212	1.047	0.42
Digitalization	1	5	3.4987	1.04155	−0.647	0.212	−0.391	0.42
Technology adoption	1	6.86	4.6423	1.15221	−0.516	0.212	0.606	0.42
Crisis management	1.67	10	6.4529	1.78936	−0.322	0.212	−0.524	0.42
Attitude towards future success in the market	1	3	2.0076	0.55695	−0.167	0.212	−0.616	0.42
Attitude towards future technology adoption	0.75	10	6.8798	1.8074	−0.801	0.212	0.994	0.42

Descriptive statistics of the construct

5.1.4 Common method variance test

In survey data collection, common method variance bias (CMV) is introduced through item and respondent characteristics. Bias arising from respondent characteristics is often a result of the respondent showing tendencies in their responses, such as answering the questions based on habit or social desirability. The item itself may introduce CMV bias by the content of the options supplied to the respondent being too similar (Podsakoff et al., 2012). This must be carefully considered during the development of the survey questionnaire because the layout and questions might be the cause of bias (Kothari, 2004). Reducing the probability of such bias can be rendered by both procedural and statistical measures. To reduce the probability of respondent CMV in our study, we introduced procedural measures concerning both characteristics (Podsakoff et al., 2012). The probability of biases occurring will be reduced with a higher number of respondents in general, but because we have limited possibilities of increasing the number for this thesis, we tried to minimize the CMV using other measures. Studies show that the order of the response alternatives might affect respondents' selection of alternatives (Krosnick, 1999; Krosnick & Presser, 2009). To reduce the risk of this bias to occur we presented the response alternatives with different scaling - points and anchors. We varied the number of points in the Likert scales (3, 5, and 7-point) and the wording and order of the scaling anchors (e.g., “totally agree” vs. “totally disagree” and “extremely low” vs. “extremely high”). We carefully decided on what headings to use to reduce biases; for instance, when assessing optimism, we agreed that the positive sound of the word “optimism” would cause the respondent to rate more the questions than they would instinctively do. Because of this we decided to cut the headlines to measure these constructs. Additionally, we added a statement at the beginning of the survey to ensure the respondents' anonymity, and we ensured that the survey length did not tire the respondent through the pre-study. Lastly, we used the Harman one-factor test as a statistical measure to test for CMV, which showed that a single factor had a 16.43% (<50%) contribution to the total variance. This further indicates that there is no dominant factor in the dataset and thus, low CMV bias (Podsakoff et al., 2012).

5.2 MODERATOR AND MEDIATOR ANALYSIS

5.2.1 Exploratory factor analysis and confirmatory factor analysis

To ensure the concept validity of the construct we conducted an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). The EFA was conducted to try to identify the common factors that explain the covariation between a set of items (Watkins, 2018). We ran the EFA for our independent variables first to confirm the factor loadings. Our research included "level of digitalization" as a construct, so it was included for our first EFA. The results showed some cross-loadings and low values. We set the threshold at .4, as factor loadings higher than .4 are considered stable (Guadagnoli & Velicer, 1988). The outputs of the first EFA and CFA are presented in appendix 3. The results from a new EFA run confirmed the remaining items and gave a KMO of .745, which is considered good (Kaiser, 1974). The EFA matrix was then copied in the "Pattern Matrix Builder" plugin in SPSS Amos for the CFA. The CFA seeks to identify the relationship between the items and the constructs (Anderson & Gerbing, 1988). We conducted the CFA to further examine the construct validity and convergent validity by assessing the linkage between the items and constructs. We used the comparative fit index (CFI) and root mean square error of approximation (RMSEA) as the main measures for model fit. The CFI compares the estimated model with a null model and gives a value between 0 to 1, where values above .9 is considered an acceptable level of fit. The RMSEA also gives a value between 0 and 1, where values below .65 is considered acceptable as it reflects the number of required estimations to reach an acceptable fit (Hu & Bentler, 1999). However, the first CFA run showed a CFI of .86, which is an unacceptable level (Hu & Bentler, 1999). The results further suggested that digitalization could be a troublesome construct for this model.

We went back to run a new EFA, this time excluding the digitalization items. The KMO level of the repeated EFA of .77 indicates that the remaining dataset is suitable for a CFA. Table 12 gives an overview of the reduction strategy.

Table 12: Item reduction

Construct	Items removed	Reason
Optimism	N/A*	N/A
Innovativeness	N/A*	N/A
Discomfort	DC1, DC2, DC3, DC7	DC1, DC2 and DC3 cross-loaded factors 7 and 8, DC7 was below threshold=.4
Insecurity	IY1	IY1 was below threshold=.4
Digitalization	N/A**	N/A
Technology adoption	T3	Cross-loaded on factors 2 and 9
Crisis management	N/A*	N/A
Future success in the market	N/A*	N/A
Future technology acceleration	N/A*	N/A

*Note: * No items removed, ** The construct entirely removed based on results from EFA and CFA*

We then ran another CFA based on the pattern matrix from the second EFA, and as reported in table 13, the model reported a CFI of .91, and RMSEA of .05, suggesting an acceptable model fit. All outputs from second run of EFA and CFA is presented in appendix 4. The factor loadings from the CFA are shown in table 14. The CFA results allowed us to move forward with our regression model.

Table 13: CFA outputs

Measure	CFA w. Digitalization	CFA wo. Digitalization
CMIN/DF	1.476	1.341
CFI	0.885	0.905
RMSEA	0.061	0.051
PClose	0.049	0.432

Key measures from CFA with and without digitalization construct

The digitalization construct was indeed included in our first thought of model but seeing how the construct was inappropriate for further analysis, we decided to remove it. As digitalization was an item alone, we argue that it will not affect any of the other constructs' meaning of concept, but rather only remove a factor that could be used for examining the moderating factors of current level of digitalization. Nevertheless, we argue that technology adoption is sufficient for measuring current technology level, although it does not necessarily represent the process of digitalization in the office. Our hypotheses as presented in previous chapters was amended to reflect the removal of the digitalization item.

Table 14: CFA results

Optimism		
O1	Technology gives people more control over their daily lives.	.63
O2	Technology gives you more freedom of mobility.	.61
O3	Learning about technology can be as rewarding as the technology itself.	.59
O4	You feel confident that machines will follow through with what you instructed them to do.	.62
O5	You prefer to use the most advanced technology available.	.72
O6	Technology makes you more efficient in your occupation.	.66
O7	You find new technologies to be mentally stimulating.	.73
Innovativeness		
IS1	Other people come to you for advice on new technologies.	.66
IS2	You can usually figure out new high-tech products and services without help from others.	.82
IS3	You keep up with the latest technological developments in your areas of interest.	.65
IS4	You enjoy the challenge of figuring out high-tech gadgets.	.70
IS5	You find you have fewer problems than other people in making technology work for you.	.81
Discomfort		
DC4	There should be caution in replacing important people-tasks with technology because new technology can breakdown or get disconnected.	.62

DC5	Many new technologies have health or safety risks that are not discovered until after people have used them.	.79
DC6	New technology makes it too easy for governments and companies to spy on people.	.45
Insecurity		
IY2	The human touch is very important when doing business with a company.	.77
IY3	When you call a business, you prefer to talk to a person rather than a machine.	.57
Technology adoption: To what degree have your office made use of the following technologies?		
T1	Big data technology (such as big database, data analysis technology)	.56
T2	AI technology (such as machine learning)	.55
T4	Cloud computing technology (such as cloud computing)	.67
T5	IoT technology (such as network distribution technology)	.71
T6	Social technology (such as online commerce, instant messaging)	.75
T7	Platform development technology (such as network platforms	.56
Crisis management: During the pandemic, to what extent has your office taken the following measures to keep production level up?		
K1	Adopted online telecommuting	.5
K2	Optimized business models to capture new customer needs	.77
K3	Develop marketing channels and remove dependence of offline transactions	.69

Note: The CFA results after reducing items in accordance with EFA findings and removing Digitalization as a construct in accordance with first CFA run

5.2.2 Content reliability

We examined the correlations among the constructs after reducing the number of items to assess the extent to which the measurement shows the specific domain of content (Carmines & Zeller, 1979).

Table 15: Correlation matrix with Cronbach's Alphas

		1	2	3	4	5	6	7	8
1	Optimism	**.832**							
2	Innovativeness	.553**	**.843**						
3	Discomfort	-.225**	−0.086	**.624**					
4	Insecurity	−0.086	-.198*	.191*	**.608**				
5	Technology adoption	.267**	.191*	0.006	0.078	**.796**			
6	Crisis Management	.215*	.200*	−0.053	−0.074	.207*	**.679**		
7	Future success in the market	.375**	.340**	−0.014	−0.039	.207*	.340**	**.711**	
8	Future technology acceleration	.257**	.354**	0.029	−0.15	.216*	.460**	.542**	**.894**

*Note: The diagonal (bold) represents the Cronbach's Alphas, ** Correlation is significant at the 0.01 level, * Correlation is significant at the 0.05 level*

The general rule of thumb is that Cronbach´s alphas above .7 is good, with above .6 being acceptable (George & Mallery, 2003). Constructs discomfort, insecurity and crisis management are below .7, but still within an acceptable level, thus we argue that all constructs are pass the Cronbach´s alpha reliability test.

There is a significant correlation between optimism and all the other variables except insecurity, suggesting that the optimistic trait will increase the positive attitude towards technology and crisis management. There is also significant correlation between crisis management and attitude towards future success in the market ($r = .340$, $p <. 01$) and crisis management and future technology acceleration ($r = .460$, $p < .01$), suggesting that the more positive to the crisis management an employee is the more positive he or she will be about the future. These findings provide initial support for our proposed hypotheses. Discomfort does not have significant correlations with either crisis management ($r = -.053$, $p > .05$), future success in the market ($r = -.014$, $p > .05$) or future technology acceleration ($r = .029$, $p > .05$), which is not in line with previous studies that suggested negative feelings about technology can affect technology adoption and digitalization processes (Parasuraman, 2000; Son & Han, 2011). However, it is

noteworthy that past studies examined the effect of discomfort or negative attitudes toward technology in normal situations rather than during a crisis, such as a pandemic in our thesis. Thus, we speculate that one reason that we did not find an association between discomfort and technology adoption and attitudes toward future technology acceleration might be that during a crisis employees' negative feelings about the technology become less crucial in shaping employees' attitudes toward future technology acceleration. We, however, do not have enough data to explain why this might be the case. Thus, future research is encouraged to explore why discomfort or negative feelings toward technology do not impact attitudes towards future technology acceleration.

Correlation coefficients above .80 are generally recommended to be avoided, as too high correlation can indicate that each item adds minimal information to describe the factor. As indicated in table 15, future technology acceleration and future success in the market have the highest correlation coefficient value of .54, which is under the .80 threshold.

5.3 REGRESSION ANALYSIS

We used the PROCESS syntax in SPSS (Preacher & Hayes, 2008) to run our model as it allows for directly analyzing the mediator and moderator effects of the model. Our variables are computed using the remaining items from CFA results. We will in this section test our hypothesis 1, hypothesis 2 and hypothesis 3a, and the final model hypothesis 3b.

5.3.1 Testing our research hypotheses

We have formed four hypotheses, with the last being our final model. To test these, we have used regression analysis in SPSS. This section will report the results from our analysis that will be further discussed in later chapters.

Hypothesis 1

To test our first hypothesis 1, we ran a linear regression in SPSS with crisis management as our independent variable and future technological acceleration as a dependent, with optimism, innovativeness, discomfort, and insecurity as control variables. The results of the regression analysis support our hypothesis. Crisis management is positively associated with attitude towards future technology acceleration (b = .404, p < .01). Specifically, the result shows that when a company is successful at managing the crisis during a pandemic, employees would form

positive perceptions about the company's future adoption of technology. Of the control variables, only innovativeness has a significant effect on attitude towards future technology acceleration (b = .468, p < .01) meaning that the more innovativeness the firm the more positive perceptions about a company's adoption of technology in the future. We have thus established that there is a direct and positive relationship between employees' perception of the effectiveness of crisis management during the pandemic and their attitudes toward the firm's adoption of technology in the future.

Figure 9: H1 linear regression model

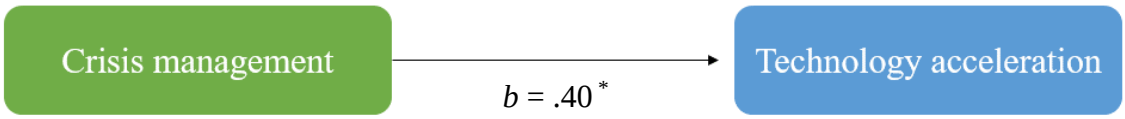


Table 16: H1 coefficients

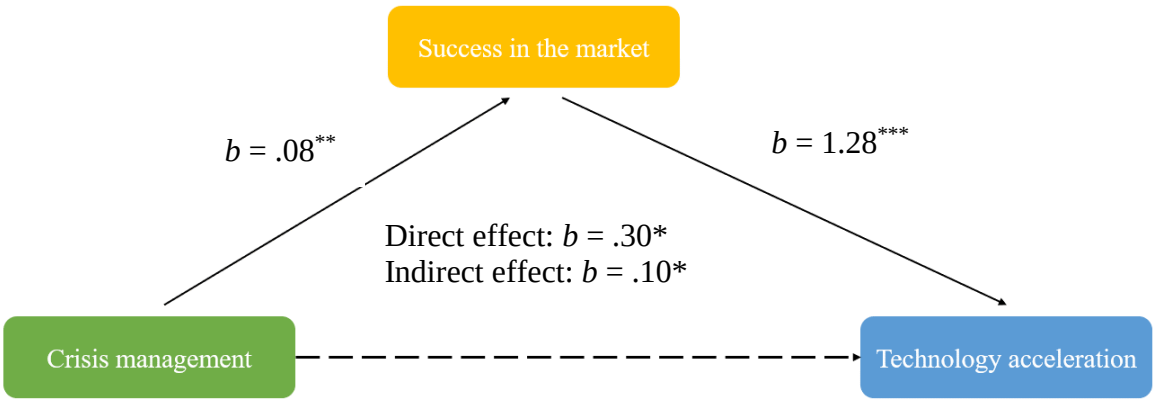
	Unstd. coefs		Std. coefs		
Predictor	**B**	**E**	**Beta**	**t**	**Sig.**
(Constant)	2.344	1.531		1.531	0.128
Crisis management	0.404	0.078	0.4	5.173	<0.01**
Control variables					
Optimism	0.144	0.24	0.056	0.6	0.55
Innovativeness	0.468	0.184	0.234	2.541	0.012*
Discomfort	0.218	0.171	0.1	1.269	0.207
Insecurity	−0.256	0.226	−0.088	−1.129	0.261

*Note: *p<.05, **p<.005, ***p<.001*

Hypothesis 2

Hypothesis 2 seeks to identify and explain the mechanism that underlies an observed relationship between crisis management and attitude towards future technology acceleration. To test Hypothesis 2, we added to the H1 model, attitude towards future success in the market as a mediator.

Figure 10: H3a mediation model



*Note: *p<.05, **p<.005, ***p<.001*

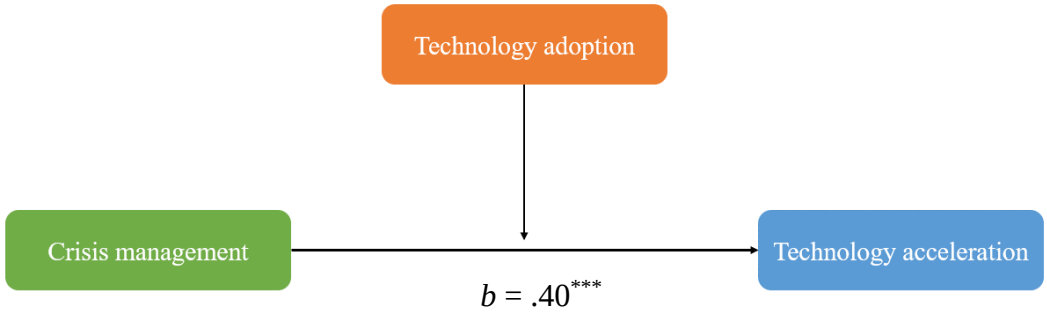
The results of the mediation analysis showed that crisis management is positively associated with attitude towards future success in the market (b = .08, t(125) = 3.17, p = <.002). Furthermore, the results suggests that attitude towards future success in the market as mediator is a significant predictor of attitude towards acceleration of technology in the future (b = .304, t(124) = 4.07, p < .001). The analysis further revealed that controlling for the mediator, crisis management scores also were a significant predictor of perceived future technology acceleration (b = 1.27, t(124) = 5.92, p < .001). A Sobel test was conducted and found full mediation in the model (z = 2.74, p = .006). The results show that attitude towards future success indeed contributes to the relationship between crisis management and future technology acceleration as the confidence interval excludes zero (95% CI = 0.03; 0.18). Of the control variables optimism, innovativeness, discomfort and insecurity, only optimism had a slightly significant effect on the mediator relationship (b = .20, t(124) = 2.54, p = .01), with innovativeness following closely with b = .10, t(124) = 1.68, p = .10), suggesting that the motivating factors positively contributes to attitude towards future success based on the crisis management, whilst the inhibitor factors are ignored in crisis situation.

Hypothesis 3a

For hypothesis 3a, we are adding technology adoption as a moderator, as we theorized that current technology adoption would affect the employees' attitude towards future technology acceleration. In addition to the PROCESS Model to test the hypothesis that the attitudes towards

a firm's future success in the market is a function of crisis management and technology adoption, we also ran a hierarchical multiple regression analysis. The interaction term between crisis management and technology adoption was added to the regression model, and the interaction is not significant (unstandardized interaction *b* = 0.068, BSE = 0.064, t = 1.074, p = .28) suggesting that hypothesis 3a is not supported.

Figure 11: H3a moderator analysis



*Note: *p<.05, **p<.005, ***p<.001*

Also for hypothesis 3a we added the control variables, which resulted in only innovativeness being significant (*b* = .45, t(123) = 2.45, *p* = .02) Suggesting that innovativeness of a firm is positively associated with employees' attitudes toward the digital acceleration in the future.

Hypothesis 3b

We tested our hypothesis 3b, our full moderated mediation model, using the PROCESS macro model number 7 in SPSS, which tests a model whereby technology adoption moderates the effect of path a (Figure 13; Hayes, 2013). As predicted, a significant interaction effect has emerged, *b* = .04, *SE* = .02, *t* = 2.106, *p* = .037. More importantly, the effect of crisis management on attitudes toward a firm's future success in the market was significant at a high level of technology adoption but not a low level of technology adoption. Table 17 shows the effect of crisis management on attitudes toward a firm's future success in the market. Figure 12 visualize the observed interaction effect.

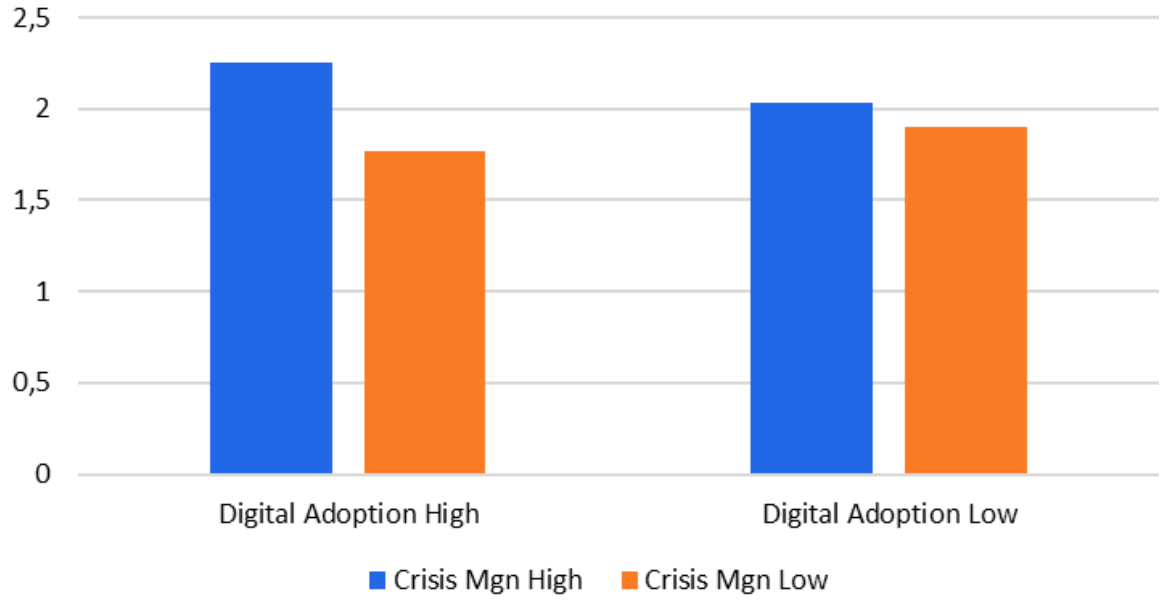
Technology adoption has no significant relationship with attitudes towards future success in the market (b = .02, p >.5). Among the control variables, only optimism had a significant relationship with attitudes toward future success in the market (b = .18, p = .02); the more optimistic employees are about the use of technology the more they have positive attitudes towards the company's future success in the market. Albeit marginally significant, innovativeness had a positive effect on attitudes toward future success in the market (b = .10, p = .08), suggesting the more innovative a firm is the more positive attitudes employees have regarding the firm's future success in the market.

Table 17: Effect of crisis management on Attitudes toward a firm's future success in the market at a high and a low level of technology adoption

Technology adoption	Effect	SE	t	p	LLCI	ULCI
Low Level	.034	.032	1.06	.29	-.029	.098
High Level	.13	.036	3.68	.000***	.061	.203

*The output of the moderating effect of technology adoption. Note: *p<.05, **p<.005, ***p<.001*

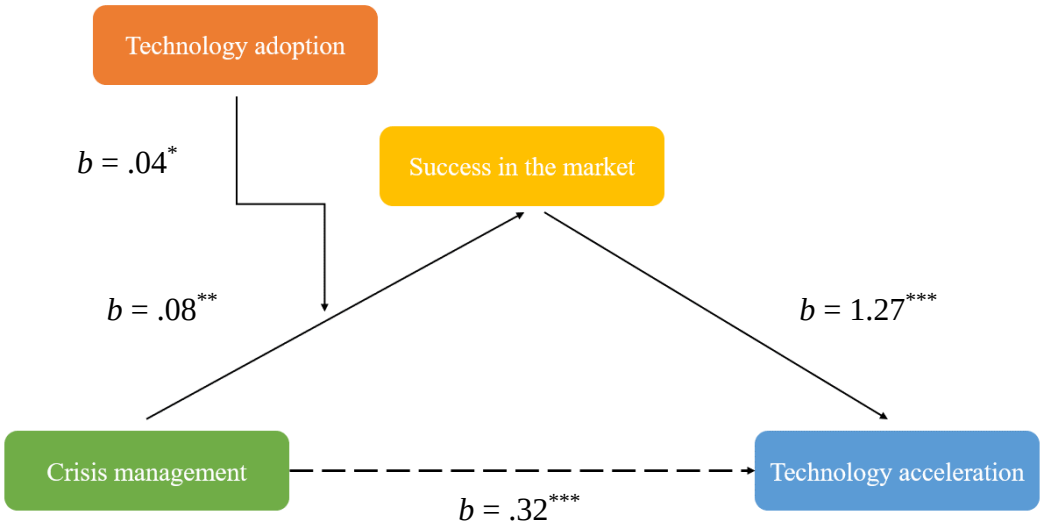
Figure 12 The interaction effect of crisis management and technology adoption on attitudes towrd future success in the market



Additional analysis showed that the indirect effect of crisis management on future acceleration via attitudes toward success in market is significant at a high level of technology adoption (indirect effect = .17, Boot SE = 0.07, 95% CI = .05; .30). At a low level of technology adoption,

however, the indirect effect (Crisis management→Success in market→Digital acceleration) is not significant as the confidence interval includes zero (95% CI = -.02; .14]).

Figure 13: H3b Moderated mediation model



*Note: *p<.05, **p<.005, ***p<.001*

6 DISCUSSION AND CONCLUSION

In this thesis, we aimed to understand how crisis management during COVID-19 pandemic in the accounting business affected the employees' attitudes towards future technology acceleration. Our motivation was that in a business, digitalization may cause a certain level of negativity towards new methods and technology, but it is interesting to see how a crisis such as the COVID-19 pandemic would affect that view. Overall, our study reveals that when the employees experienced good management during the crisis also increased their perception of future technology acceleration. This effect is further mediated by the perception and believe that the company will be successful in the future in the market that is affected by the same experience. An interesting finding was that current technology adoption of a firm has only a conditional effect on the attitudes of the employees toward the current and future actions of the firm. We found that not only a successful management of a crisis by a firm was perceive positively by employees, but the level of technology adoption (high level) augmented this effect. When the current level of technology adoption was high, employees were even more positive towards the future actions of the firm in market and ultimately future adoption of digital technologies.

6.1 DISCUSSION

By addressing the links between crisis management and the attitudes towards the future performance of the company, we offer insight for how crisis management and unforeseen situations can be a utilized for the future of an accounting business. Our results revealed a model that might contribute to the understanding of crisis management and technological adoption in the accounting business. Firstly, we were able to highlight the relationship between crises, the management of such crises and how it will affect the view of the future related to those changes the crisis initiated. The crisis management in our thesis is focused on the digitization of internal processes that COVID-19 pandemic forced upon the businesses, and how it affected the employees' view of future technology acceleration internally and towards the market. We found that the crisis management indeed positively correlates with attitude towards future technology acceleration, both directly, but also as mediated by attitude towards future success in the market. These confirmative results are not generalizable but can nonetheless give indications as to how important crisis management is for the future of a company. It can further contribute to the

understanding of the implications of crisis management. Although our thesis does not cover the preparedness of the business and the effects of such, we can suggest that when crisis management is satisfactory, the employees will have a more positive attitude towards the technological change in the future and how this can increase success in the market. This is in line with previous research by Hanelt et. al. (2021), who states that a societal situation like the COVID-19 pandemic emphasizes the vulnerability of digital technology and how such accelerating situations can work as a driver for future and lasting changes in technology within the business. Thus, we further speculate that the preparedness of a business on unforeseen situations will have an indirect effect on future performance should such situation arise. This is an important notion that should be considered by business management in light of cost-benefit analysis.

Secondly, our research included the constructs optimism, innovativeness, discomfort and insecurity, all personality traits from the Technology Readiness Index (TRI), to control for other factors that may contribute to such situations as our research discusses. Our initial thought was that these traits would influence how the employees perceive the future technology acceleration in accordance with the TRI research. For instance, TRI research suggests that optimism generally contributes to a positive attitude towards technology, while insecurity introduces inhibiting attitudes (Walczuch et al., 2007). As such, our theory was that these traits could have an impact on the relationship between crisis management and attitude towards future technology and success. The Norwegian society generally trust the government and the and thus their decisions concerning the national handling of the pandemic. As the constructs optimism and innovation had significant correlations in our model, we speculate that the general trust of the decision to initiate social distancing and lock-down causes a collective feeling of working towards a common purpose, which again results in a positive attitude towards technology adoption. However, our research suggests that the inhibiting traits such as discomfort and insecurity that in normal situations would have negative effects, may in crisis situations be neglected. We suggest that in crisis such as the COVID-19 pandemic, the management is required to take actions that not necessarily otherwise would be taken, and further creates a situation that motivates the employees to ignore the inhibiting traits.

Thirdly, the significant correlation between crisis management an attitude towards future success in the market suggests that not only will the crisis management of the company in terms of technological advancement affect how their attitude towards the technological aspects of the

future, but also how the employees see the future performance in terms of competitiveness and performance. This implies that the experiences from the management of the pandemic indeed will positively affect the actual future performance of the company (Schneider et al., 2003). The mediating effect of attitude towards future success in the market suggests that when the employees have a positive experience from the crisis management and believe that this will make them more attractive in the market, they will also have greater belief in technology acceleration. This may increase the understanding of why the employees scoring high on crisis management would believe in future technology acceleration when they might not know how that will affect their workday. It can thus be argued that being prepared and aware of how to handle possible crisis in the future will have a direct effect on the performance in the future, and that it should not be considered only an episodic change, but rather a part of continuous change (Hanelt et al., 2021; Weick & Quinn, 1999).

Finally, research suggested that new technology would meet less resistance if the workplace already enjoyed a relatively high level of current technology adoption (Elias et al., 2012). Our research advocates that the current level of technology adoption indeed strengthens the relationship between crisis management and attitude towards future technology acceleration, but only when the employees rate the current technology adoption level as relatively high. There is no significant moderating effect of technology adoption when employees rate the level low. If we compare this finding with that of TRI and crisis management, one may argue that for the same reason that personality traits are being ignored in crisis situations, the employees will try to adapt to the situation at hand because they know it is needed. The implementation of new systems will still be positively affected by a higher technology adoption, but when current level is low will the employees still work for better solutions.

6.2 LIMITATIONS AND FUTURE RESEARCH

The goal for this thesis was to study how crisis management during COVID-19 pandemic in the accounting business affected the employees' perception of future technology acceleration. Although the thesis offers insight to the crisis management and the attitude towards technology acceleration rate in accounting business, is it not without limitations. In this chapter we will acknowledge these limitations and indicate some possibilities for future research.

The first limitation is that this study is cross-sectional rather than longitudinal, because we do not have any comparable data prior to the COVID-19 outbreak, the collected data is

representing the employees in accounting business view at a given time, without comparison to historical data. An important weakness of primary data collected in the form of a survey is that it makes it challenging to collect data over time, this creates a question about causality. Therefore, we cannot be certain if their perception has changed based on the COVID-19 pandemic or if they had the same view before the crisis. For future research it could be interesting to study the actual digitalization and technology adoption rate in the accounting business prior to COVID-19, during COVID-19 and post COVID-19 to see if the crisis had an impact on the digitalization and technology adoption rate.

Secondly, our research instrument is the case study measured with a survey questionnaire, which is a method that will not be generalizable outside the case itself (Yin, 2018). The study is limited to the factors measured through this survey questionnaire, there might be several other factors and variables that this thesis does not investigate because of limited data and resources.

Third, accounting is a collaboration between the employees and the clients. Our study is limited to the employees' perspective. In our pre-study some respondents commented that the question "*We fully adopt digital artifacts (products or services)"* could be interpreted in different ways, because in some cases the accountants want to fully adopt digital artifacts to increase the collaboration with the clients, but it is not always the case that clients want to do so. This shows that it is possible that the results from the study could have been different if the question was asked differently. The original question was used in other business segments where the use of digital products and services was not dependent on the client's level of digitalization. We think that for accounting business the client's perspective is important to be able to see the whole picture, because of this we see this as an interesting issue to research further.

Fourth, in our thesis we have been using the elements from TRI measuring relevant control variables (Parasuraman, 2000). TRI is as mentioned earlier in this thesis measuring optimism, innovativeness, discomfort and insecurity. It could have been interesting to use previous research on the matter that has presented both personality traits and experiences that contribute to the motivation to change (Lam et al., 2008; Son & Han, 2011; Walczuch et al., 2007).

Finally, during the work with our thesis we also found it interesting to study how this crisis actually has affected the long-term organizational change, attitude and beliefs on digitalization in accounting business. We find that the kind of forced change COVID-19 brought upon companies is an interesting thing to investigate further. It may or may not have been a positive

experience upon employees and clients' attitude toward change. This segmentation of organizational change can be compared to two different responses of crises, described by Müller (1985) as response for short-term for survival and long-term for strategic advantage. The short-term responses are in this context is the sudden digitalization of processes and the episodic change that led to, but what remains to see is if this crisis response changed the attitude in a way that it can move towards a continuous change and strategic advantage (Guo et al., 2020). Additionally, the attitude of the employees is shaped by factors such as own experience and demography, the workplace environment, and others' attitudes (Rice & Aydin, 1991). These aspects might also be relevant in this context. Researching this might contribute to understanding both the short-term and the long-term effect from the COVID-19 pandemic on the changes in the organizations and the attitude towards change among the employees and the clients. This might be interesting both in an organizational and client context in businesses in general, not only for the accounting business.

6.3 CONCLUSION

This thesis offers an understanding the effects the crisis management during COVID-19 had on the technology acceleration in accounting business, and how a company can benefit from the experiences of proper crisis management. The key findings invite to further research on crisis induced change and the implications crisis has on employees´ perceptions of the company for future performance. Moreover, we introduce possible connections between how the employees change their inherent attitudes towards change and technology as a result of a crisis. We conclude that the quality of the crisis management along with the existing technology adoption is strongly linked to the perception of future technology acceleration and market success in the accounting business.

We hope this thesis encourages researchers to study the topics discussed further, and to continue exploring the impact COVID-19 has had on technology acceleration in businesses in general.

7 REFERENCES

209 000 ansatte med avtale om hjemmekontor. (2021). ssb.no. https://www.ssb.no/arbeid-og-lonn/artikler-og-publikasjoner/209-000-ansatte-med-avtale-om-hjemmekontor

Agarwal, R., & Prasad, J. (1999). Are Individual Differences Germane to the Acceptance of New Information Technologies? *Decision Sciences*, *30*(2), 361–391. https://doi.org/10.1111/j.1540-5915.1999.tb01614.x

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411.

Austin, M. J., & Ciaassen, J. (2008). Impact of Organizational Change on Organizational Culture. *Journal of Evidence-Based Social Work*, *5*(1–2), 321–359. https://doi.org/10.1300/J394v05n01_12

Awang, Y., Taib, A., Shuhidan, S. M., Rashid, N., & Hasan, M. S. (2021). Examining Gender Differences on Technology Knowledge and Readiness towards Digitalization of Accounting Profession. *International Journal of Academic Research in Business and Social Sciences*, *11*(10), Pages 473-486. https://doi.org/10.6007/IJARBSS/v11-i10/11337

BarNir, A., Gallaugher, J. M., & Auger, P. (2003). Business process digitization, strategy, and the impact of firm age and size: The case of the magazine publishing industry. *Journal of Business Venturing*, *18*(6), 789–814. https://doi.org/10.1016/S0883-9026(03)00030-2

Calloway, L. J., & Keen, P. G. W. (1996). Organizing for crisis response. *Journal of Information Technology*, *11*, 13–26.

Carmines, E. G., & Zeller, R. A. (1979). *Reliability and Validity Assessment*. SAGE Publications, Inc.

Coombs, W. T., & Laufer, D. (2018). Global Crisis Management – Current Research and Future Directions. *Journal of International Management*, *24*(3), 199–203. https://doi.org/10.1016/j.intman.2017.12.003

Crespo, R. F., & Staveren, I. van. (2011). *Would we have had this crisis if women had been running the financial sector?* https://doi.org/10.1080/20430795.2012.655892

Dehning, B., Richardson, V. J., & Zmud, R. W. (2003). The value relevance of announcements of transformational information technology investments. *MIS Quarterly, 27*(4), 637–656.

Elias, S. M., Smith, W. L., & Barney, C. E. (2012). Age as a moderator of attitude towards technology in the workplace: Work motivation and overall job satisfaction. *Behaviour & Information Technology*, *31*(5), 453–467. https://doi.org/10.1080/0144929X.2010.513419

Fichman, R., Dos Santos, B., & Zheng, Z. (2014). Digital Innovation as a Fundamental and Powerful Concept in the Information Systems Curriculum. *MIS Quarterly*, *38*, 329–353. https://doi.org/10.25300/MISQ/2014/38.2.01

Fu, J., & Mishra, M. (2022). Fintech in the time of COVID−19: Technological adoption during crises. *Journal of Financial Intermediation*, *50*, 100945. https://doi.org/10.1016/j.jfi.2021.100945

George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference* (4th ed.). Allyn & Bacon.

Gherman, M., Molociniuc, M., & Grosu, V. (2021). Digitalization of accounting—Trends and perspectives. *JOURNAL OF INFORMATION SYSTEMS*, *15*, 11.

Guadagnoli, E., & Velicer, W. F. (1988). Relation of sample size to the stability of component patterns. *Psychological Bulletin*, *103*(2), 265–275. https://doi.org/10.1037/0033-2909.103.2.265

Guo, H., Yang, Z., Huang, R., & Guo, A. (2020). The digitalization and public crisis responses of small and medium enterprises: Implications from a COVID-19 survey. *Frontiers of Business Research in China*, *14*(1), 19. https://doi.org/10.1186/s11782-020-00087-1

Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A Systematic Review of the Literature on Digital Transformation: Insights and Implications for Strategy and Organizational Change. *Journal of Management Studies*, *58*(5), 1159–1197. https://doi.org/10.1111/joms.12639

Hayes, A. F. (2013). *Mediation, moderation, and conditional process analysis. Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (1st ed.). Guilford Publications.

Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research*, *50*(1), 1–22.

Henriette, E., Feki, F., & Boughzala, I. (2015). *The Shape of Digital Transformation: A Systematic Literature Review*. Ninth Mediterranean Conference on Information Systems (MCIS), Samos, Greece.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Ignat, V. (2017). Digitalization and the global technology trends. *IOP Conference Series: Materials Science and Engineering*, *227*, 012062. https://doi.org/10.1088/1757-899X/227/1/012062

Jaroensutiyotin, J., Zhongming Wang, Bin Ling, & Yanni Chen. (2019). Change leadership and individual innovative behavior in crisis contexts: An attentional perspective. *Social Behavior & Personality: An International Journal*, *47*(4), 1–12.

Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, *39*(1), 31–36.

Karahanna, E., & Straub, D. W. (1999). The psychological origins of perceived usefulness and ease-of-use. *Information & Management*, *35*(4), 237–250. https://doi.org/10.1016/S0378-7206(98)00096-2

King, N. (1992). Modelling the Innovation Process: An empirical comparison of approaches. *Journal of Occupational & Organizational Psychology*, *65*(2), 89–100.

Kothari, C. R. (2004). *Research Methodology: Methods and techniques* (2nd ed.). New Age International Ltd. Publishers. http://localhost:8080/xmlui/handle/123456789/248

Krosnick, J. A. (1999). Survey research. *Annual Review of Psychology*, *50*(1), 537. https://doi.org/10.1146/annurev.psych.50.1.537

Krosnick, J. A., & Presser. (2009). Question and Questionnaire Design. *Handbook of Survey Research (2nd Edition)*, 81.

Kudyba, S. (2020). COVID-19 and the Acceleration of Digital Transformation and the Future of Work. *Information Systems Management*, *37*(4), 284–287. https://doi.org/10.1080/10580530.2020.1818903

Lam, S. Y., Chiang, J., & Parasuraman, A. (2008). The effects of the dimensions of technology readiness on technology acceptance: An empirical analysis. *Journal of Interactive Marketing*, *22*(4), 19–39. https://doi.org/10.1002/dir.20119

Li, L., Su, F., Zhang, W., & Mao, J.-Y. (2018). Digital Transformation by SME Entrepreneurs: A Capability Perspective. *Information Systems Journal*, *28*, 1129–1157. https://doi.org/10.1111/isj.12153

Loebbecke, C., & Picot, A. (2015). Reflections on societal and business model transformation arising from digitization and big data analytics: A research agenda. *The Journal of Strategic Information Systems*, *24*(3), 149–157. https://doi.org/10.1016/j.jsis.2015.08.002

Lønneid, M. R. (2019, May 12). Regnskapsbransjen er i et paradigmeskifte. *Visma Blogg - om teknologi, regnskap, skatt, lønn, innkjøp, HR*. https://www.visma.no/blogg/spar-digitale-klasseskiller-i-regnskapsbransjen/

Maxwell, A. L., Loxton, N. J., & Hennegan, J. M. (2017). Exposure to food cues moderates the indirect effect of reward sensitivity and external eating via implicit eating expectancies. *Appetite*, *111*, 135–141. https://doi.org/10.1016/j.appet.2016.12.037

Mayring, P. (2021, September 14). *Qualitative Content Analysis: Theoretical Foundation, Basic Procedures and Software Solution*. Social Science Open Access Respository (SSOAR). on, basic procedures and software soluthttps://nbn-resolving.org/urn:nbn:de:0168-ssoar-395173

Morris, M. G., & Venkatesh, V. (2000). Age differences in technology adaption: Implications for a changing work force. *Personnel Psychology*, *53*(2), 375–403. https://doi.org/10.1111/j.1744-6570.2000.tb00206.x

Müller, R. (1985). Corporate crisis management. *Long Range Planning*, *18*(5), 38–48. https://doi.org/10.1016/0024-6301(85)90199-2

Nergaard, K. (2020). *Hjemmekontor og digitale løsninger* (p. 4). FAFO. https://www.fafo.no/images/pub/2020/300420-hjemmekontor-faktaflak.pdf

Okfalisa, O., Anggraini, W., Nawanir, G., Saktioto, S., & Wong, K. Y. (2021). Measuring the effects of different factors influencing on the readiness of SMEs towards digitalization: A multiple perspectives design of decision support system. *Decision Science Letters*, *10*(3), 425–442. https://doi.org/10.5267/j.dsl.2021.1.002

Parasuraman, A. (2000). Technology Readiness Index (TRI): A Multiple-Item Scale to Measure Readiness to Embrace New Technologies. *Journal of Service Research*, *2*(4), 307–320. https://doi.org/10.1177/109467050024001

Parasuraman, A., & Colby, C. L. (2015). An Updated and Streamlined Technology Readiness Index: TRI 2.0. *Journal of Service Research*, *18*(1), 59–74. https://doi.org/10.1177/1094670514539730

Parviainen, P., Jukka, K., Tihinen, M., & Teppola, Susanna. (2017). Tackling the digitalization challenge: How to benefit from digitalization in practice. *IJISPM - International Journal of Information Systems and Project Management*, *5(1)*, 63–77. https://doi.org/10.12821/ijispm050104

Pearson, C. M., & Clair, J. A. (1998). Reframing Crisis Management. *The Academy of Management Review*, *23*(1), 59–76. https://doi.org/10.2307/259099

Phillips, J., Babcock, Rebecca A., & Orbinski, James. (2021). The digital response to COVID-19: Exploring the use of digital technology for information collection, dissemination and social control in a global pandemic. *Journal of Business Continuity & Emergency Planning*, *14*(4), 333–353.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539–569.

Poole, M. S., & Ven, A. H. V. de. (2004). *Handbook of Organizational Change and Innovation*. Oxford University Press.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behaviours Research*, *40*, 879–891.

Regnskap Norge. (2020). *Årsmelding 2020—Regnskap Norge*. Regnskap Norge.

Rice, R. E., & Aydin, C. (1991). Attitudes Toward New Organizational Technology: Network Proximity as a Mechanism for Social Information Processing. *Administrative Science Quarterly*, *36*(2), 219. https://doi.org/10.2307/2393354

Ringdal, K. (2013). *Enhet og mangfold: Samfunnsvitenskapelig forkning og kvantitativ metode* (3rd ed.). Fagbokforlaget.

Schei, V., Sverdrup, T., Sandvik, A., & Tjølsen, Ø. (2016). Undersøkelse av regnskapsbransjen. *NHH Focus*, 16.

Schiavi, G., Momo, F., Maçada, A., & Behr, A. (2020). On the Path to Innovation: Analysis of Accounting Companies› Innovation Capabilities in Digital Technologies. *Review of Business Management*, *22*(2), 381–405. https://doi.org/10.7819/rbgn.v22i2.4051

Schneider, B., Hanges, P. J., Smith, D. B., & Salvaggio, A. N. (2003). Which comes first: Employee attitudes or organizational financial and market performance? *Journal of Applied Psychology*, *88*(5), 836–851. https://doi.org/10.1037/0021-9010.88.5.836

Siuta-Tokarska, B. (2021). SMEs during the COVID-19 Pandemic Crisis. The Sources of Problems, the Effects of Changes, Applied Tools and Management Strategies—The Example of Poland. *Sustainability*, *13*(18), 10185. https://doi.org/10.3390/su131810185

Son, M., & Han, K. (2011). Beyond the technology adoption: Technology readiness effects on post-adoption behavior. *Journal of Business Research*, *64*(11), 1178–1182. https://doi.org/10.1016/j.jbusres.2011.06.019

Soto-Acosta, P. (2020). COVID-19 Pandemic: Shifting Digital Transformation to a High-Speed Gear. *Information Systems Management*, *37*(4), 260–266. https://doi.org/10.1080/10580530.2020.1814461

Spicer, A. (2020). Organizational Culture and COVID-19. *Journal of Management Studies*, *57*(8), 1737–1740. https://doi.org/10.1111/joms.12625

Stolterman, E., & Fors, A. C. (2004). Information Technology and the Good Life. In B. Kaplan, D. P. Truex, D. Wastell, A. T. Wood-Harper, & J. I. DeGross (Eds.), *Information Systems Research* (Vol. 143, pp. 687–692). Springer US. https://doi.org/10.1007/1-4020-8095-6_45

Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. *British Journal of Management*, *14*(3), 207–222. https://doi.org/10.1111/1467-8551.00375

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Qi Dong, J., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research*, *122*, 889–901. https://doi.org/10.1016/j.jbusres.2019.09.022

Walczuch, R., Lemmink, J., & Streukens, S. (2007). The effect of service employees' technology readiness on technology acceptance. *Information & Management*, *44*(2), 206–215. https://doi.org/10.1016/j.im.2006.12.005

Wang, H., Tsui, A. S., & Xin, K. R. (2011). CEO leadership behaviors, organizational performance, and employees' attitudes. *The Leadership Quarterly*, *22*(1), 92–105. https://doi.org/10.1016/j.leaqua.2010.12.009

Watkins, M. W. (2018). Exploratory Factor Analysis: A Guide to Best Practice. *Journal of Black Psychology*, *44*(3), 219–246. https://doi.org/10.1177/0095798418771807

Webster, J., & Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, *26*(2), 13–23.

Weick, K. E., & Quinn, R. E. (1999). Organizational Change and Development. *Annual Review of Psychology*, *50*(1), 361–386. https://doi.org/10.1146/annurev.psych.50.1.361

Yin, R. K. (2018). *Case Study Research and Applications: Design and Methods* (6th ed.). SAGE Publications, Inc.

Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). The New Organizing Logic of Digital Innovation: An Agenda for Information Systems Research. *Information Systems Research*, *21*(4), 724–735. https://doi.org/10.1287/isre.1100.0322

Zoltners, A. A., Sinha, P., Sahay, D., Shastri, A., & Lorimer, S. E. (2021). Practical insights for sales force digitalization success. *Journal of Personal Selling & Sales Management, 41*(2), 87–102. https://doi.org/10.1080/08853134.2021.1908144

8 APPENDICES

8.1 APPENDIX 1: FIRST DRAFT QUESTIONNAIRE

The following is the first draft of the questionnaire based on the studies of Parausuraman (2000) and Guo et. al. (2020)

Descriptive

Questionnaire

Q1	Age	18-24	25-34	35-44	45-54	55+
Q2	Office size; employees	0-10	11-20	21-30	31-40	41+
Q3	Years in accounting business	0-5	6-10	11-15	16-20	21+

Technology readiness index (Parasuraman, 2000)

Readiness

Optimism

		Totally disagree	Partially disagree	Neither agree nor disagree	Partially agree	Totally agree
O1	Technology gives people more control over their daily lives.					
O2	Technology gives you more freedom of mobility.					
O3	Learning about technology can be as rewarding as the technology itself.					
O4	You feel confident that machines will follow through with what you instructed them to do.					
O5	You prefer to use the most advanced technology available.					
O6	Technology makes you more efficient in your occupation.					
O7	You find new technologies to be mentally stimulating.					

Innovativeness

		Totally disagree	Partially disagree	Not sure	Partially agree	Totally agree
IS1	Other people come to you for advice on new technologies.					
IS2	You can usually figure out new high-tech products and services without help from others.					
IS3	You keep up with the latest technological developments in your areas of interest.					
IS4	You enjoy the challenge of figuring out high-tech gadgets.					
IS5	You find you have fewer problems than other people in making technology work for you.					

Discomfort

		Totally disagree	Partially disagree	Neither agree nor disagree	Partially agree	Totally agree
DC1	Sometimes, you think that technology systems are not designed for use by ordinary people.					
DC2	If you buy a high-tech product or service, you prefer to have the basic model over one with a lot of extra features.					
DC3	It is embarrassing when you have trouble with a high-tech gadget while people are watching.					
DC4	There should be caution in replacing important people-tasks with technology because new technology can break down or get disconnected.					
DC5	Many new technologies have health or safety risks that are not discovered until after people have used them.					
DC6	New technology makes it too easy for governments and companies to spy on people.					
DC7	Technology always seems to fail at the worst possible time.					

Insecurity

		Totally disagree	Partially disagree	Neither agree nor disagree	Partially agree	Totally agree
IY1	Whenever something gets automated, you need to check carefully that the machine or computer is not making mistakes.					
IY2	The human touch is very important when doing business with a company.					
IY3	When you call a business, you prefer to talk to a person rather than a machine.					

Digitalization and technology adoption (Guo et. al., 2020)

Digitalization

What is your firm's overall degree of digitalization?

		Totally disagree	Partially disagree	Neither agree nor disagree	Partially agree	Totally agree
DI1	We fully adopt digital business models					
DI2	We fully adopt digital management models					
DI3	We fully adopt digital artifacts (products or services)					
DI4	We fully adopt digital platforms that support digital products and services					
DI4	We fully adopt digital infrastructures, such as technology tools and systems					
DI6	Firm digitalization relies on external purchases					

What is your firm´s degree of digital technology adoption?

		Very High	High	A little high	A little low	low	Very low
T1	Big data technology (such as big database, data analysis technology)						
T2	AI technology (such as machine learning)						
T3	Mobile technology (such as mobile internet, wireless communications)						
T4	Cloud computing technology (such as cloud computing)						
T5	IoT technology (such as network distribution technology)						
T6	Social technology (such as online commerce, instant messaging)						
T7	Platform development technology (such as network platforms						

Crisis management during the pandemic (Guo et. al., 2020)

Crisis response during the pandemic

In face of the pandemic, your firm has taken the following strategies to resume production?

On a scale from 1-10

K1. Adopt online telecommuting
K2. Optimized business models to capture new customer needs
K3. Develop marketing channels and remove dependence of offline transactions

Attitude towards future success in the market (Guo et. al., 2020)

Perception of future successfulness based on the pandemic.

Will your firm change in the following aspects after the pandemic?

		Largely	to a lesser extent	To a small degree
S1	Change in existing product lines			
S2	Change in regional market coverage			
S3	Change in external cooperative relations			

Attitude towards future technology acceleration (Guo et. al., 2020)

Will your firm accelerate its digital transformation after the pandemic?

To what degree do you think your firm will….

On a scale from 1-10

A1. Strengthen the application of online office tasks
A2. Improve the digitalization of supply chain channels
A3. Adopt digital platforms, such as digital communication platforms
A4. Adopt digital infrastructures, such as digital technology systems

8.2 APPENDIX 2: FINAL QUESTIONNAIRE IN NETTSKJEMA

Digitalisering og håndtering av COVID-19 i regnskapsbransjen

Side 1

Obligatoriske felter er merket med stjerne *

Vi setter stor pris på at du vil svare på undersøkelsen vår.

Vi studerer Økonomi og ledelse - siviløkonom - hovedprofil digital ledelse og business analytics ved Høgskolen i Innlandet. Denne undersøkelsen er i forbindelse med vår masteroppgave hvor vi undersøker hvordan forskjellige regnskapskontorer har håndtert koronasituasjonen og den økte digitale tilværelsen som følge av pandemien. Denne undersøkelsen er ment for å være subjektiv, så tanken er at du skal svare utifra egen situasjon og opplevelse.

Undersøkelsen er selvfølgelig helt anonym, det vil ikke være mulig for oss å identifisere deg eller hvilket kontor du jobber på. Resultatene vil kun bli brukt i forbindelse med den statistiske analysen i masteroppgaven, og vil ikke kunne bli benyttet av andre.

Det tar ca 15 minutter å gjennomføre undersøkelsen.

Igjen, tusen takk for hjelpen.

Hilsen Heidi og Katrine

Før vi kommer til spørsmålene vil vi vite litt om deg og kontoret du jobber på.

Alder *

- ○ 18-24
- ○ 25-34
- ○ 35-44
- ○ 45-54
- ○ Eldre enn 54

Antall ansatte på kontoret *

Dersom dere har flere kontorsteder med felles ledelse, tell med alle ansatte.

- ○ 0-10
- ○ 11-20
- ○ 21-30
- ○ 31-40
- ○ Flere enn 40

Antall år i regnskapsbransjen *

Her er vi ute etter din samlede erfaring innenfor bransjen.

- ○ 0-5
- ○ 6-10
- ○ 11-15
- ○ 16-20
- ○ Flere enn 20

Obligatoriske felter er merket med stjerne *

Teknologisk modenhet

I denne delen ønsker vi å få et innblikk i din opplevelse av ny teknologi generelt.

	Helt uenig	Litt uenig	Hverken enig eller uenig	Litt enig	Helt enig
Teknologi gir mennesker mer kontroll over livet *	○	○	○	○	○
Teknologi gir deg mer bevegelsesfrihet *	○	○	○	○	○
Det å lære om teknologi er like givende som teknologien i seg selv. *	○	○	○	○	○
Du føler deg trygg på at maskiner gjør det du ber de om. *	○	○	○	○	○
Du foretrekker å bruke den mest avanserte teknologien som er tilgjengelig. *	○	○	○	○	○
Teknologi gjør deg mer effektiv i jobben din. *	○	○	○	○	○
Du synes teknologi er mentalt stimulerende. *	○	○	○	○	○

Obligatoriske felter er merket med stjerne *

	Helt uenig	Litt uenig	Ikke sikker	Litt enig	Helt enig
Folk kommer til deg for råd om ny teknologi *	○	○	○	○	○
Du kan vanligvis finne ut av høyteknologiske produkter og tjenester uten hjelp fra andre. *	○	○	○	○	○
Du holder tritt med de siste teknologiske innovasjonene innenfor ditt fagfelt *	○	○	○	○	○
Du liker utfordringen med å finne ut av høyteknologiske dingser (gadgets). *	○	○	○	○	○
Du har færre problemer enn andre med å få teknologien til å fungere for deg. *	○	○	○	○	○

Obligatoriske felter er merket med stjerne *

	Helt uenig	Litt uenig	Hverken enig eller uenig	Litt enig	Helt enig
Noen ganger synes du at teknologien ikke er designet for vanlige folk *	○	○	○	○	○
Om du kjøper høyteknologiske produkter eller tjenester, foretrekker du å ha en enkel utgave fremfor en med mye ekstra funksjoner *	○	○	○	○	○
Det er pinlig å ha problemer med høyteknologiske dingser (gadgets) når folk ser på. *	○	○	○	○	○
Man bør være forsiktig med å bytte ut viktige menneskelige oppgaver med teknologi, fordi ny teknologi kan få sammenbrudd eller bli frakoblet. *	○	○	○	○	○
Mye ny teknologi har risikofaktorer som ikke blir oppdaget før folk har brukt dem. *	○	○	○	○	○
Ny teknologi gjør det enkelt for myndighetene og selskaper å spionere på folk. *	○	○	○	○	○
Teknologi ser alltid ut til å feile på verst tenkelige tidspunkt. *	○	○	○	○	○

Obligatoriske felter er merket med stjerne *

	Helt uenig	Litt uenig	Hverken enig eller uenig	Litt enig	Helt enig
Når noe blir automatisert, må du sjekke at maskinen ikke gjør feil. *	○	○	○	○	○
Det menneskelige aspektet er veldig viktig når du samhandler med selskaper. *	○	○	○	○	○
Når du ringer til en bedrift, foretrekker du å snakke med et menneske fremfor en maskin. *	○	○	○	○	○

Obligatoriske felter er merket med stjerne *

Digitalisering

I følgende seksjon er vi interessert i din opplevelse av din arbeidhverdag, ikke hva du tror ledelsens strategi er for øyeblikket eller for framtiden. Hovedfokuset er på den digitale hverdagen og hvordan du opplever tilretteleggingen og status på digitaliseringen på ditt kontor.

Hva mener du er din bedrifts grad av digitalisering?

Her er vi interessert i hvor langt du mener bedriften har kommet i digitaliseringen generelt.

VÆR OPPMERKSOM PÅ REKKEFØLGEN PÅ SVARALTERNATIVENE

	Helt enig	Litt enig	Ikke sikker	Litt uenig	Helt uenig
Alle våre produkter og tjenester er digitale *	○	○	○	○	○
Oversikt over bedriftens nåværende situasjon mtp. salg, HR, lønn o.l. er digital og visualisert i digitale verktøy *	○	○	○	○	○
Vi tar fullstendig i bruk digitale artefakter (produkter og tjenester) *	○	○	○	○	○
Vi tar fullstendig i bruk digitale plattformer som støtter digitale produkter og tjenester *	○	○	○	○	○
Vi tar fullstendig i bruk digital infrastruktur, som teknologiske verktøy og systemer for kommunikasjon, samarbeid, informasjonsflyt o.l. *	○	○	○	○	○
Selskapets digitalisering avhenger av eksterne leverandører og konsulenter *	○	○	○	○	○

Hva er din oppfatning av din bedrifts grad av teknologisk adopsjon?

Med teknologisk adopsjon sikter vi til hvilke nye teknologiske virkemidler dere har tatt i bruk og i hvilken grad dere benytter det.

Begrepsavklaring:

AI teknologi: Maskinlæring kan f.eks være at regnskapssystemet ditt "lærer" og foreslår kontering ut i fra historikken.

Skybasert teknologi: Her spørres det om dere lagrer og prosseserer data i skyen fremfor på lokale installasjoner.

IoT: Benytter dere programmer som snakker sammen gjennom internett? Snakker f.eks kvalitetssikringssystemet deres med regnskapssystemet?

Sosial teknologi: Benytter dere f.eks. Teams eller lignende teknologi som kommunikasjonsplattform internt og/eller eksternt?

Plattformutviklingsteknologi: Utvikler din bedrift egne plattformer?

	Veldig høy	Høy	Litt Høy	Ikke sikker	Litt lav	Lav	Veldig lav
Adopsjon av store databaser med mye mengder informasjon og data analyse teknologi) *	○	○	○	○	○	○	○
Adopsjon av AI teknologi (som maskinlæring) *	○	○	○	○	○	○	○
Adopsjon av mobilt internett og trådløs kommunikasjon *	○	○	○	○	○	○	○
Adopsjon av skybasert teknologi (som lagring og prosessering av data i sky) *	○	○	○	○	○	○	○
Adopsjon av tingenes internett (IoT) (som nettverksdistribusjonsteknologi) *	○	○	○	○	○	○	○
Adopsjon av sosial teknologi (som fjernarbeid og online kommunikasjon) *	○	○	○	○	○	○	○
Adopsjon av plattformutviklingsteknologi (som nettverksplattformer, ny hardware, utvikling av produksjonssystemer) *	○	○	○	○	○	○	○

Obligatoriske felter er merket med stjerne *

Strategi for kriserespons

I følgende seksjon er vi interessert i å vite hva du mener om responsen ditt kontor har gitt til pandemien, om de har tilrettelagt tilstrekkelig på forskjellige områder. Det er basert på dine opplevelser som ansatt og ikke hva som var forventet.

Som følge av pandemien, i hvilken grad mener du bedriften din har tatt følgende grep for å gjenoppta tjenesteproduksjonen:

Innført digitalt hjemmekontor *

I hvilken grad har din bedrift tilrettelagt for og benyttet seg av hjemmekontor under pandemien?

1 - I svært liten grad

....

10 - I svært stor grad

Verdi

Optimalisert forretningsmodeller for å fange opp nye kundebehov. *

I hvilken grad har dere gjort endringer i måten dere jobber på for å tilpasse dere situasjonen?

Eksempler:
Tilby andre/nye tjenester til kundene enn før pandemien, hjulpet selskaper med kompensasjonsordningen selv om de ikke var kunder fra før

1 - I svært liten grad

....

10 - I svært stor grad

Verdi

Utviklet markedsføringskanaler og fjernet avhengigheten av offline transaksjoner *

Her er vi ute etter å finne ut i hvilken grad du mener din bedrift har utviklet markedsføringskanalene, og blitt mer digitale ut i markedet.

1 - I svært liten grad

....

10 - I svært stor grad

Verdi

Obligatoriske felter er merket med stjerne *

Bedriftens digitale utvikling etter pandemien

I denne delen er vi interessert i din oppfatning av hvordan bedriftens utvikling kommer til å være etter pandemien, sett i sammenheng med digitalisering og pandemien. Vi er kun interessert i din opplevelse av situasjonen, ikke hva du tror ledelse eller andres utsikter er.

Vil din bedrift gjøre endringer ved følgende aspekter?

Forklaring

Tror du at:
1: Vil dere tilby andre produkter/tjenester etter pandemien enn før?
2: Vil dere tilby tjenester i andre markeder enn tidligere?
3: Vil dere samarbeide annerledes med kolleger, kunder og leverandører?

	I stor grad	I mindre grad	I liten grad
1.Endre eksisterende produktlinjer *	○	○	○
2.Endre regional markedsdekning *	○	○	○
3.Endre eksisterende samarbeidsforhold *	○	○	○

I hvilken grad tror du at din bedrift vil....

Øke mengden av nettbaserte kontoroppgaver *

Eksempler:
Samhandling mellom kolleger blir mer digital
Interne møter blir oftere avholdt digitalt

1 - I svært liten grad

....

10 - I svært stor grad

Verdi

Forbedre digitaliseringen i forsyningskjeden *

Med forsyningskjeden menes alt som har med utarbeidelse og distribusjon av produkter og tjenester.

Eksempel:

1 - I svært liten grad

....

10 - I svært stor grad

Verdi

Innføre digitale plattformer, som digitale kommunikasjonsplattformer *

Eksempel:
Nye plattformer for kontakt med kunder, leverandører og medarbeidere

1 - I svært liten grad

....

10 - I svært stor grad

Verdi

Innføre digital infrastruktur, som digitale teknologisystemer *

Eksempel:
Nye systemer for styrearbeid
Nye systemer for samarbeid
Nye systemer for regnskapsføring, kvalitetskontroll, timeføring,osv.

1 - I svært liten grad

....

10 - I svært stor grad

Verdi

8.3 APPENDIX 3: EFA AND CFA 1ST RUN

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,720
Bartlett's Test of Sphericity	Approx. Chi-Square	2374,062
	df	703
	Sig.	<,001

	Factor									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
O1		0,74								
O2		0,685								
O3		0,411							0,519	
O4		0,579								
O5		0,632								
O6		0,697								
O7		0,566								
IS1				0,566						
IS2				0,86						
IS3				0,629						
IS4				0,665						
IS5				0,747						
DC1										0,44
DC2				−0,439						
DC3								0,512		
DC4					0,577					
DC5					0,552					
DC6					0,707					
DC7										
IY1										
IY2							0,509			
IY3							0,404			
DI1	0,667									
DI2	0,746									
DI3	0,911									
DI4	0,983									
DI5	0,932									
DI6										
T1			0,533							
T2			0,526							
T3			0,814							
T4			0,722							
T5			0,704							
T6			0,736							
T7			0,522							
K1						0,57				
K2						0,918				
K3						0,58				

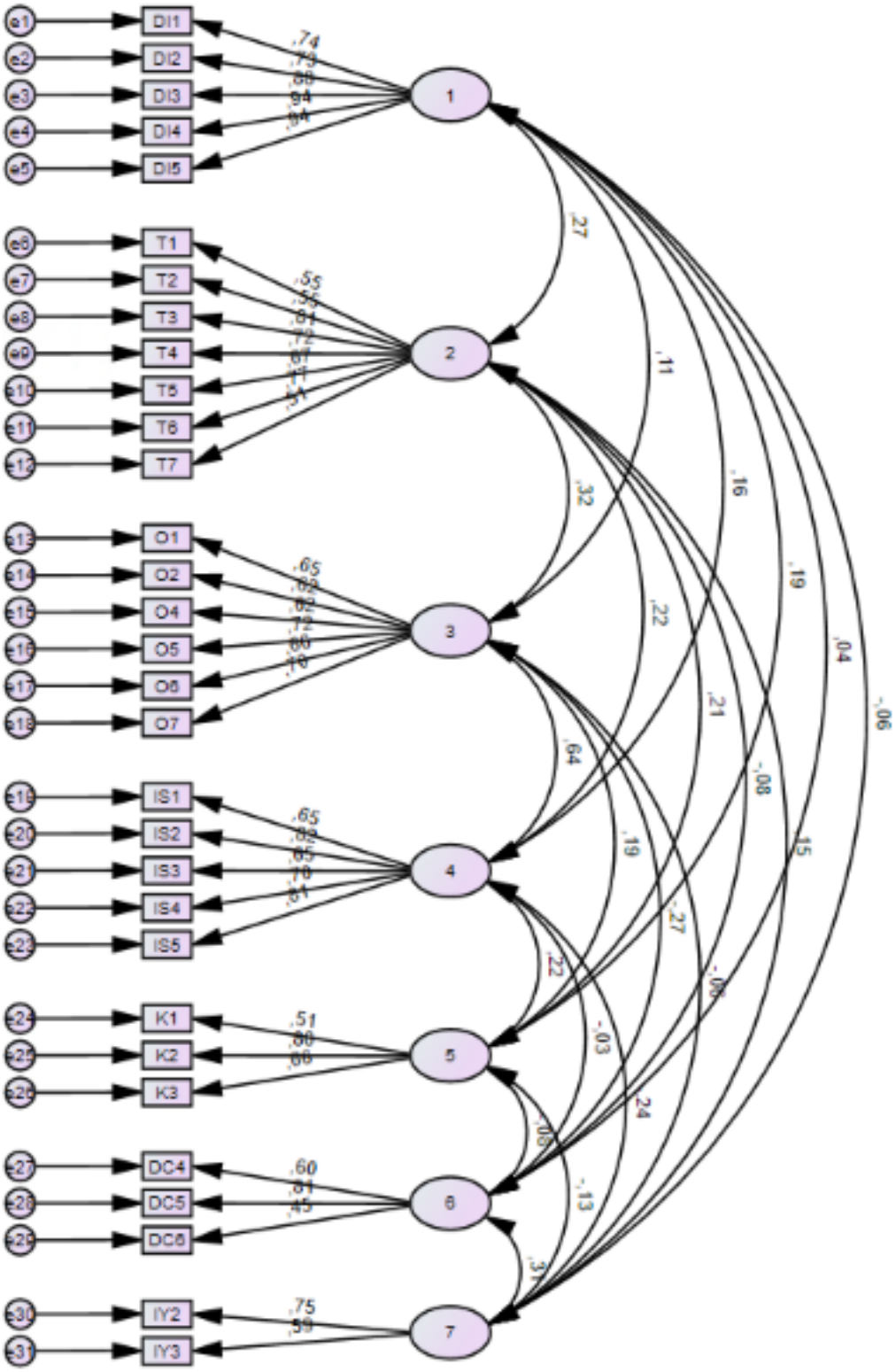
EFA after removing items below threshold

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,745
Bartlett's Test of Sphericity	Approx. Chi-Square	1995,030
	df	465
	Sig.	<,001

EFA - items removed							
	Factor						
	1	2	3	4	5	6	7
O1			0,681				
O2			0,711				
O4			0,565				
O5			0,662				
O6			0,691				
O7			0,603				
IS1				0,595			
IS2				0,903			
IS3				0,617			
IS4				0,596			
IS5				0,757			
DC4						0,666	
DC5						0,652	
DC6						0,585	
IY2							0,514
IY3							0,449
DI1	0,671						
DI2	0,73						
DI3	0,884						
DI4	0,96						
DI5	0,96						
T1		0,636					
T2		0,606					
T3		0,746					
T4		0,642					
T5		0,699					
T6		0,697					
T7		0,538					
K1					0,514		
K2					0,831		
K3					0,643		

CFA in SPSS AMOS



Model Fit Measures

Measure	Estimate	Threshold	Interpretation
CMIN	609,658	--	--
DF	413,000	--	--
CMIN/DF	1,476	Between 1 and 3	Excellent
CFI	0,885	>0.95	Terrible
SRMR	0,077	<0.08	Excellent
RMSEA	0,061	<0.06	Acceptable
PClose	0,049	>0.05	Acceptable

8.4 APPENDIX 4: EFA AND CFA 2ND RUN

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,742
Bartlett's Test of Sphericity	Approx. Chi-Square	1614,305
	df	496
	Sig.	<,001

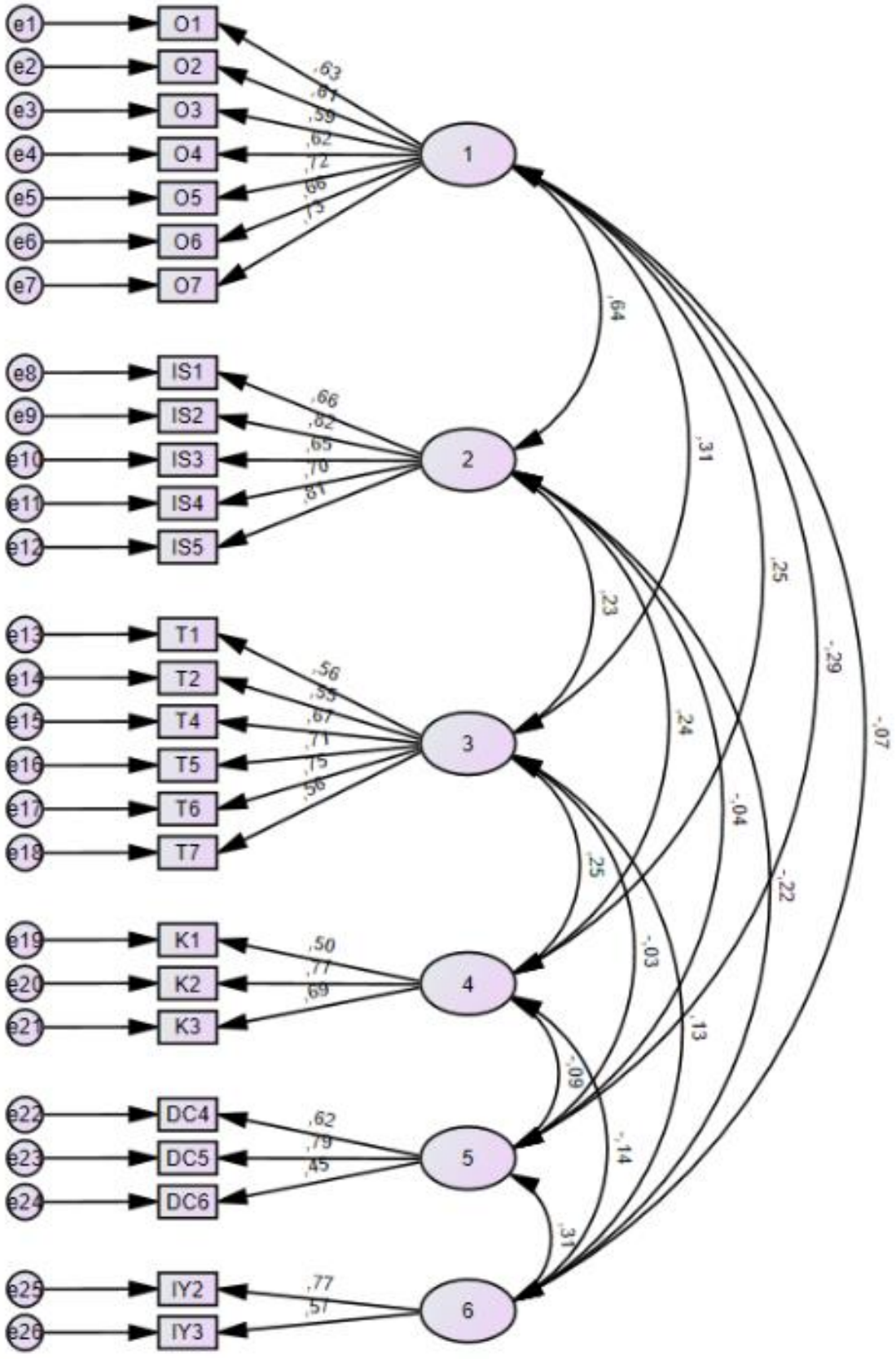
EFA									
	Factor								
	1	2	3	4	5	6	7	8	9
O1	0,689								
O2	0,678								
O3	0,466								
O4	0,54								
O5	0,627								
O6	0,612								
O7	0,735								
IS1			0,622						
IS2			0,839						
IS3			0,634						
IS4			0,561						
IS5			0,765						
DC1							0,507		
DC2								0,628	
DC3							0,472		
DC4				0,645					
DC5				0,655					
DC6				0,591					
DC7									
IY1									
IY2						0,407			
IY3						1,033			
T1		0,546							
T2		0,502							
T3		0,791							−0,499
T4		0,704							
T5		0,747							
T6		0,775							
T7		0,521							
K1					0,457				
K2					1,037				
K3					0,519				

EFA after removing those below threshold

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,771
Bartlett's Test of Sphericity	Approx. Chi-Square	1244,238
	df	325
	Sig.	<,001

EFA 2						
	Factor					
	1	2	3	4	5	6
O1	0,657					
O2	0,728					
O3	0,475					
O4	0,571					
O5	0,66					
O6	0,678					
O7	0,654					
IS1		0,588				
IS2		0,898				
IS3		0,665				
IS4		0,551				
IS5		0,742				
DC4					0,671	
DC5					0,656	
DC6					0,505	
IY2						0,5
IY3						0,484
T1			0,605			
T2			0,585			
T4			0,622			
T5			0,749			
T6			0,723			
T7			0,538			
K1				0,534		
K2				0,882		
K3				0,569		


e1
e2
e3
e4
e5
e6
e7
O1
O2
O3
O4
O5
O6
O7
,63
,67
,59
,62
,72
,66
,73
1
e8
e9
e10
e11
e12
IS1
IS2
IS3
IS4
IS5
,66
,62
,65
,70
,81
2
e13
e14
e15
e16
e17
e18
T1
T2
T4
T5
T6
T7
,56
,55
,67
,71
,75
,56
3
e19
e20
e21
K1
K2
K3
,50
,77
,69
4
e22
e23
e24
DC4
DC5
DC6
,62
,79
,45
5
e25
e26
IY2
IY3
,77
,57
6
,64
,31
,25
-,29
-,07
,23
,24
-,04
-,22
,25
-,03
,13
-,09
-,14
,31

Model Fit Measures

Measure	Estimate	Threshold	Interpretation
CMIN	380,800	--	--
DF	284,000	--	--
CMIN/DF	1,341	Between 1 and 3	Excellent
CFI	0,905	>0.95	Acceptable
SRMR	0,073	<0.08	Excellent
RMSEA	0,051	<0.06	Excellent
PClose	0,432	>0.05	Excellent