

PERCEIVED EFFECTS OF DIGITALIZATION ON ACCOUNTING PROFESSION AND IDENTITY OF ACCOUNTING PROFESSIONALS

A field study in Finnish accounting firms and departments

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Abstract

The accounting function has undergone numerous changes over the years, and future jobs are predicted to be very different from today; as the global megatrend, digitalization disrupts the field of accounting, constantly shaping the industry practices. Several world-renowned scholars (e.g., Frey & Osborne, 2017) have even presented threatening images of how the accounting function could be ruled over by automation and similar revolutionary novel technologies such as artificial intelligence brought about by digitalization. Nevertheless, prior conceptual studies in accounting research do not sufficiently explicate what is happening in the field on a practical level and how the accounting professionals respond to the transformation. Hence, the purpose of this study was to shed light on the practical implications of digitalization in the accounting domain. Three different objectives were set for this study. First, the objective was to build an understanding of how the accounting profession is perceived to be influenced and what the potential implications of digitalization are. Second, the objective was to examine how accounting professionals perceive the changes on attitude level and how they make sense of the phenomenon. Third, the objective was to identify what factors inhibit and promote taking digitalization further in accounting firms.

In the empirical study, the Gioia approach of grounded theory method was applied in combination with qualitative content analysis to conduct an exploratory field study in 14 different accounting firms and accounting departments. A total of 15 semi-structured interviews were conducted with the target group of the study, which included accounting professionals, financial management personnel, and HR managers and specialists. In addition, a literature review was conducted to form a theoretical background from the relevant theories.

The key findings of this study suggest that the transformation process is gradually progressing in the field with the absence of radical changes. Moreover, the role of accounting professionals is expected to grow towards higher expertise and consultancy as novel technologies eliminate mundane routine work allowing accountants to focus on added-value tasks. Regarding their professional identity, technologies are found to have relatively positive effects such as a sense of pride and self-esteem growth. Yet, on the other hand, digitalization may cause identity conflicts, especially for less technologically oriented individuals, whose initial expectations deviate from the future outlook of the profession. Furthermore, it emerges that digitalization could trigger organizational rigidity as cohesive processes may leave less space for creative situational problem-solving.

Keywords digitalization, digital transformation, transformation process, professional identity, relevance of accounting profession

Tekijä Pekka Rauramo

Työn nimi Digitalisaation koetut vaikutukset laskenta-ammattiin ja alan ammattilaisten identiteettiin – Kenttätutkimus suomalaisissa tilitoimistoissa ja yritysten taloushallinnossa

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Tiivistelmä

Vuosien saatossa taloushallinto on käynyt läpi mittavia muutoksia ja digitalisaation murtaessa toimialaa tulevaisuuden näkymien ennustetaan olevan hyvinkin erilaisia kuin tänä päivänä. Useissa aikaisemmissa tutkimuksissa (esim. Frey & Osborne, 2017) on esitetty uhkakuvia siitä, kuinka robotit, automaatio, tekoäly sekä muut mullistavat teknologiat voisivat tulevaisuudessa korvata ihmisen roolin taloushallinnossa. Aikaisempi konseptuaalinen kirjallisuus ei kuitenkaan selitä, mitä muutokset merkitsevät käytännössä ja kuinka laskenta-ammatti niihin reagoi. Näin ollen, tutkimukseni tarkoitus on kaventaa konseptuaalisten tutkimusten kuilua käytännön liike-elämään selventämällä digitalisaation käytännön vaikutuksia taloushallinnon yrityksissä. Tutkimuksen ensimmäinen tavoite on rakentaa ymmärrys siitä, kuinka ilmiö vaikuttaa laskenta-ammattiin. Toiseksi tutkimuksen tavoitteena oli selvittää, miten muutokset vaikuttavat taloushallinnon ammattilaisiin asennetasolla ja millaisia reaktioita muutos heissä aiheuttaa. Kolmantena tavoitteena tutkimukseni pyrkii selvittämään, millaiset tekijät hidastavat ja millaiset edesauttavat digitalisaation kehitystä organisaatioissa.

Tutkimuksen empiirinen osuus toteutettiin kartoittavana kenttätutkimuksena, jossa käytettiin semi-strukturoituja haastatteluja yhteensä 15 ammattilaisen haastatteluun 14 eri organisaatiossa. Tutkimusjoukko koostui laskenta-ammattilaisista, talousjohdon henkilöstöstä, sekä HR-puolen johdosta ja ammattilaisista. Kerätty aineisto analysoitiin hyödyntämällä grounded theoryn Gioia-lähestymistapaa yhdistettynä laadulliseen sisällön analyysiin. Tämän lisäksi tutkimusta täydentää aihealueen relevanteista teorioista koostettu kirjallisuuskatsaus.

Tutkimuksen keskeisten löydösten mukaan digitalisaation ymmärretään etenevän asteittain taloushallintoympäristössä, eikä selkeää digiloikkaa voida havaita. Laskenta-ammattilaisten roolin oletetaan muuttuvan entistä asiantuntevammaksi ja työnkuvan aiempaa konsultatiivisemmaksi uusien teknologioiden eliminoidessa aikaa vieviä rutiinitöitä. Näin ollen laskenta-ammattilaiset voivat keskittyä suurempaa lisäarvoa tuottaviin tehtäviin aiempaa enemmän. Ammatillisen identiteetin osalta teknologioilla havaitaan olevan myönteisiä vaikutuksia, kuten ammatillisen ylpeyden ja itsetunnon kasvua. Toisaalta uudet teknologiat voivat aiheuttaa identiteettiriitoja erityisesti vähemmän teknologiaorientoituneille työntekijöille, joiden alkuperäiset odotukset poikkeavat merkittävästi ammatin tulevaisuuden näkymistä. Käy myös ilmi, että digitalisaation tuoma tehokkuusajattelu voi johtaa organisatoriseen jäykkyyteen yhtenäisten prosessien jättäessä vähemmän tilaa luoville ratkaisuille.

Avainsanat digitalisaatio, digitaalinen transformaatio, muutosprosessi, ammatti-identiteetti, laskenta-ammattilaisten relevanttius

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Helsinki, 20 November 2021,

Pekka Rauramo

Abbreviations

AI	Artificial intelligence
BT	Blockchain technology
CA	Cognitive automation
CDO	Chief digital officer
CIO	Chief information officer
DT	Digital transformation
ERP	Enterprise resource planning
FA	Financial accountant
IIS	Integrative information system
IT	Information technology
MA	Managerial accountant
RPA	Robotic process automation
SME	Small and medium-sized enterprise

1 INTRODUCTION

1.1 Background and motivation

Digitalization has undoubtedly changed traditional ways of working and it will create new opportunities and threats for companies within all industries (Kane et al., 2017). Specifically, because of its efficiency, it is a megatrend in which companies want to be involved in as the change enables revenue growth, creates opportunities for generating added value and enables the emergence of novel business models (Gartner, 2021; Möller et al., 2020). Efficiency here should be understood in a broad sense: for instance, as cutting costs, improving revenue opportunities through added value, and reduction of human bias. In the context of accounting, looking from a theoretical perspective, the topic has been studied extensively, but the practical implications of digitalization of accounting practices are less known, and a clear research gap has been observed (Möller et al., 2020). Digitalization is a rapidly progressing trend and as evidence of this, the amount of data doubles per every 40 months (in 2012) (McAfee & Brynjolfsson, 2012) and the rate of change has increased even further. Thus, the topic constantly requires new timely information.

For companies' finance functions, digitalization has mostly appeared as the automatization of processes and workflows (Möller et al., 2020). Prior conceptual studies (e.g. Arnaboldi et al., 2017; Bhimani & Willcocks, 2014; Quattrone, 2016) have explored structural and managerial implications on digitalization of accounting. In addition, economic efficiency has been achieved, for example, by taking advantage of technologies that allow processing of giant data sets, use of algorithms and advanced analytics (KPMG, 2017; McKinsey, 2018). As technology races ahead, a multitude of accounting jobs are susceptible to computerization and are estimated to be automated within the near future with a probability higher than 0.90¹ (Frey & Osborne, 2017). But however, the unanswered question is: *what happens to the people inside these transforming organizations?* Hence, my focal point in the research is to

¹ Frey and Osborne studied prospects of more than 700 professions in the US, including several accounting professions. In their study, probabilities fluctuate depending on the specific profession and in the case of some accounting professions, the probability of becoming automatized is as high as 0.98.

explore the implications of digitalization on accounting professionals on a very practical level and shed light on how digitalization and the technologies it has brought could be better implemented in accounting organizations.

The research gap is essential to fill because as a rapidly advancing and evolving disruptive phenomenon, digitalization will broadly reshape the job descriptions and functions of accounting professionals. Therefore, it is vital to identify how organizations can prepare for and adapt to the changes brought about by digitalization and moreover how employees should respond to the change accordingly. In addition, timely information on the phenomenon may aid by reducing the transition friction of both employees and employers.

1.2 Research questions and research objectives

This master's thesis project investigates digitalization's implications on the accounting profession and the professional identity of accounting professionals within accounting firms and accounting departments of real estate companies specialized in financial management. The study has one key research question that folds into three sub-questions as follows:

How does the accounting profession respond to the digitalization of the field?

1. *How is the accounting profession influenced by the digitalization process?*
2. *What factors support or inhibit the transformation of the accounting profession to higher levels of digitalization?*
3. *How do accounting professionals adapt and react to changes caused by digitalization?*

The sub-questions delimit the areas I will examine concerning the key question and, in this study, I will not examine the topic more broadly than by answering the sub-questions. In this study, the research questions guide me towards practical actions. To answer the research questions, research objectives are set as follows:

First, I examine what has changed in the accounting profession due to digitalization. In this thesis, changes in the profession are narrowed to professional identity, skills, roles, and relevance of the profession (presented in Figure 1). Naturally, these aspects may interact with

each other, but the effects of interaction will not be assessed in this study and the study is simplified from reality as I assess the effects of the digitalization process solely on the individual aspects. The aspects I examine in this research are adopted from the following studies: professional identity (Barbour & Lammers, 2015; Brouard et al., 2017), the relevance of the profession (Bhimani & Willcocks, 2014), role and skills (Bhimani & Willcocks, 2014; Kokina et al., 2021; Leitner-Hanetseder et al., 2021). The aim in the examination of professional identities is to explore factors and attributes that may cause shifts in the professional identity of accountants. To capture the potential change factors, I apply Brouard et al.'s (2017) integrative identity formation framework that guides my empirical research and I also utilize Barbour and Lammers' (2015) pre-defined measures to analyze how digitalization affects accountants' professional identity. However, the research is conducted as an inductive field study and therefore is not fully tied to the theoretical framework but broadly follows it. For the rest of the aspects in Figure 1, the study is more straightforward and is not based on any specific framework.

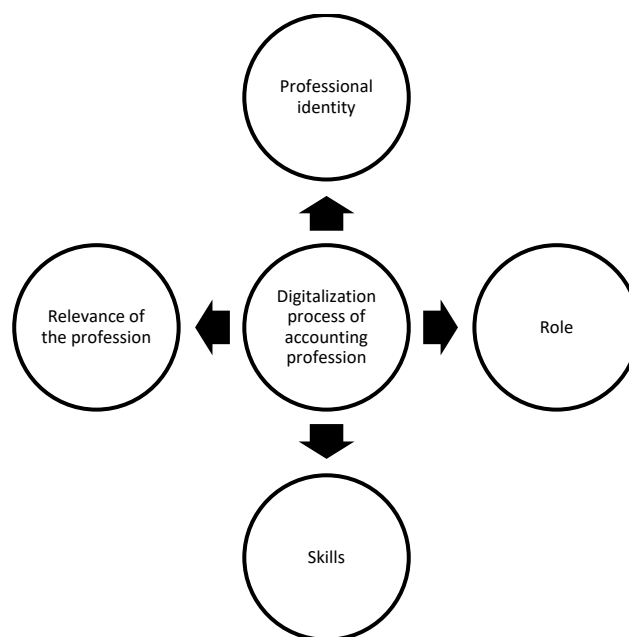


Figure 1 Key aspects for examining the changes in the accounting profession

Second, the objective is to find answers on how to enhance the implementation of novel techniques that enable higher levels of digitalization and to explore factors that may constitute slowness for digitalization of accounting processes or even prevent digitalization. Here, three perspectives are particularly highlighted: a user's perspective, HR's view, and

managerial view, while the first and last objectives place more emphasis on the accounting professional perspective, although the same set of questions is used for each interviewee.

Finally, I examine how accountants react and adapt to the changes. This includes examining how the changes are processed at the attitude level (e.g., resistance or positive attitude towards novel technologies), what kind of feelings do the changes evoke, and how do accountants react to these changes in practice (e.g., by acquiring new skills or considering other career possibilities). In the end, the question is about sensemaking: how the actor understands the situation and forms a response to it (Weick, 1993).

My research contributes by alleviating the research gap between conceptual studies and the practical implications of digitalization in the accounting profession and adding timely information on the topic. The findings of the thesis serve not only academics but also managerial decision-makers by helping to understand the implications of digitalization. Such information can be used to improve the implementation of novel technologies, mitigate ethical problems and perhaps even to enhance employee motivation and commitment. Despite the limitations, this research helps to understand the phenomenon and opens up interesting topics for further research.

1.3 Research data and methods

The empirical research of this thesis was conducted in form of an exploratory field study as a commissioned project for Accountor Finago (a subsidiary of Accountor), a Finnish company that provides financial management software solutions for over 1600 accounting firms and serves over 130 000 companies in Finland, Sweden, Norway, and Denmark. Accountor Finago was considered a suitable company to collaborate with due to its position in the industry as an accounting information systems platform operator. Moreover, through the company, it was possible to contact and interview numerous accounting firms suitable for the project.

Due to relatively scarce information available on the topic, a qualitative research approach was considered to fit the research purpose. Answers to research questions were sought by applying a grounded theory method's approach described by Gioia et al. (2013) in

combination with qualitative content analysis (Denzin & Lincoln, 2018) to data acquired from 15 semi-structured one-on-one interviews with 14 different firms. The technical implementation of the qualitative analysis was conducted using Atlas.ti software, which facilitated the categorization of themes and the management of the research data. In addition to the empirical research, a literature review was conducted to extend the understanding of the research areas and to provide a theoretical basis to which the empirical findings could be reflected. The methods and research process of this study are explained in more detail in the methodology chapter of this thesis.

1.4 Thesis structure

This master's thesis consists of six chapters and follows a conventional master's thesis structure proceeding systematically from the problem definition to the literature review, then to the methodology used to conduct the empirical research, and finally to the presentation of findings, discussion, and conclusions. First, after the introduction, the literature review provides a brief theoretical foundation for my empirical research and a basis on which the empirical results can be reflected. Second, the methodology chapter aims to explain in detail how the research was conducted by explicating the sampling of the study, how the data was collected and analyzed, and as well as what methods were applied. Next, in Chapter 4, I present the findings of the empirical study utilizing Gioia data structures to transparently report findings addressing the set research questions. Then, in Chapter 5, I synthesize the findings and reflect them on previous literature. Finally, the sixth chapter is used to provide concluding remarks of the study, to discuss managerial implications and methodological limitations, as well as other considerations of my study. Lastly, I reflect on how the study could be improved and give suggestions for further research topics.

2 LITERATURE REVIEW

The literature review consists of theories and a selection of studies that explain a) digitalization of accounting function, b) digital capabilities of accounting firms c) accountants' reaction to the transformation and adoption to the change. First, to gain a better understanding of the topic, it is important to explore how accounting is changing due to digitalization and how it affects accountants. Then the next branch of the literature review consists of exploring factors that inhibit the adoption of novel technologies and factors that may promote the acceleration of digitalization in the accounting context. In this part, I examine what is required from the perspective of accounting firms to become digitalized and how digitalization can be accelerated in organizations. In the final branch of the literature review, I explore how accountants react to the changes caused by digitalization. Whereas the first part has an emphasis on what the digitalization process causes to the profession, the latter part is focused on what is the response of accountants.

In the literature review and all the other chapters of this master's thesis, notions of an accountant and an accounting professional refer more to a financial-oriented accounting professional (e.g., a financial accountant, a controller, or a bookkeeper) rather than a managerial accountant. However, a clear distinction is difficult to make as the spectrum of tasks is such diverse, and practices are adopted from both financial accountant (FA) and managerial account (MA) roles, but with the target group of the study being accounting professionals working in financial accounting firms and similar environments, it is a more logical choice to concentrate on the FA function.

2.1 Digitalization of the accounting function

2.1.1 Motivation for digitalization and introduction of digital technologies

According to the two Oxford University scholars (Frey & Osborne, 2017), the accounting function is notoriously susceptible to computerization. Addressing the computerization, I aim to explore the answers to questions of *what* and *why*. In this section of the literature review, I will proceed as follows. First, the concept of digitalization and motivations for digitalization

are briefly explored. Second, this section discusses what kind of novel tools and technologies "computerization" mainly refers to in the context of accounting and what the key benefits of such disruptive innovations are. Moreover, the section discusses key challenges and opportunities in the accounting domain from the perspective of different stakeholders such as employers, employees, and partly society as well. Thus, in this section of the literature review, the emphasis is on motives, emerging technologies, and their expected benefits and possible challenges, whereas the further implications for the accounting profession are discussed in the next section.

In the literature, digitalization is often confused with digitization and digital transformation, and the reader is assumed to understand the terms in the given context. However, digitalization should be understood to lie between these terms, whereas digitization refers to encoding analogical information to digital format and digital transformation (DT) in turn entails more comprehensive organization-level changes brought by digital change and ultimately even profound changes in business and strategy (Knudsen, 2020). The concept of digitalization and the connection between these related terms can be illustrated through Unruh and Kiron's (2017) framework.

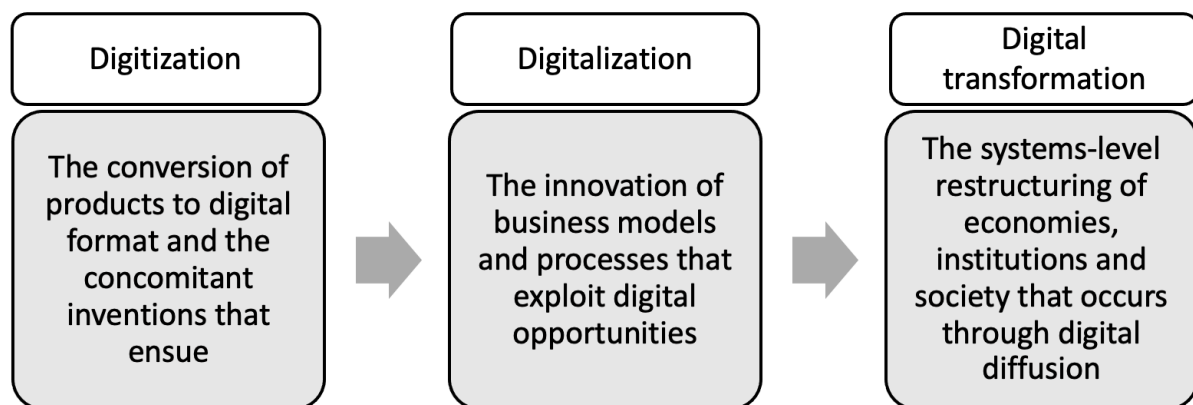


Figure 2 Framework for understanding digitalization (Unruh & Kiron, 2017)

To understand how the accounting profession is influenced by digitalization, I first need to view what might have changed and recognize what drives the changes in the accounting domain. The third wave of technological advancements (Knudsen, 2020) or digitalization is globally a smoking hot topic which often refers to the use of digital technologies to change business models and introduce new value creation opportunities for businesses. According to

Deloitte (2020), digitally mature companies' reported financial performance has been significantly better compared to their less digitally mature peers. Hence, it is no wonder that companies are interested in digitalization. Superior financial performance that is a consequence of positive business impacts of digitally mature firms has been explained by increased cost efficiency, improved quality of both products and services, increased customer satisfaction, revenue growth, and increased employee engagement (Deloitte, 2020). Vial (2019) agrees that organizations achieve organizational performance and operational efficiency in the short and medium-term using digital technologies, but on the other hand, he notes that the use of digital technologies might have unpleasant effects on ethical performance and thus negative impacts on medium to long term performance. The accounting industry is by no means an exception but appears to be even more prone to the change in terms of digital technologies (Bhimani & Willcocks, 2014).

Although there is no exact definition or clear consensus on what digitalization means (Knudsen, 2020; Vial, 2019; Warner & Wäger, 2019), in regard to digital technologies, Leitner-Hanetseder et al. (2021) have synthesized disruptive technologies in accounting as integrated information systems (i.e., ERP systems) (Caglio, 2003; Galani et al., 2010), software robots that enable robotic process automation (RPA) (Cooper et al., 2019; Kokina et al., 2021; PwC, 2017), blockchain technology (Bonsón & Bednárová, 2019; Tiron-Tudor et al., 2021), cloud solutions (Dimitriu & Matei, 2014; Huttunen et al., 2019), artificial intelligence (AI) (Bakarich & O'Brien, 2021; Greenman, 2017; Vetter, 2018) and further intelligent technologies that have changed or will change accounting workflows and processes. Of these digital technologies, AI is expected to have the greatest impact of all, in particular when combined with other existing technologies (Leitner-Hanetseder et al., 2021). From the perspective of accounting firms, Table 1 presents key objectives, expected benefits and challenges, and uncertainties of each presented digital technology².

² The intention is to highlight some of the observations relevant to the accounting profession and accounting tasks, and the table is not to be understood as a fully comprehensive listing of the objectives, benefits, and challenges of the mentioned technologies. For a more detailed literature review on the technologies, refer to the cited articles in the last column of Table 1.

Table 1 Key information of digital technologies for accounting firms

	Objective	Expected benefits	Key challenges for accountants	Sources
Integrated information systems (IIS)	The general objective of IIS is to get the various systems interact and communicate with each other to enhance information flows in organizations.	Enhanced information flow, improved quality of information, reduced costs, linkage with suppliers, reduced response time to customer needs.	Downsizing of accounting departments, loss of monopoly position and declination of the traditional accounting role since ERPs enable accounting literacy to be transferred to non-accountants.	(Caglio, 2003; Galani et al., 2010)
Robotic process automation (RPA)	The main purpose of RPA is to streamline processes by automating rule-based repetitive and mundane work tasks. Hence, RPA has potential to substitute firms' outsourcing activities to some extent.	The expected benefits of RPA can be summarized to cost reduction, error reduction and reduced need outsourcing. RPA enables employees to spend their time on higher value-producing tasks and/or serve more customers without increasing working hours.	Accountants must engage in digital upskilling to train robots and identify automation opportunities. In addition, new security risks emerge, e.g., in the event of 'bad actors' hacking the robots.	(Cooper et al., 2019; Kokina et al., 2021; PwC, 2017)
Blockchain technology (BT)	BT provides secured technology for storing and distributing information. In accounting, implementation of BT means that companies would record their financial transactions to their own ledgers and respectively information would be independently updated to a shared blockchain ledger. Consequently, changes to the ledger would require alteration of each previously created block that makes records immutable.	Use of BT would provide a triple-entry ledger that could replace third party validations. Such technology would improve accounting information quality, transparency, trust, and audibility of accounting information. It would reduce costs, information asymmetry, agency costs, human errors, and frauds.	Organizations increasingly need experienced professionals as entry-level tasks diminish. IT expertise is emphasized, which could create a need for new types of training and an urge to recruit engineers and data scientists. The implementation of BT may also cause a loss of control. Similarly, as in the RPA, one key risk is the threat of cybercrime.	(Bonsón & Bednárová, 2019; Tiron-Tudor et al., 2021)
Cloud solutions	Cloud computing refers to flexible infrastructure and use of off-site shared servers to store, process, and manage	Use of cloud solutions allow accountants to access software and data regardless of physical location and time, services and software can	In addition to regulatory, legal and security issues, for an accountant the threat is that cloud accounting providers	(Dimitriu & Matei, 2014; Huttunen et al., 2019)

	<p>data instead of executing similar actions locally. Consequently, business is performed over the internet and there is no need for computer hardware and software licenses. Furthermore, cloud computing can be deployed to accounting to create cloud accounting solutions.</p>	<p>be scaled to fit the needs of the organization, the use of software on different devices computer (smartphones, tablets, etc.) is possible, organizations do not have to commit resources to high fixed costs (e.g., investments in software that require continuous updating).</p>	<p>could eliminate or reduce the need to hire traditional accountants.</p>	
<p>Artificial intelligence (AI)</p>	<p>AI's objective is to mimic human intelligence to execute even complex assignments. In field of business, AI can support by automating business processes, gaining insights through data analysis, and engaging with customer and employees. More specific objectives are less known, and firms are still in a process of exploring potential implementation opportunities.</p>	<p>AI has potential to reduce labor costs, enhance accuracy and reduce personality conflicts. As technology advances, AI has also potential to substitute human labor.</p>	<p>The implementation of AI is still in the experimental phase and the implications on accounting profession are still somewhat unknown. From the accountants' perspective, the fear is that artificial intelligence will develop to such an extent that it could substitute human labor and ultimately cause job losses.</p>	<p>(Bakarich & O'Brien, 2021; Greenman, 2017; Vetter, 2018)</p>

2.1.2 Effects of digitalization on accounting profession

Here, I explore how the prior literature understands digitalization and particularly AI and RPA to shape the accounting profession and the role of a contemporary accountant. Furthermore, the section discusses views of academics on the characteristics and attributes required in future accounting professions.

In the emergence of novel digital technologies that disrupt accounting practices, work tasks and roles are likely to adapt and thus create new opportunities for actors in the accounting domain (Kokina et al., 2021; Leitner-Hanetseder et al., 2021). Greenman (2017) notes that it

is not a new trend by itself, since accounting has developed constantly over time and the profession today is vastly different from what it was 20 years ago and again after 20 years accountants will presumably play a different role. According to Leitner-Hanetseder et al. (2021) it is not a question of fully automating the accounting work, although some articles may convey such an image (see e.g. Agrawal et al., 2019; Frey & Osborne, 2017), but rather of a natural exit of traditional professions and work shifting to other tasks that accountants can still perform – a trend we have witnessed throughout the history (Acemoglu & Restrepo, 2019). Recent studies in accounting recognize the role of human labor to be more focused on the added value tasks, whereas the use of human labor in non-added value tasks is understood to decrease (Bakarich & O’Brien, 2021; Greenman, 2017; Kokina et al., 2021). However, there is still no consensus among academics on the net effect of AI and other technologies on work³ (Leitner-Hanetseder et al., 2021).

Kokina et al. (2021) conducted a study addressing the robotic automation processes and the impact of digitalization on the role of accountants, where they identified several different roles for future professionals. According to the authors, the first role of an accountant in the development chain is to identify needs and opportunities for the implementation of the new technologies. The second role is to explain and communicate the needs to the IT department responsible for implementing the novel technologies. As a final step in the chain, a stabilizing role can be identified in which the accountant seeks to keep the robots and technologies up to date and sustain the position in technological developments. As an outcome of such digital advancements that free up time by eliminating mundane routine tasks, accountants are provided a completely new role – a role of an analyzer. Instead of solely producing data (i.e., accounting information), in the role of the analyzer, accountants exploit data to find solutions to pressing business problems and to help companies to meet their strategic objectives (Kokina et al., 2021). Thus, accountants are expected to move forward in the value generation pipeline when compared to their previous roles that have focused on generating accounting data rather than business insights (Richins et al., 2017).

³ Here, the net effect on work refers to whether accounting jobs will increase or decrease in volume.

Figure 3 below illustrates the roles identified by Kokina et al. (2021) and clarifies the relationship between them, and as noted, the roles are on two dimensions; the role of the accountant in the RPA process and the role of the Analyzer emerged through the shifts caused by the digital technologies. Besides, the role of an accountant is expected to become more forward-looking instead of being focused mostly on historical data.

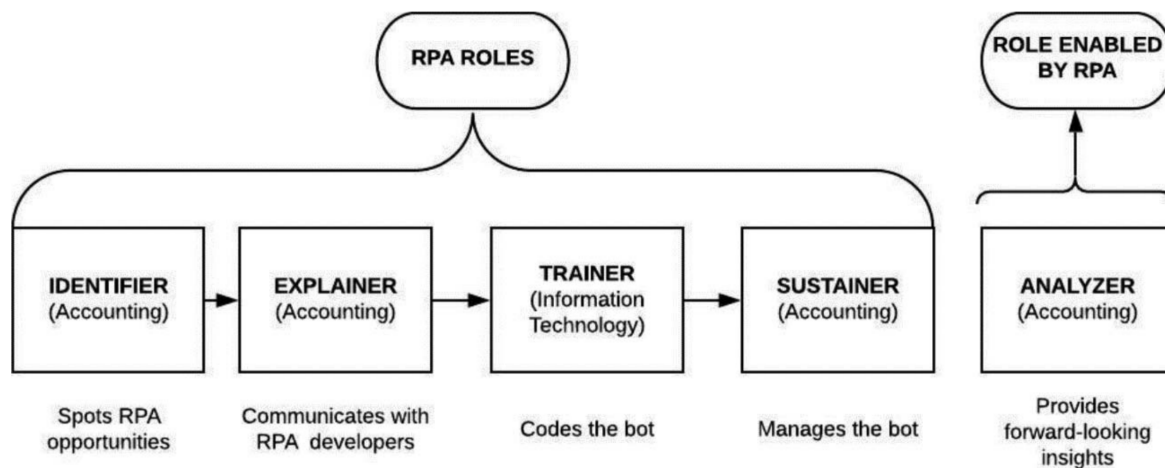


Figure 3 Accountants' role in robotic process automation (Kokina et al., 2021, p. 158)

Leitner-Hanetseder et al.'s (2021) findings on implications of AI-based accounting are consistent with Kokina et al.'s (2021) studies on RPA, as their findings suggest that AI-based technologies will supplement human labor and act as a co-actor. Correspondingly, Leitner-Hanetseder et al. (2021) predict that AI-based technologies will reduce or even eliminate routine work tasks. Furthermore, as an additional human role, the authors understand the training of AI technologies and monitoring to ensure that the technologies work as they are intended to. Consequently, the future accountant job descriptions will emphasize IT skills, networking within both between people and AI, as well as openness, flexibility, and interdisciplinary mindset (Leitner-Hanetseder et al., 2021). On the contrary, Heinzlmann (2018) suggests that at least in the management accounting domain, the extensive use of IT systems could emerge more "dirty work" (routine work and reporting). This conflicts with the ideal notion of an accountant becoming a business partner and does not steer the role towards management support and analysis (Heinzlmann, 2018).

Moreover, the introduction of digital technologies⁴ increases the demand for high-skilled employees (Wright & Schultz, 2018). It is also noteworthy that adaptation is asymmetric and appears to occur more slowly in smaller-sized organizations with scarce resources. However, it is not only a matter of resources but also of compelling pressure because if the old systems and routines are perceived sufficient enough, and there is no pressure from e.g. legislation, customers, or headquarters to evolve practices, the incentives for the transformation are weaker, even when the financial benefits from implementing modern technologies are obvious (Granlund, 2011). Interestingly, Asatiani et al. (2020) find that the asymmetry inside organizations could destabilize workplaces' atmosphere as the implementation of novel technologies is highly task-dependent, and automation does not hit all tasks equally hard. This in turn, can cause increased peer competition when some employees consider being on the winning side, and the others feel that their positions are declining (Asatiani et al., 2020). According to Schmidt et al. (2020), in regard to new technologies, employees act in accordance with the principles of rational decision-making (Kahneman & Tversky, 1979), where perceived value is a function of net benefits of that choice, but still typically people act in their own interest and thus seek to maximize their personal perceived value with the new technologies (Sirdeshmukh et al., 2002).

2.1.3 Framework for professional accountants' identity formation and digitalization as shifting environment

Academics in multidisciplinary fields have presented numerous theories addressing the construction of professional identity. In this section of the literature review, I first go through the definitions of the two key notions of my research: *profession* and *identity*. Second, I explore Brouard et al.'s (2017) identity formation framework presented in Figure 4 which brings together the versatile factors influencing accountant's professional identity and provides a reasonable account of a rather problematic concept.

⁴ Refer to Table 1, "Key information of digital technologies for accounting firms".

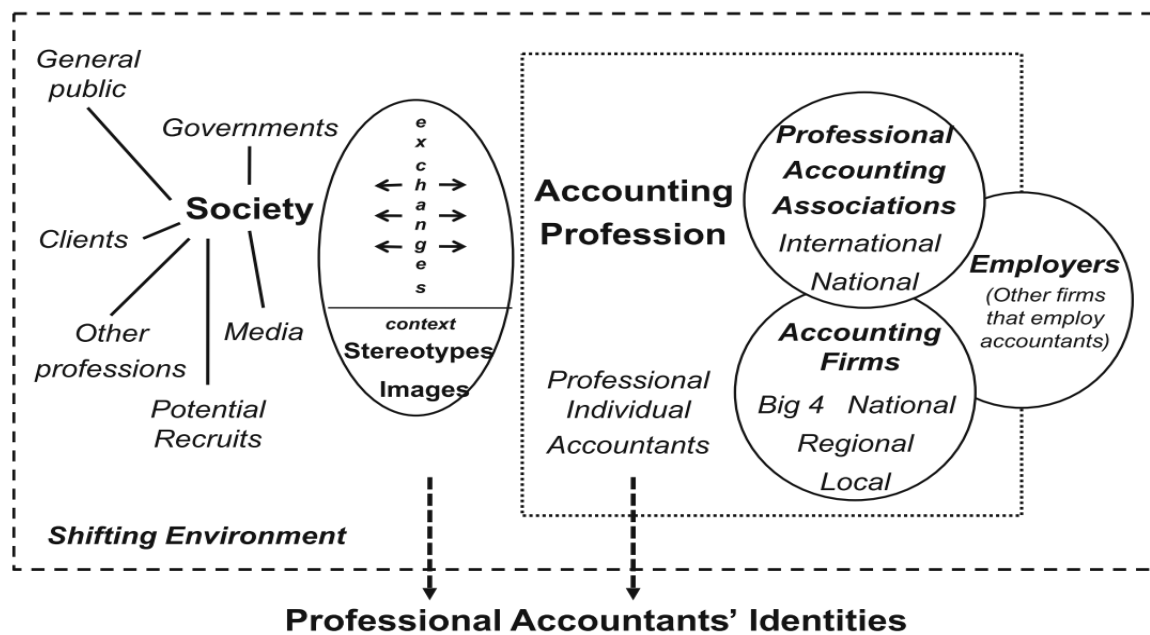


Figure 4 Professional accountants' identity formation (Brouard et al., 2017, p. 226)

Lastly, I explore the relevance of stereotypes and images as they are highly related to Brouard et al.'s (2017) identity formation framework, as they serve as a part of the shifting environment forming a context for the exchange between the society and the accounting profession.

According to Brouard et al. (2017), Carr-Saunders and Wilson (1933), Carter (2007) and Roos (2001) note that professions can be distinguished from other occupations by the traits they require, such as expertise, knowledge, skills, recognition by the public, autonomy on the job as well as authority over clients and competitors. Greenwood (1957), in turn, distinguishes the concept of the profession from other occupations based on a higher quantity of the following attributes the professions possess: a) systematic theory, b) authority, c) community sanction, d) ethical codes, and e) a culture. Whereas in terms of identity, there is an emergent consensus of what identity is (Brown, 2015). Referring to (Cerulo, 1997), Alvesson et al. (2008) see identity as subjective meanings and continuous attempts to find answers through social interactions to the questions 'Who am I?' and 'How should I act?', which also suggests that identity is not a static but a rather dynamic concept. Equally, Brown (2015) understands the notion of identity to refer to the meanings an individual attaches to herself to answer the questions 'How shall I relate to others?', 'What shall I strive to become?' and 'How will I make the basic decisions required to guide my life?'. Professional identity, on the other hand, is positioned in the middle ground of personal identity and work. Barbour and Lammers (2015)

perceive professional identity as one type of identity that is present in workplaces (see e.g. Ashforth et al., 2008; Scott, 1997; Scott & Fontenot, 1999). Besides, professional identity can also be understood as a mean to distinguish professionals from other occupations (Larson, 1977). Furthermore, the notion of professional identity helps us to understand the interaction of work and identity (Barbour & Lammers, 2015).

Exploring the Brouard et al.'s (2017) professional identity formation framework, the following observations can be made. First, the identity of accountants' stems from exchange dynamics between different audiences (presented in Figure 4) and the accounting profession. The authors' model consists of two main poles directly influencing the identities of accountants: society and the accounting profession, where society also has an indirect influence on the identities through its influence on the accounting profession. Furthermore, the accounting profession is influenced by individual accounting professionals and the key stakeholders (e.g., accounting firms, professional accounting associations, and other possible employers). Respectively, the society consists of versatile audiences who have different demands in relation to each other as well as in relation to the accounting profession, although the figure presents the society as a unified whole. Figuratively, the accounting profession engages in an interactive exchange with the society, which is illustrated in Brouard et al.'s (2017) figure below.

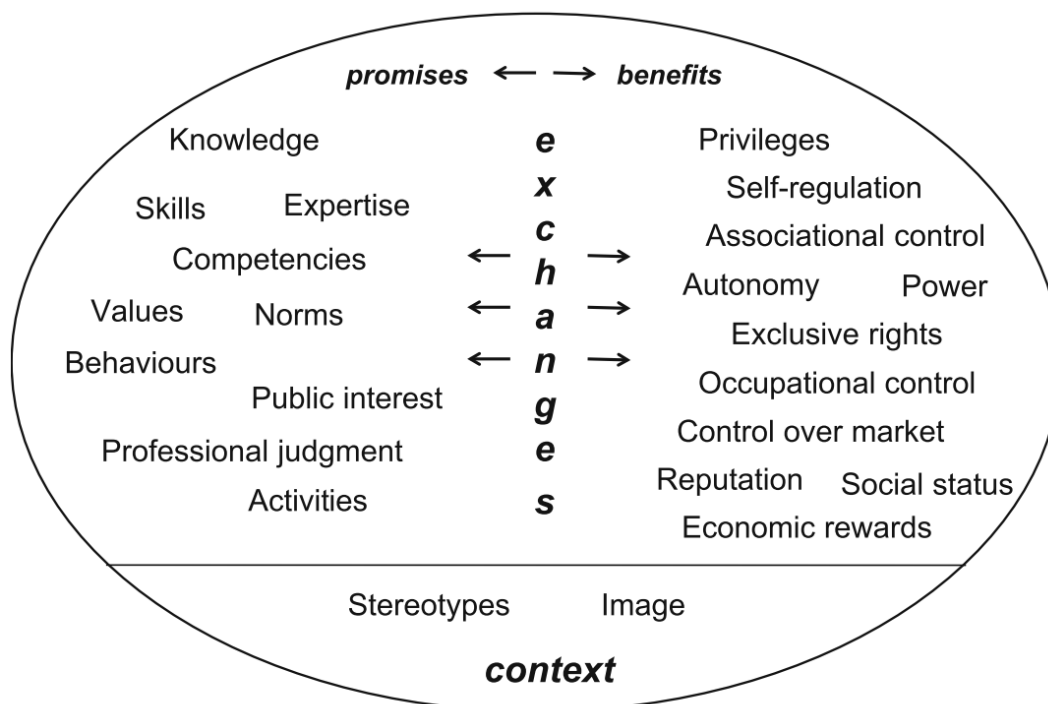


Figure 5 Accounting profession—society exchanges (Brouard et al., 2017, p. 229)

Second, the framework also takes changes in the environment into account, such as legal, social, and economic changes, since they form a factor influencing the professional identity of accounting professionals. In their framework, the changing environment is to be considered as relatively slow changes - not as dramatic events that trigger immediate changes in the industry (refer e.g. to the case of Enron scandal). Based on Suddaby et al.'s study (2007), the environmental shifts can be further categorized into changes in structural boundaries, in ideational boundaries, in identification, and in power. Hence, digitalization as a disruptive trend should be understood as a significant change factor in professional identity formation as it clearly influences several categories of the aforementioned shifts.

Third, Brouard et al. (2017) define images and stereotypes to be part of the shifting environment. In particular, the external images of the accounting profession are considered to be important in a broader social context, as they can determine how talented people the industry attracts and what kind of rights, responsibilities, privileges and trust are attached to the profession (Caglio et al., 2019; Carnegie & Napier, 2010). The public trust and the legitimacy of the profession, shaped by the public's perception of the accountants' education, ethics, and professionalism, are essential from the perspective of appreciation, but ultimately in terms of the existence and survival of the profession (Carnegie & Napier, 2010). Stereotypes in turn can be a useful notion of social identity as they can be used to describe the average or a typical member of a professional in a certain group (Richardson et al., 2014). In the framework, the professional identity is seen to be prone to change as the accounting profession seeks to manage the public held images and stereotypes, which in turn are constantly changing due to contextual and environmental shifts.

2.2 Digital capabilities

This section draws on Vial's (2019) extensive literature review consisting of a review of 282 academic papers to elaborate on what is required from accounting firms to become digitalized and what type of organizational barriers the organizations may face in digital transformation (DT). Furthermore, the affecting factors compiled by Vial (2019) can be divided into two main categories: *structural changes* and *organizational barriers*. Here,

structural changes should be understood more as building blocks, whereas barriers refer to obstacles that need to be overcome. The structural requirements consist of changes in organizational structure, organizational culture, leadership, and employee role and skills, and the inhibiting factors respectively are inertia and resistance. Consequently, for accounting firms, it is vital to overcome the issues and implement sufficient structural changes to enable successful DT processes.

Structural changes

Organizational culture. “Culture eats strategy for breakfast”, Peter Drucker stated. In the era of digitalization, academics emphasize the importance of innovative culture (e.g. Berghaus & Back, 2018; Duerr et al., 2018; Karimi & Walter, 2015; Sebastian et al., 2017). Duerr et al.'s (2018) findings suggest that to engage in DT, organizations should have a culture conducive to it. In the case companies they studied, first, they found the firms with the so-called startup mentality to be more adaptive for the change. Startup mentality is described as a collaborative, customer-oriented and low hierarchy way of working with no unnecessary formalities. In particular, the authors emphasize low hierarchy and equal power relations in which every employee has an opportunity to influence decision-making. Second, they identify the ‘failure culture’, a culture where risk-taking and innovativeness are encouraged, even when there is a risk that new ideas will fail. And third, they argue that firms should embrace digital skills and find people with the right digital skills to entrench and foster digital values in the firms. However, Sebastian et al. (2017) point out that for big old companies, it is a tough process to change the old values and the culture as they are often deeply rooted in the organizations.

Organizational structure. Despite the industry within which firms operate, to meet the challenges of DT, organizations need to transform their structures and thus provide a basis for needed operations (Berghaus & Back, 2016; Matt et al., 2015). A structure conducive to transformation should serve as an enabler of cross-functional collaboration within an organization (Earley, 2014). Matt et al. (2015) suggest two solutions to the reconstruction of the organizational structure depending on the extent of the change: when the changes are not significant, a) integration of new operations into the existing corporate structure and in

case of more substantial changes, b) establishment of a separate subsidiary within the firm. Respectively, based on the literature Vial (2019) presents two situational ways to achieve the objective: establishment of cross-functional teams inside the current organization and creation of separate business units. Moreover, digital infrastructures should help organizations by streamlining work processes, and they can also give firms a competitive edge in digital world, for instance, by attracting talents as the Schumacher Clinical Partners case demonstrates. (Kane, 2017). In the case, the digital infrastructure allowed physicians to devote more of their time serving patients by freeing time they used to spend on other mandatory generally disliked tasks, such as electronic medical records (Kane, 2017). The infrastructure thus created added value and increased the attractiveness of the work. However, as an important consideration, Matt et al. (2015) note that even though financial aspects often are the driving force for the transformation, they also set a bounding force for DT, as transformation is not possible if firms cannot finance the necessary transformation activities.

*Employee role and skills*⁵. As a requirement for a successful digital transformation, as discussed in Section 2.1.2, the role and skills of employees must adapt to DT. Just as Kokina et al. (2021) describe, digitalization and DT projects are not only the responsibility of IT departments, but the professionals outside the IT function must step up and lead the digitalization projects of their functions and communicate how the novel technologies should be utilized.

Leadership. Leadership can be recognized as a key determinant of the result of an IT-enabled transformation (Agarwal et al., 2011). Where employee skills and roles need to adapt to the new demands placed on DT, accordingly leaders of business organizations face great challenges due to rapidly changing leading context and conditions, novel ways of working and communicating, and workforce's ubiquitous access to information (Hesse, 2018). Interestingly, Hesse's (2018) findings suggest that equal access to information and the emergence of digital communication evens power structures and changes hierarchical behavior in organizations. Thus, DT calls for new types of leadership and novel roles for

⁵ Refer to Section 2.1.2

business leaders (Hesse, 2018; Horlacher et al., 2016). Even new roles have emerged to management teams, such as Chief Digital Officer (CDO) to support firms' progress on DT (Horlacher et al., 2016) and ensure that organizations can pursue the needed transformation activities (Berghaus & Back, 2016).

Organizational barriers

Inertia. Vial (2019) argues inertia to be one of the most significant barriers to successful DT. The notion of inertia refers to organizational rigidity and stickiness, status quo bias, slowness of reorganization, and persistence in using incumbent systems and technologies, despite they do not meet the demands of the changing environment (Besson & Rowe, 2012; Hannan & Freeman, 1984; Polites & Karahanna Elena, 2012). Vial (2019) elaborates the significance of inertia with the case of Eastman Kodak Company⁶ (Lucas & Goh, 2009), where the firm failed to adapt to changing times and technologies (i.e. digital photography) resulting in the bankruptcy filing. According to Lucas and Goh (2009) Kodak's collapse can be attributed to rigid core capabilities or core rigidities, as the firm's culture, middle managers, and highly bureaucratic structure inhibited the required fast response to the digital transformation. Importantly, Töytäri et al. (2017) mention that it is not that organizations' top management would not want to engage in DT, but the institutional barriers (i.e., organizational culture, identity, and legitimacy) cause stiffness and hinder the opportunities for change. However, it can be difficult to identify when inertia is detrimental to the business. To elaborate this with a real life example, the existence of QWERTY keyboard layout is largely a product of socio-technical inertia, but nevertheless it is still the most dominant layout in the world (Schmid et al., 2017).

Resistance. The second barrier Vial (2019) highlights in his paper is resistance, or more specifically, resistance to change. In the literature, resistance refers to employees' resistance to change (Matt et al., 2015) due to the pace and ways the novel technologies are introduced into organizations (Vial, 2019). According to Matt et al. (2015), transformation leadership skills are essential for mitigating the resistance and the whole transformation process

⁶ A prior market leader in the photography industry.

requires the active involvement of all stakeholders who are affected by the change. Furthermore, Matt et al. (2015) emphasize the active supportive role of top management throughout the whole transformation process. The global consulting company, McKinsey (2018), in turn, suggests that organizations' senior leaders and CFOs should reconfigure incentives and alter compensation schemes to combat the potential resistance to change. On the other hand, not all resistance can be overcome, as some of the resistance is beyond organizations' influence (Schmid et al., 2017). With this, Schmid et al. (2017) indicate that some of the resistance in organizations is based on inertia that is deeply rooted in multiple facets such as organizational routines – factors that cannot be easily influenced or influenced at all.

2.3 Accountants' reactions and adaption to automation

In this branch of the literature review, I briefly explore how knowledge workers such as accountants have reacted to the digitalization of work and what emotions technologies have evoked. The automation of work among knowledge workers caused by RPA, cognitive automation (CA) and similar technologies is a relatively new phenomenon, and there is a rather limited amount of empirical research data on its implications and particularly on employees' reactions (Asatiani et al., 2020).

In the historical developments, we have witnessed a somewhat corresponding change when the manufacturing automation occurred for manual workers. In the previous developments, in the automation of manual work, plenty of research information can be found regarding the perceptions, reactions, and experiences of employees (see e.g. Argote et al., 1983; Chao & Kozlowski, 1986; Herold et al., 1995), but however, according to Asatiani et al. (2020) the setting in automation concerning the work of contemporary workers is anomalous, since a) now high-skill workers are also exposed to automation, b) contemporary workers have a greater understanding of the robots and technologies compared to their peers in the case of manufactory automation, and c) knowledge workers have witnessed the rapid declination of manual workers caused by automation and thus they are able to better understand the potential consequences of automation (i.e. job losses). Furthermore, Asatiani et al. (2020) note that the preconceptions are strongly affected by discussion of threats (e.g. threatening

unemployment) in the media (Forbes, 2021; The Economist, 2021), scientific publications (Bakarich & O'Brien, 2021; Frey & Osborne, 2017), and business literature may have been rather negative. However, the case study revealed that after the first-hand experiences, the accountants' pre-implementation reactions and perceptions on the automation, besides the typical fears, were curious, even enthusiastic, and significantly more positive than expected based on the pre-reactions (Asatiani et al., 2020). The summary of reactions and the key perceptions of accountants observed in Asatiani et al.'s (2020) study are presented in the two tables below.

Table 2 Positive perceptions of the automation enabling technologies in the accounting domain (Asatiani et al., 2020)

Positive perceptions		
Perception code	Description	Related literature
Upgrading jobs	The informants felt that reduction of mundane and routine-based tasks would lead to more responsible tasks. Thus, human experts could focus on value-added tasks.	(Blaker et al., 2013; Chao & Kozlowski, 1986; Herold et al., 1995)
Evening out peaks in the workload	Accounting is highly seasonal by its nature and there are clear spikes in the workload due to deadlines such as monthly closures. The informants see that advances in technology may allow a more even distribution of the workload.	(Blaker et al., 2013)
Enabling more in-depth analysis of accounting	RPA enables automation of manual work, freeing up time for the accountant to analyze and verify the accounting data.	(Zuboff, 1988)
Reduced errors	Accounting is prone to human errors (e.g., in manual accounting entries) and those errors obviously decrease when the robots take the control.	(Blaker et al., 2013; Herold et al., 1995)

Table 3 Negative perceptions of the automation enabling technologies in the accounting domain (Asatiani et al., 2020)

Negative perceptions		
Perception code	Description	Linked studies
Job security	Although robots were seen as the reason for the development of the work tasks, some informants feared that robots could replace some of the human jobs.	(Blaker et al., 2013; Chao & Kozlowski, 1986; Herold et al., 1995)
Loss of control over work through fragmentation of tasks	The informants worried that their tasks would become fragmented,	(Argote et al., 1983; Gohmann et al., 2005;

	and they would no longer understand the whole processes as the robots would perform some of the tasks and thus their overall understanding could become impaired. Hence, this could cause deskilling of accountants.	Majchrzak & Cotton, 1988; Markus, 1983)
Perplexity of what a “robot” is	The informants did not fully understand how the robots work and how the “rules” could be written in the systems. They were also confused on different types of automation (lightweight IT vs. heavyweight IT).	(Bygstad, 2017)

Similarly, in the case of the implementation of a new financial accounting system, Markus (1983) studied financial accountants’ reactions and found significant resistance towards the change. The resistance was motivated by an expected loss of control, loss of organizational status, and loss of control over the organization’s resources⁷. Even when the technological reforms have the best intentions, the adoption of new technologies may fail completely due to insufficient implementation (Bhattacharjee & Hikmet, 2007; Markus, 1983). To alleviate the potential resistance, Markus (1983) emphasizes early risk identification and quantification as well as open and honest organizational level communication.

2.4 Conclusion of literature review

In the literature review, I examined theories that as such could partially help answer the research questions. First, I presented generically what digitalization means in the context of accounting and why companies should engage in digitalization in the first place. Then I explored what digitalization practically implies for the accounting industry, including, for instance, novel digital technologies shaping the industry practices. Next, I focused on examining the reformation and implications on the roles and skills, and I also presented a framework illustrating the formation of professional identity that supports the understanding of my empirical research. Second, I examined what type of changes the accounting firms need to make to accelerate digitalization and engage in digital transformation and what type of

⁷ Similarly, as in the first row of Table 1 (Caglio, 2003; Galani et al., 2010), accountants perceive the risk of a loss of the monopoly position in accounting data.

barriers there are to digitalization and DT. Finally, as my third sub-research question suggests, I explored the prior literature of how employees have reacted to digitalization and the reforms it has brought, especially in the accounting domain. The theory presented in the literature review serves as a theoretical starting point for my empirical research but does not limit it, as this is inductive research that aims to gain a new understanding of the phenomenon under the study. In addition to the related concepts and the presentation of prior literature, the other purpose of the literature review is to provide a basis for my empirical work on which the findings of my research can be reflected in the discussion chapter of this master’s thesis.

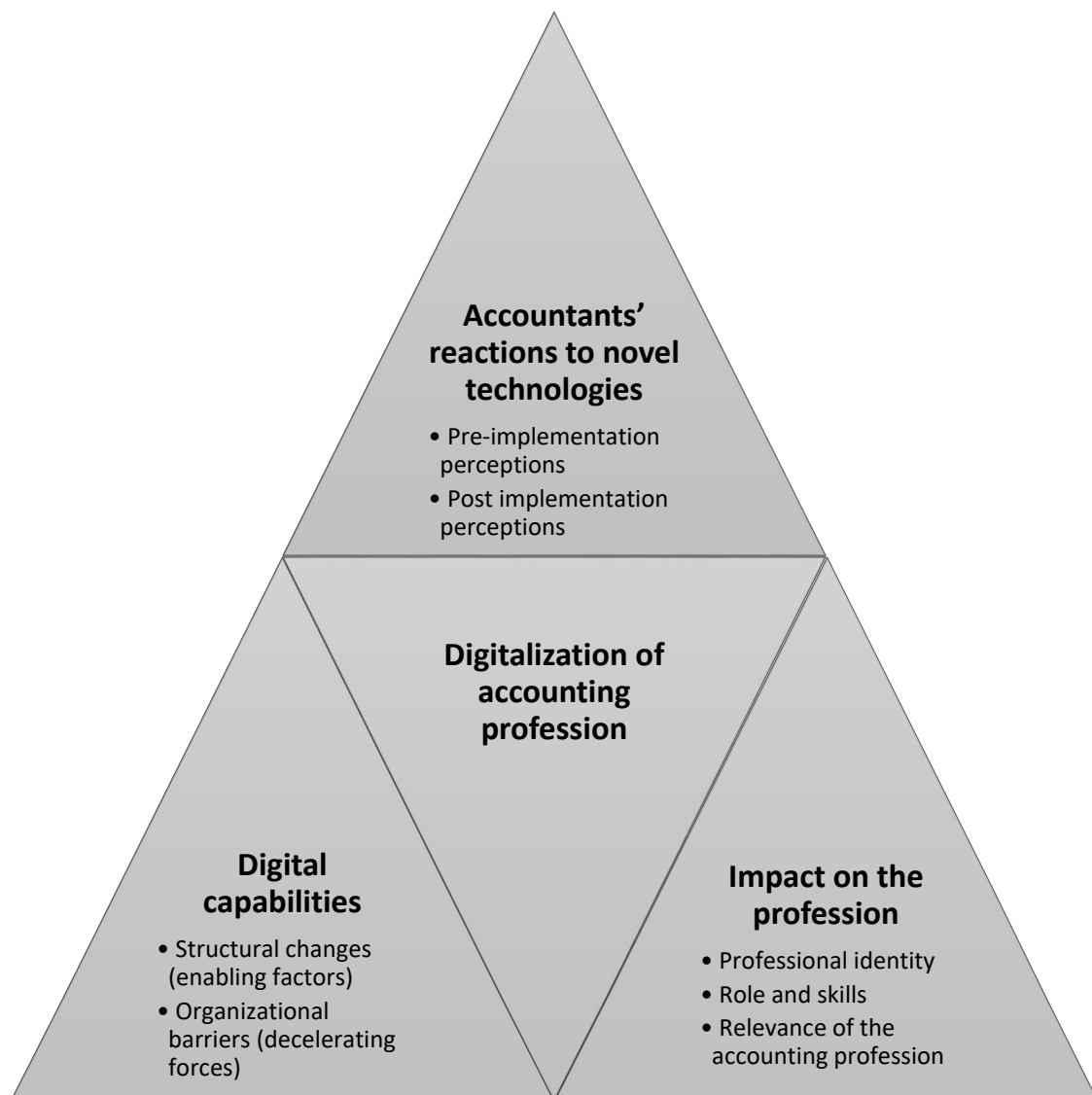


Figure 6 Theoretical concepts of the study

Lastly, to recap the key topics before moving to the methodology part of this study, I have summarized the theoretical concepts and their key notions that I presented in the literature review in Figure 6.

3 METHODOLOGY

3.1 Research method

In the existence of only a modest amount of prior practical research and scarce evidence on the research topic, a qualitative research method was considered justified for this master's thesis (Eisenhardt & Graebner, 2007). The empirical research of the study was conducted as an exploratory field study, where I conducted multiple interviews in accounting firms and accounting departments of real estate companies specialized in financial services for property management. The exploratory field study was seen as a suitable strategy to approach for the study as I examined how a contemporary and evolving phenomenon, digitalization, affects accounting professionals who pursue versatile tasks in different organizations (Eisenhardt & Graebner, 2007). As a main method, I employed the Gioia approach of the grounded theory method (Gioia et al., 2013) in combination with qualitative content analysis (Denzin & Lincoln, 2018). The rationale for applying the Gioia approach was that it allows detection of emerging findings and as well rigorous analysis of the research data so that I, as a researcher, had a rather objective approach to the phenomenon under the study. In particular, the approach was chosen to provide transparent analysis of the empirical research data. Finally, the combination of the methods was considered apt for presenting emerging findings from qualitative data.

In the following sections of this chapter, I will first explicate the sampling of the study, then the data collection methods, and third, I will present information on the Gioia method, explicate how the data analysis was done, and lastly, I will evaluate the trustworthiness of this study. Furthermore, I will present the limitations and considerations related to the chosen approach and methods in the final chapter of this thesis.

3.2 Sample selection

The interviewees were selected in collaboration with Accountor Finago. The initial plan for sample selection was to select two types of companies: digital laggards and digital pioneers. However, quite soon, it was discovered that Accountor Finago's customers had a similar type

of products in use, and therefore, it did not make sense to distinguish between pioneers and laggards. Consequently, this left us with an option to focus on sample consisting of different roles and functions. The main target group for the interviews was obviously accountants, whose changes in the profession and in professional identity were the subject of the research. The research data was acquired from Accountor Finago's client companies and their peers by interviewing accounting professionals and managers who are responsible for accounting functions or responsible for developing financial functions or can otherwise be considered to have an impact on the firms' accounting function. Besides, complementary perspectives were sought from HR departments and other management personnel. In addition to accounting firms, the sample also consists of real estate companies that perform similar accounting tasks internally and for property management. Accounting firms and firms that operate in a similar setting were considered as a justified target group for this research because a) in these environments, the firms focus on very traditional accounting tasks b) the firms' day-to-day accounting practices are comparable as the firms have similar needs in terms of accounting and c) there is a vast amount of tasks in these firms that are estimated to become automated in the near future as digitalization has a significant impact on tasks that require manual labor but demand only little tacit knowledge⁸.

The initial set of interviewees was based on contacts of the representative of Accountor Finago and the author's personal contacts. Then, more prospective interviewees were contacted by employing a snowball sampling strategy (Biernacki & Waldorf, 1981) (i.e., asking if an interviewee knew someone who could also participate in the study). The full list of interviewees is presented in Table 4, which specifies the key information of the interviews and the research sample company demographics in Table 5, respectively⁹. Furthermore, diversity was also sought in the sample selection by selecting companies with versatile business demographics, as Table 5 illustrates. In the next section, I will explain in detail how the interview guide was formulated and how the data collection was done.

⁸ Tacit knowledge is to be understood as information that cannot be communicated, stored, simplified, or formalized like explicit information (Lubit, 2001).

⁹ I have used broad ranges in the table to protect company confidentiality.

Table 4 Overview of the interview data

Interviewee	Industry	Title in the organization	Career length in the organization (years)	Date of the interview
1	Accounting	Accountant	5	28.5.2021
2	Accounting	CEO / Accountant	15	28.5.2021
3	Real estate	Controller	1	3.6.2021
4	Real estate	Controller	26	3.6.2021
5	Accounting	CEO / Accountant	13	4.6.2021
6	Accounting	Head Accountant	8	4.6.2021
7	Accounting	CEO / Accountant	4	7.6.2021
8	Accounting	Accountant	2	9.6.2021
9	Accounting	Senior Advisor	2	11.6.2021
10	Accounting	HR Specialist	9	16.6.2021
11	Real estate	Finance Director	11	16.6.2021
12	Accounting	Head of Services	1	17.6.2021
13	Accounting	Head of People and Culture	8	21.6.2021
14	Real estate	Reporting Development Manager	3	24.6.2021
15	Accounting	Service Director	10	29.6.2021

Table 5 Research sample company demographics

Company	Industry	Number of employees	Sales revenue (€)	Year founded
A	Accounting	100-200	> 10M	1993
B	Accounting	1-10	< 0.2M	2017
C	Accounting	1-10	< 0.1M	2006
D	Real estate	40-50	< 20M	1993
E	Real estate	100-200	< 20M	2008
F	Accounting	10-20	< 1M	2004
G	Accounting	10-20	> 1M	2005
H	Accounting	50-100	> 5M	2007
I	Accounting	10-20	< 1M	1993
J	Real estate	10-20	< 2.5M	1997
K	Accounting	1-10	> 2M	2008
L	Real estate	400-500	< 50M	1988
M	Accounting	300-400	> 25M	1985
N	Accounting	1-10	< 0.1M	2019

3.3 Data collection method

3.3.1 Formulation of the interview guide

The primary source for the empirical study of this qualitative master's thesis was semi-structured interviews. The drafting of the interview guide began in the early stages of the project when I had a moderate picture of the theoretical content of the thesis and a clear research plan covering the entire course of the research project. However, as suggested by Gioia et al. (2013), I did not structure the questions around prior constructs or theories, but the interview questions were constructed around the research questions and multiple interview questions were set to address each research question. In addition, to clarify the process, I coded the questions, so that each code indicates to which research question or area of research (i.e., identity, relevance, role, and skills) the interview question seeks an answer to (see Appendix 1). The design of the interview guide followed an iteration process with the thesis supervisor. The questions were reviewed, modified, and narrowed down, and more suitable questions were invented over several iteration rounds.

Contrary to the traditional Gioia method (Gioia et al., 2013), the questions addressing the professional identity loosely rely on the key measures of Barbour and Lammers' (2015) study, and I also utilized Brouard et al.'s (2017) framework to outline the formation of professional identity in accounting domain, while the other interview questions are solely based on the research questions I have set and do not follow any specific framework. The last version of the interview guide was translated into Finnish, as all interviewees spoke Finnish as their mother tongue, thus ensuring that the interviewees could express themselves in the most natural way and that there would not be any kind of language barriers. In addition, I modified the order of the questions so that the questions at the beginning would be easier and the interview would progress steadily towards more difficult questions. The two versions of the interview guide are presented in Appendix 1 (original body with the coding) and Appendix 2 (translated into Finnish).

Following the iteration process, I started testing the questions in the field. After couple of interviews, I discovered that the questions worked somewhat as they were intended and

there was no need to modify the question body. However, the fundamental idea in the interview guide was to have a clear frame for the interviews to ensure that all the themes were addressed systematically to achieve adequate saturation for each research question. Therefore, I did not blindly follow the interview guide, but I considered each interview session a unique opportunity and asked questions where appropriate and tailored the questions to the context, yet without compromising the neutrality of questions. To elaborate this, interviews with HR staff and accounting staff required a different formulation of the questions, as digitalization directly affects the accountant's work, and HR could only respond from their perspective. In addition, I also asked questions outside the interview guide as refinement questions and follow-up questions whenever I felt necessary.

3.3.2 Data collection

To fulfill the set research goals and to answer the research questions, I conducted 15 semi-structured interviews in total in 14 different organizations located in Finland. The interviews were conducted on a relatively short period, during a period of one month between May 2021 and June 2021. First, the interviewees were contacted via e-mail or phone, after which an interview was arranged in online utilizing meeting software such as Microsoft Teams and Zoom. At this point, the interviewee had a brief idea of the topic but no specific information about the type the of questions I was going to ask to ensure spontaneity of the responses so that the respondent's answers could not be formed in advance. Also, anonymity was promised for all the interviewees so that they could talk without a filter and present their genuine thoughts on the discussed topics and, furthermore, to avoid all kinds of career and legal risks. I asked permission to record the interviews that would allow me to transcribe the interviews afterwards, and I informed the interviewee how the obtained interview data would be processed and used in the study.

Approximately one-hour slot was reserved for each interview, but in most cases, the preplanned questions were already asked in just over half an hour. To create a relaxed and open atmosphere, I always started the interviews with small talk. After that, with the permission granted, I turned on the recording and started going through the interview guide. I treated the interviewees as "knowledgeable agents", as suggested by Gioia et al. (2013) and

took the role of facilitator of the discussion and thus one of my main tasks was to keep the conversation on the right track. If the discussion went too far on desired the topic, I often interrupted by asking a clarifying question or changing the topic of the discussion to the next question. In the following section, I will explicate how the data analysis was made.

3.4 Data analysis

In analyzing the research data, I engaged in a two-phase approach. Like Gioia et al. (2013), I combine grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 1998) and qualitative content analysis (Denzin & Lincoln, 2018). I draw on Gioia et al.'s (2013) doctrines, terminology, and ground assumptions for both phases. In the first phase, which is the data collection and coding, I have followed Gioia et al.'s (2013) guidelines adopted from grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 1998). The first phase focused on generating categories, themes, and finally, concepts from the acquired research data. However, I did not produce new theory as the Gioia method (Gioia et al., 2013) and grounded theory (Glaser & Strauss, 1967; Strauss & Corbin, 1998) presume. Whereas in the latter phase, I examined the constructed themes and concepts by applying qualitative content analysis. In this phase, the objective was to interpret and articulate the meanings of the constructed themes and concepts, thus conveying a holistic understanding of the phenomenon under the study. In the following two paragraphs, I will explain the Gioia method and its aspirations.

The Gioia method (Gioia et al., 2013) is an informant-centric approach to conduct grounded theory. A particular advantage is its systematic and rigorous analysis, which aims to reduce the questionability of the emerging findings (Gioia et al., 2013). Namely, qualitative research has been criticized for the lack of scholarly rigor, as methods, especially in inductive research, have not provided sufficient evidence to justify the emerging findings. The method aims to alleviate the problem by constructing transparent data structures from which an external reader can interpret how the findings are derived from the raw data. According to the method, the researcher should make extraordinary efforts to represent the voices of informants prominently. Hence, data gathering should occur in the early stages of the research without any prior theories or constructs guiding the study. For a successful application, at least the following ground assumptions should be met: (1) the informants are

experts in their field and can explain their actions, intentions, and thoughts. (2) The researcher can identify patterns in the research data and communicate them in theoretical terms (Gioia et al., 2013).

In the data analysis, the information produced by the informants as a starting point, the analysis proceeds level by level towards a more abstract interpretation. First, the 1st order concepts (informant-centric) are derived from the raw data. This is done by classifying the data with codes into their own categories using the informants' own expressions or very similar terms. Next, the 1st order concepts are categorized under theoretical terms formulated by the researcher. This group is called as 2nd order themes. Lastly, where appropriate, the researcher strives to gather the 2nd order concepts under coherent and more abstract dimensions which unite the theoretical pieces. This category goes by the name of aggregate dimensions (Gioia et al., 2013; Glaser & Strauss, 1967; Strauss & Corbin, 1998). Below, I provide a description of how the methods were applied to perform analysis in my study.

After the interviews, almost without exception by the following day at the latest, while I still could remember the content of the interview, I transcribed the recordings. Initially, I ran Microsoft Word's transcription tool in Microsoft 365, after which I manually checked if there were any errors on the generated transcriptions. I then edited the transcriptions to a more readable format by eliminating clutter as I removed extra filler words such as "like," "you know," and other consecutive word repetitions. Similarly, I removed all unrelated conversations and my expressions of agreement. By this procedure, the readability of the transcriptions was significantly improved without compromising the credibility of the interviewees' answers. Next, after all the transcriptions were treated, I exported the transcription documents to Atlas.ti to start the coding and analysis phase.

The coding and analysis were conducted in progressing levels, as suggested by Gioia et al. (2013). Initially, I created a separate project folder for each research question in Atlas.ti, within which I conducted the coding utilizing all the acquired research data. First, I wrote a new descriptive code for each passage that addressed the research questions without limiting the number of codes (open coding). Furthermore, this process was repeated for each research

question, where applicable. Then I constructed the 1st order concepts by revising the codes and checking that the codes matched the content of the passages and combining the codes that were almost identical. Next, these 1st order concepts (informant-centric terms) were merged into wider more theoretical themes, so-called 2nd order themes. The merging was done by figuring a descriptive group for compatible 1st order terms. Finally, the theory-centric themes were distilled into overarching aggregate dimensions. In the findings chapter, I will communicate the constructed data structures, using rich, in-depth, and verbatim descriptions of the informants (Denzin & Lincoln, 2018).

3.5 Trustworthiness of the study

As suggested by Eriksson and Kovalainen (2016), the assessment of reliability and validity of the study is established according to Lincoln and Guba's (1985) parallel concept of trustworthiness. Following the definitions of Lincoln and Guba (1985), the evaluating criteria consist of four measures: (1) "truth value" – confidence in the "truth" in the findings, (2) applicability – demonstrating that the findings have applicability in other contexts or with other subjects, (3) consistency – showing that the findings are consistent and could be repeated with the same (or similar) subjects in the same (or similar) context, and (4) neutrality – a degree of neutrality or the extent to which the subjects shape the findings of a study and not the inquirer's biases, motivations, interests, and perspectives. Next, I will address each measure in turn.

"Truth value"

In Section 1.3, I present the commissioned nature of this thesis project. However, this has a very insignificant effect on the "truth value" of the results as I act as an impartial researcher pursuing a master's degree without any further commitments to the commissioner. The research objective is not directly related to the commissioner. The task was to map the effects of digitalization in the accounting industry and thus provide valuable information to the company. Hence, the study did not concentrate on Accountor's products but on the solutions brought by digitalization in general. The commissioner's role was limited to financially supporting the research and contributing to the acquisition of the interviewees. In this

chapter, I have clarified the choices and the methods I have utilized to conduct the empirical study. In addition, I have documented the research process to the report throughout the study, as Eriksson and Kovalainen (2016) suggest being central to promote confidence in “truth” in reporting. Moreover, I provide a detailed account of the research data without compromising the anonymity of the interviewees and the confidentiality of the sample organizations. Regarding the findings in Chapter 4, I provide rich and verbatim descriptions of respondents to support the findings. Lastly, in Section 6.3, I explain the limitations, shortcomings, and other considerations related to the applied methods and study approach.

Applicability

Typical for qualitative research, due to a small and thus unique sample, the findings of empirical research as such are weakly generalizable. On the other hand, according to some scholars, qualitative research does not aim to provide statistical generalizations (e.g., Vaivio, 2008). In contrast, Eriksson and Kovalainen (2016) suggest that in qualitative research, applicability refers to the researcher's opportunity to comment on the similarities and differences of the results in light of prior research. I consider that I have succeeded in this endeavor, as I was able to compare my results somewhat comprehensively with the themes presented in the theory section (Chapter 2) of this thesis. Such comparison and reflection of similarities and dissimilarities are presented in Chapter 5, where I also synthesize empirical research findings in response to the research questions posed. Consequently, my findings can provide useful theoretical arguments for other contexts as well.

Consistency

To advocate consistency of the research, the study was conducted following general research practices of business and social science research. The research process began with the design of a detailed research plan, which was audited by the peer researchers and the thesis supervisor. This detailed plan guided me throughout the study. Next, following the Gioia approach of grounded theory method (Gioia et al., 2013), the design of the interview guide and data collection were performed at the early stages of the study. The interview guide was carefully designed to be based on my research questions, as shown in the codes in Appendix 1. Simultaneously, and partly afterward of the data gathering, I conducted a literature review to build a comprehensive understanding of the relevant topics. Then, the analysis was

performed applying qualitative content analysis (Denzin & Lincoln, 2018) in combination with the Gioia method (Gioia et al., 2013), and finally, results were reported cohesively and transparently. Obviously, the study was not conducted in a linear process progressing steadily from Chapter 1 to Chapter 6, but rather as an iterative process in which the report was repeatedly refined.

Neutrality

In qualitative research, especially in a setting of one researcher, complete objectivity is impossible to achieve. However, the bias was alleviated by designing a carefully structured interview framework so that the general structure of the questions was the same for everyone, and the questions did not lead the interviewee in one direction or another. In addition, the procedure of recording and transcribing all the interviews made the analysis more objective. In particular, the method in which the data was coded as masses in Atlas.ti was apt in advocating the neutrality of interpretation. As described earlier in this chapter, the findings were then derived transparently and systematically applying the Gioia method (Gioia et al., 2013). In the findings section, I have distinguished my interpretation from the information produced by the respondents, for example, by consistent use of quotations. Thus, it is also convenient for the reader to interpret which quotes support each theme presented. Lastly, the study followed an iterative process, where the thesis supervisor challenged potential inconsistencies at reasonably regular intervals.

4 FINDINGS

The primary aim of my empirical research was to discover how the accounting profession responds to the digitalization of the field. In this chapter, I will present empirical findings utilizing Gioia data structures. Data structures help to justify where the findings are based, as they present the observations that emerged from the data at the first level, thus making it transparent how unified themes and ultimately abstract concepts have emerged from the research data. This chapter is divided into three different categories. First, I will go through the attitudes related to digitalization and views on whether digitalization is perceived more as a threat or an opportunity. Furthermore, I present how digitalization is embraced in organizations and how the novel technologies are implemented. Second, I go through the findings related to how the accounting profession is influenced by digitalization and what digitalization implies in the accounting domain. Third, I discuss the findings on how digitalization could be promoted and the inhibiting factors that prevent the further implementation of novel technologies in accounting firms.

4.1 Attitudes and reactions to digitalization

It is necessary to understand the attitudes and perceptions of respondents on the phenomenon under the study, as they are likely to have an influence on the expressed views of impacts of digitalization. In this section, I will present findings on how the research subjects view digitalization on the attitude level and what type of emotions the phenomenon evokes. First, I present the data structure regarding the attitudes, then more detailed findings in Tables 6 and 7, where I present the respondent's verbatim quotes. As can be interpreted from the data structure in Figure 7, respondents' views are somewhat divided. It is possible to identify two types of mental models: people who consider the phenomenon as a full opportunity without any threat images, as well as people who find the phenomenon more as an opportunity but also identify threats.

1st order concepts

2nd order themes

Aggregate dimensions

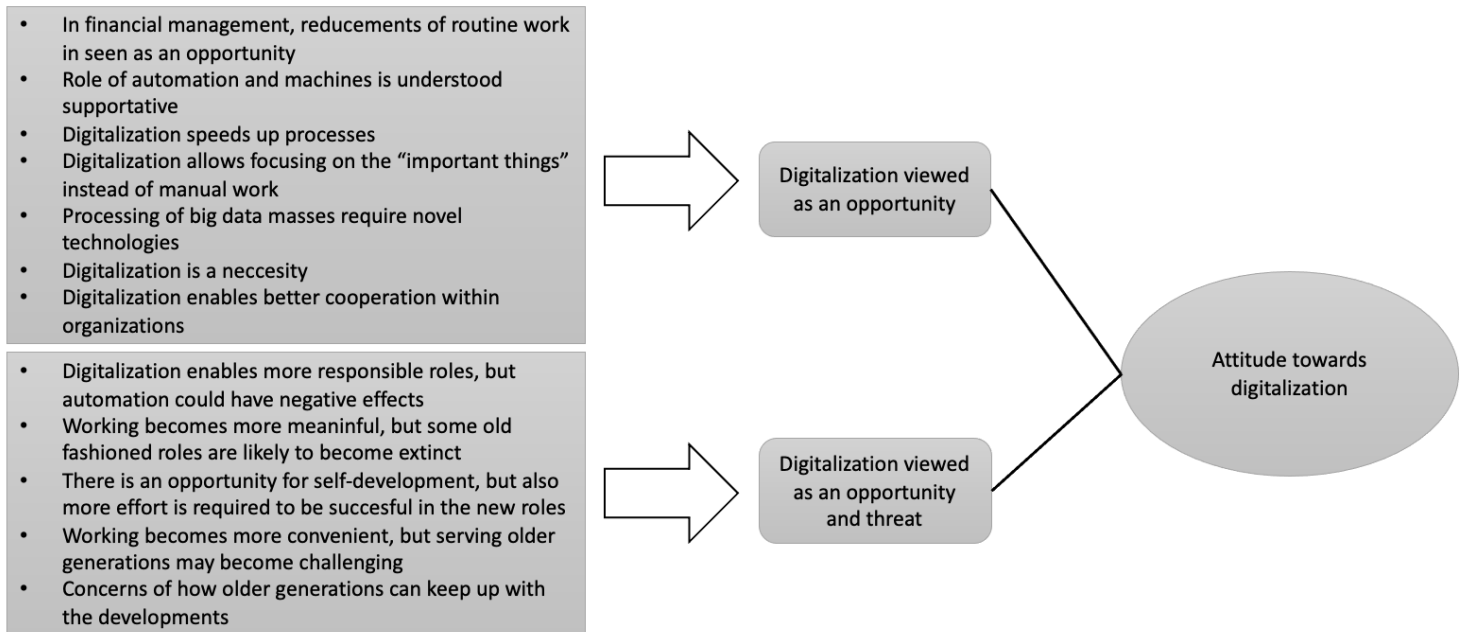


Figure 7 Data structure for attitudes towards digitalizations

Looking at the big picture, the respondents are somewhat positive about the phenomenon and consider it an opportunity because it is seen to upgrade jobs, eliminate mundane routine work, and increase the meaningfulness of work. Moreover, it emerges that in the current phase, which could be described as a tentative phase, accountants' adaption has not required significant efforts, as the changes have been quite gradually advancing. Thus, based on the data, no clear reactions such as a need for sudden re-skilling or a major career change trend are observed. At present, changes are often perceived as pleasant as they increase the convenience of work and develop tasks in the desired direction without posing a direct threat to employees. The training required for change, on the other hand, is both internal and external to the organizations, but the typical model is for the training to be provided by an external party that also delivers the technology or solution. In addition, based on the observations, re-skilling takes place largely informally - through practical work. These views were supported at least by interviewees 8 and 10:

“It mostly comes through practice, and of course we have had some training with service provider X, for instance, on learning how to use financial management system and what all these cloud services are, but for the most part it comes through user experience.” – Interviewee 8, Accountant

“...usually training come from service providers who nowadays have pretty good training when it comes to some new software -- Then there are also different third parties from which different type of training can be purchased, and if necessary, we also train each other internally if someone has more expertise in some area.” – Interviewee 10, HR Specialist

Table 6 Digitalization viewed as an opportunity

Interviewee	Quote
Interviewee 3, Controller	<i>“Well, at least in the case of financial management, that's a really big possibility, because these involve quite a lot of routine work -- but if you can automate it then that's a good thing”</i>
Interviewee 4, Controller	<i>“It's more of an opportunity, quite clearly.”</i>
Interviewee 5, CEO/Accountant	<i>“Absolutely a possibility. I don't think there's any threat in that.”</i>
Interviewee 6, Head Accountant	<i>“I would say it is an opportunity, because it will probably speed up such routine tasks, and the more the machine assists you, the more time there will be for the rest of task as such mechanical work will be left out in the future.”</i>
Interviewee 7, CEO/Accountant	<i>“Well, I think it's a chance as it will make this job a lot easier. -- The most important thing is to understand which solutions are beneficial for your company and work.”</i>
Interviewee 10, HR Specialist	<i>“Well, if I think about this area where our group works, the area of financial management, then digitalization has brought more opportunities than any threats at the moment. The work will then in the future focus more on customer service and consulting instead of manual work.”</i>
Interviewee 11, Finance Director	<i>“It is an opportunity, as we process big data masses. Digitalization helps in that the more data there is in systems, data warehouses, etc., the better we can process and use it in diverse environments. And of course, the data masses need to be analyzed and digital tools aid in that.”</i>
Interviewee 12, Head of Services	<i>“I definitely see it as an opportunity and it's something we've been going through in the organization.”</i>
Interviewee 13, Head of People and Culture	<i>“Above all, it is a necessity, so it is a great opportunity, and we would not be involved in this game in any way if we would not take advantage of digitalization.”</i>
Interviewee 14, Reporting Development Manager	<i>“I naturally see it more as an opportunity. There is an opportunity for all this efficiency that can be achieved, and it also enables better cooperation, within the company on a larger scale globally or less globally.”</i>

Yet, automation and its effects on the employment of low-skill workers emerged as threats. Furthermore, from the managerial perspective, such an efficiency mindset motivated by digitalization and development in general, where the employee is seen primarily as a resource, was recognized as a potential threat. In the third aspect, there was no direct threat but uncertainty about the possibilities of older generations to keep up with developments and the ability of service providers to provide them with appropriate accounting services in the future.

Table 7 Digitalization viewed as an opportunity and threat

Interviewee	Quote
Interviewee 1, Accountant	<i>"I can't really say whether I see it as a threat or an opportunity. The threat now, of course, is all the automation. -- (As an opportunity) After all, we are no longer like actual accountants, but we are financial management professionals."</i>
Interviewee 2, CEO/Accountant	<i>"Yeah. I think it's an opportunity that makes the job more meaningful and I don't miss the accounting entry recording work I've done in my career. (As a threat) Thinking about the big picture... I worked for firms X and Y [both market leaders in their industry] 10 or 20 years ago and there were several purchase ledger clerks. Nowadays, such roles don't exist anymore."</i>
Interviewee 8, Accountant	<i>"It's both as it somehow makes working a lot easier, but then it also makes it especially difficult when you think of older customers who would be happy to deliver those concrete paper invoices versus that they would send them via cloud service or email."</i>
Interviewee 9, Senior Advisor	<i>If you think from the employee's perspective, it's an opportunity to develop yourself -- but then it's pretty drastic, because whenever we talk about efficiency, it also means that employees are expected to put more effort."</i>
Interviewee 15, Service Director	<i>"I would say that digitalization certainly brings a lot of opportunities, but there are also certain types of risks with digitalization, or at least things to consider"</i>

4.2 Impacts of digitalization in accounting domain

Figure 7 below presents the data structure for the first category of my empirical findings, that is, digitalization’s impact on the accounting domain and its current state in the field. In this section, I will discuss the concept of shifting environment and change in the professional identity of an accountant by explicating their sub-themes.

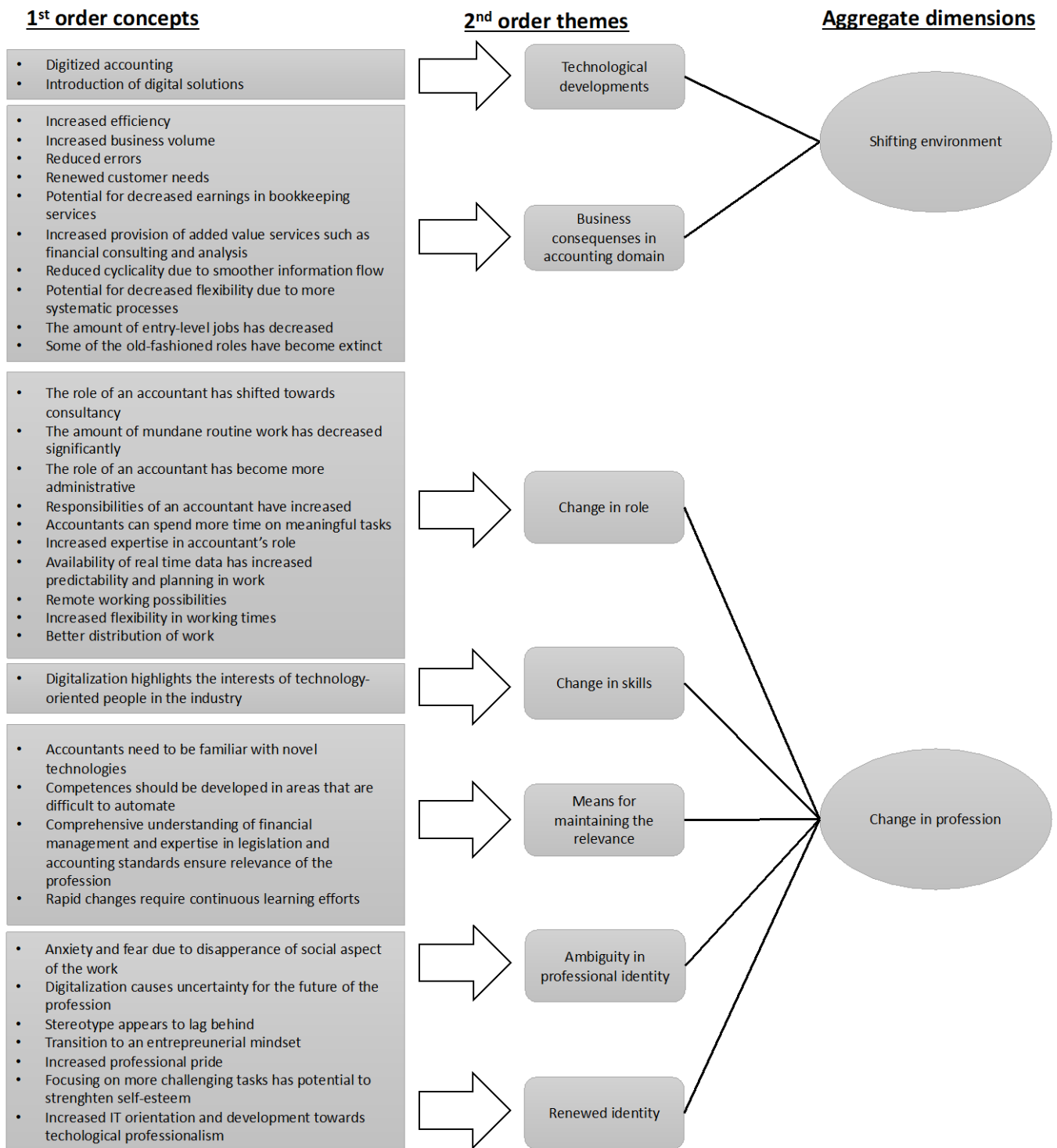


Figure 8 Data structure for impacts of digitalization in accounting domain

4.2.1 Current state of technological developments

Based on the interviews, it can be stated that the digitalization process is still in an early phase in the accounting domain within the studied organizations. For many of the interviewees, digitalization implies mainly what Unruh and Kiron (2017) describe as the concept of digitization¹⁰ as the interviewees discuss the transition to digital systems and the desired abandonment of paper-based accounting. This finding was also evident in some of the quotes, as for example, interviewees 5 and 7 below briefly illustrate how digitalization has affected the processes of their organizations.

“We have completely digital accounting, i.e., all sales invoices, purchase invoices are sent electronically. Everything also comes in electronic format, employee hours are entered directly into that same system also where salaries are calculated, also all travel invoices, employee working hours monitoring and ERP are all in the same system and receipts are scanned there, financial statements are made directly in structured form, and they are exported in a structured form to the tax authority and the trade register. We strive to minimize paper handling in general. The only thing we receive in a paper format are paper receipts, but we encourage customers to scan them directly into the system themselves, i.e., when they are at the checkout, they take a picture of that receipt on the phone, and it goes straight to the financial management system, and we can process it right away there on. Then of course as everyone wants to work remote due to COVID-19, we use Zoom and other systems to hold all the meetings online.” – Interviewee 5, CEO/Accountant

“In my work we use these digital financial management systems, i.e., everything works in conjunction with the customer and all purchase invoices and sales invoices, and receipts are transmitted to us electronically, hence no papers are ever processed, and I do not have any papers in my office and all signatures are handled digitally. In addition, nowadays, accounting meetings and everything is held remotely utilizing these remote communication tools. And now we're also testing a robot, which would also allow us to better automate those purchase invoice settlements so that we can get rid of those manual task that we have to do in our system, as there are not such good features that we can control so that the invoices would be accounted as automatically as possible, so now we start our work here and then we use the Jackpot system for internal monitoring, which automatically retrieves information from customers' environments in order to monitor that all accounting matters and regulatory notices and everything else are handled on time.” – Interviewee 7, CEO/Accountant

¹⁰ Refer to Figure 2

In addition, the early phase of the transformation in the accounting industry is indicated by the fact that several interviewees mentioned that their organization still offers paper-based services. It is not that organizations do not want to move to fully digital accounting, but that customers, especially the older generation, do not want to switch away from traditional models of operating. Several interviewees stated that while their core business is based on electronic accounting and customers are encouraged to switch, a customer who wants paper-based accounting will not be turned away. In addition, one quote from an interview with a small size accounting firm's CEO suggests that the cost of paper accounting may be more affordable for SMEs.

"Yes, we do. We also provide paper-based accounting services for which we have another system, as for SMEs it may not be worth it, as the total cost may then become too high and therefore, we do it on paper." – Interviewee 2, CEO/Accountant

"Of course, if there are bigger customers who have a lot of that paper material, then we always recommend switching it for e-financial management. But the fact is that when they are somehow rooted in delivering paper materials then the customer has a pretty big threshold to switch to digital systems. But we never say that paper material will no longer be accepted. Of course, we will accept it." – Interviewee 8, Accountant

This, in turn, suggests that while digital accounting is clearly the dominant practice of operation, it is not necessarily the most cost-effective for all types of customers, and there is still room for adaptation in pricing. In the current phase of digitalization, firms are in an active process of examining how to utilize the novel technologies to juice up their businesses. However, the transformation in the accounting industry appears to be quite rigid. A CEO of an SME accounting firm points out that companies do not yet utilize the most sophisticated technologies¹¹ such as artificial intelligence, blockchain technologies and highly automated processes, but that automation is currently being exploited in rule-based, repetitive manual work.

"The actual artificial intelligence, to my knowledge, is not used in any of those larger financial management systems yet. Our system has automated billing that allows you to create certain rules based on which that robot completes billing on a line-by-line basis for invoices and statement transactions and debit and credit card debits. ...I'm pretty sure it's not in use anywhere yet, that it's more of those ready-made rules that are created there, through which that robot then makes those automatic accounts

¹¹ Refer to Table 1

there, but I don't think that actual machine learning is used anywhere yet.” – Interviewee 5, CEO/Accountant

Although there exists knowledge on how to automate processes, it is evident that accounting firms need to carefully assess which processes can be automated from the resource perspective, as automation always requires new investments, as interviewee 14 explicates. Furthermore, interviewee 7 stresses that the provision of novel technologies is rather asymmetric as the technologies are products of software firms and accounting firms have limited resources in terms of time and knowledge to familiarize themselves with the existing products. Based on the research data, it is apparent that the digital solutions mostly come from external service providers and only the largest companies have in-house development. On average, however, accounting firms tend to be small and medium-sized, leaving a large proportion of firms dependent on external development.

“The development work is not free and the robot itself when it does the work, it also has its own costs all the time, so you must think very carefully whether this is now financially viable. If it's something that is done quite infrequently then it may not make economic sense to automate. -- It really should be such a task that really takes time and is repetitive.” – Interviewee 14, Reporting Development Manager

“Now that there is more supply in software, so how do you know then which one is suitable for you -- because salesmen sell, that's what they do and everyone's product is the best in the world, so you have to be really active and really kind of familiar with those things before it is worth taking anything, and that it is precisely to prevent that it becomes more slow and detrimental than beneficial to your own business.” – Interviewee 7, CEO/Accountant

In addition, interestingly, it came up that the global COVID-19 pandemic has had a major role in forcing the companies to develop their practices and stress-test their current solutions. Some of the interviewees attribute the pandemic to be the trigger for embracing the novel technologies. Hence, the pandemic was, as it were, a turning point for technological developments where companies were forced to ensure that operations could continue fully digitally, as the following pair of quotes explicate.

...and then on the other hand, the COVID-pandemic drove to the fact that more and more material had to be in digital format and remotely available. For example, the

accounting department just had to go to the point where all the data really existed in digital format. Systems can no longer trust that it is in the (paper) folder. Well, that folder didn't exist when you couldn't even be in the office, so yes, it's like the basic condition for being able to digitalize. – Interviewee 11, Finance Director

...just over a year ago, we completely switched to remote mode for a while because of the COVID-pandemic. Then everyone had to take a course with which we made sure that everyone has a good level of skills, that we don't do stupid stuff and useless work but that everyone has that solid knowledge on technologies that we can trust.
– Interviewee 13, Head of People and Culture

Lastly, my findings partly suggest that the aforementioned technological developments have not emerged completely new business models for the accounting firms, but the firms rather have more efficient tools to fulfill the existing tasks and they have shifted to cohesive ways of operating. For instance, when asked whether the change has been such extensive that it would have changed the business, Interviewee 11, a finance director of a large corporation replied as follows:

"I would not say that the business has changed, it has rather shaped the way we operate. -- data is indeed available to everyone, that it has forced us to have everything stored in a certain place. Efforts have been made to work in concert. We have grown so much in recent years that we have reached the point where we cannot just do it that way, think differently, in another place the other way, so we have tried to create coherent ways of working." – Interviewee 11, Finance Director

4.2.2 Business consequences of novel technologies

During the interviews, we discussed how the novel technologies have affected the organizations and what type of changes they have brought. Although digitalization in the accounting industry appears to be in its early phase, so to speak, my findings present several already realized business impacts and discussion of potential impacts.

Increased efficiency

Unsurprisingly, efficiency has increased as the result of technological solutions, but interestingly, there was no clear consensus on where efficiency is reflected and where the freed-up time is spent. On the subject, the discussions were very different, for others with it being obvious that higher business volume is achieved while some of the interviewees

thought efficiency could be reflected in higher quality or even self-development and organizational development. By higher quality, in this context, it is meant that the accounting firms aim to provide the client with more comprehensive services, such as financial consulting and broader financial analysis, in addition to accounting required by law alone. Below, quotes from interviewees 3, 7 and 8 elaborate the varying understandings of how efficiency is reflected.

"I currently work little bit less and study instead ...When I use all of these systems, I try to use all of them as efficiently as possible, allowing me to do my jobs much faster. -- Of course, as an entrepreneur, I can do it as I want, but if you think that there is an employee in the accounting firm who is just a salaried employee, then when he or she has spare time, he or she can use the time, for example, to think about development proposals or how to develop and streamline something that may be lagging."

– Interviewee 7, CEO/Accountant

"If the customer has a digital financial management environment where all payments are handled, and accounting is somewhat automated then the freed-up time is used to new customers." – Interviewee 8, Accountant

"...if we could export more customer-required reporting templates out of the system so that they do not have to be processed manually in Excel, then you would have more time to study the changes, what happened in a month or a quarter and where those changes come from. When the customer has terribly complicated forms that require a lot of manual work and you don't get reporting package directly from the system, it takes more time to produce that reporting package, which is not the core idea, but the core is to analyze the numbers to understand what has happened here and why." –

Interviewee 3, Controller

Yet, the majority understood efficiency to be reflected in increasing customer numbers, with an individual accountant being responsible for an increasing number of companies. Furthermore, some discussions suggested that as efficiency increases, pricing could also change in the direction of possibly lower compensation from a single customer. This is largely explained by the fact that it does not take as many working hours to do the accounting as previously required for manual work. On the other hand, total compensations do not appear to be declining, as the increased volume compensates for losses from revenues received from an individual customer. The revenues received by an accounting firm could also increase due to the ability to provide more comprehensive services, such as the provision of real-time accounting information or other extra services in addition to conventional accounting services, such as financial consulting.

“On one hand, what we lose in price, on the other hand, we win it back in volume as it is possible to take more customers at once compared to what it was used to be. Before, the pricing of accounting firms has been pretty much hourly and there have been these computer exports which are again per line recorded. Now there is a transition towards fixed prices, and it may be that some of the things may still be in unit prices, but the actual work may be charged as fixed price, but of course it has to be taken into account that if customers want more real-time data, the more time it takes and the more it costs.” – Interviewee 5, CEO/Accountant

Reduced errors

The just mentioned quality is not a completely unambiguous concept, but it can also be understood as internal, less visible to external customers, such as reduced errors or better processes. Typically accounting work has included repetitive tasks such as manual storage of records, which are prone to human errors. It is evident that the number of human errors has decreased as machines have taken responsibility for, if not all, such a large number of repetitive manual tasks as interviewee 15, a service director in a large size corporation, describes:

“(Automation) can improve the work, for example in a way, that there will be no recording errors once the data has been stored in a system and it will flow on from there if it is technically handled”. – Interviewee 15, Service Director

In addition, digital systems provide a more convenient way to check the correctness of accounting information.

“I never do the posting of debit card receipts, credit card bills or purchase invoices myself, but when it’s all there in one digital system then I can check with one accounting report that they have posted and accounted correctly.” – Interviewee 7, CEO/Accountant

On the other hand, interviewee 6, head accountant, revealed that identifying errors made by a machine can take a while and there is a risk that the machine will repeatedly do the wrong thing if the person in charge notices the error in question. Thus, the total number of errors is human errors plus machine errors, making it likely that the total number of errors would have decreased, or at least will decrease in the long run.

“...if there is an error and if you do not necessarily notice it then it may be that it will go wrong for a long time before you notice it if you rely too much on that automation.”
– Interviewee 6, Head Accountant

Reduced cyclical due to smoother accounting information flows

Due to numerous deadlines and statutory reporting, such as closures of monthly accounts and overlapping financial statements of companies, financial accounting is a notoriously cyclical field. Digitalization in itself has not brought about a change in the industry’s tight deadlines, but it has eased the time pressure by bringing a steady flow of accounting material, as interviewees 5 and 13 describe. Typically, in paper-based accounting, accounting materials are delivered in large volumes, while contemporary systems allow for a real-time material flow, allowing the accountant to work steadily toward deadlines. As a result, the workload is more evenly distributed over the financial year.

“It has been a very significant change. In the past when the materials were imported once a month and after the VAT was announced, usually the first week tended to be pretty quiet, as there were really nothing to work on and then again the next 3 weeks were really busy when all those materials arrived at about the same time and the due date were still the same for every firm, so now that we are in digital material so that material constantly flows into the system on a daily basis and we are able to distribute evenly over how we use the time.” – Interviewee 5, CEO/Accountant

“When things are done in real time, then they (deadlines) lose a little bit of meaning, because we are always so on time with things that they disappear there in the background. -- But yes, they are still visible there, and at least we have not yet been able to fully guarantee that there wouldn’t be such work spikes in the spring, no matter how real-time and up-to-date accounting materials are” – Interviewee 13, Head of People and Culture

Furthermore, Interviewee 11, noted that timeliness used to be quarterly, whereas today, due to real-time information, there is no need to bridge the gap between historical accounting information and the present, but instead, there is a steady continuity in timeliness.

“Digitalization has helped by reducing the need for so-called transfers or time-based postings, as invoices... from invoices onwards everything starts to be in digital form, the timeliness is so continuous versus that it may have been monthly or quarterly in the past” – Interviewee 11, Finance Director

Potential for reduced flexibility due to more systematic processes

Building efficiency requires more systematic processes and perhaps even more rigid approaches. Thus, slightly surprisingly, the interviews revealed that digitalization could lead to a decrease in flexibility, as to get the most out of resources, the processes must be cohesive. Although the aim is to solve the problem of unsystematic processes, there is always a risk that unwanted organizational rigidity will increase.

“It is not just a system development or a system change, but rather a process change. Such convergent processes have been a bit missing and now the aim is to harmonize them. ...It becomes problematic when there are 100 different ways to operate so now, we want a change to it, so that in the future there will be one cohesive process on how e.g., bookkeeping will be done.” – Interviewee 14, Reporting Development Manager

“Nowadays, the bigger the organization is you work at, the bigger the systems there are and the more options the more precisely they define in user management that who is allowed to do something and of course it varies a little within organizations but defining user rights and responsibilities is really trendy now. -- It always starts with who gets to do what and what can be done, and everything needs to be documented pretty well. So, I don't think it will increase it (flexibility).” – Interviewee 4, Controller

Potential changes in job security of manual workers

The effect of digitalization appears to be far greater in the employment prospects of routine and manual workers, while the employment of accountants, who perform more complex tasks requiring more expertise, is quite secure. The interviews highlighted that automation has influenced and is likely to influence the demand for some assisting accounting roles, such as the accounts payable and receivable, due to novel technologies decreasing the amount of manual work. However, digitalization, at its current extent does not seem to pose a considerable threat to the employment of accountants, and none of the interviewees pointed out that accounting staff would have been reduced as the result of digitalization.

“I have worked for Firm X and Y, (both leaders in their industry) 10 or 20 years ago and there were accounts payable and receivable clerks at work, so there have been such roles. Today, the system takes care of the accounts payable and receivable, and people just accept and check the invoices and accounts and therefore it has basically changed in a way that these kind of job descriptions don't exist in similar extent anymore.”

– Interviewee 2, CEO/Accountant

“I think there will be some decline (in the demand). A few years ago, I would have said that there will certainly not be a reduction but based on what I have heard from colleagues around the world, what has happened I think that there may be some reduction, but I feel that the need for expertise is still pressing.” – Interviewee 10, HR Specialist

“Not so far, even though robotics and automation help in performing work tasks, but nevertheless accounting in financial management is not yet so automated that human handprint could be entirely replaced by computers, so I do not yet believe it, and it (digitalization) is not a threat to anyone’s job, at least not yet.” – Interviewee 11, Finance Director

“If we consider the role of a payable receivable, I think it is the first disappearing resource there, at least in the traditional sense of what it is now... so I think the need for these people will decrease, then the bookkeepers will follow, but I don't think the world is ready for that yet.” – Interviewee 14, Reporting Development Manager

In addition, in the discussion with interviewee 1, an accountant, it occurred that the provision of vocational internships is reduced as the manual work does not exist to a similar extent as before, and thus, the tasks require more understanding.

“Before, it was possible to hire trainees who have no experience at all to record accounting entries, but since that recording work no longer actually needs to be done, they are no longer needed either.” – Interviewee 1, Accountant

4.2.3 Changes in role and skills

In the interviews, it emerged that digitalization has expectedly to some extent affected the roles and required skills of accounting professionals. In this section, my findings suggest potential changes concerning the role of the accountant and the skills required for future accounting positions.

Emphasis on IT knowledge and skills

It is somewhat evident that accountants are assumed to possess IT skills in addition to accounting-specific skills. As the level of digitization increases, the accountant should understand systems and new technologies to an increasing extent, as the accountant is the main user of the function. Interviewees 1 and 8 mentioned that IT skills are rather a prerequisite for working and accounting firms might be reluctant to hire people with

insufficient knowledge in accounting systems and tools. Furthermore, interviewee 6 noted that it is not entirely unusual for a client to request an accounting-specific system consultation from an accountant.

“In addition to the fact that you need to know how to do accounting and payroll, you also need to know how to use these different programs and systems.” – Interviewee 8, Accountant

“It is advantage in this field that you know certain software well. For example, if we had a new employee who had not even heard of these of our software, there would be problems, so we prefer to hire someone who has knowledge in software.” – Interviewee 1, Accountant

“...If a customer has any technical questions about why something isn’t working. Those questions come up from time to time, such as why a program doesn’t work and things like that, which may not have been the case before.” – Interviewee 6, Head Accountant

Interestingly, it also came up that the industry might have become more attractive for technologic-oriented people. The quotes from interviewees 8 and 13 below illustrate how the image of the industry is changing in a more modern direction.

“The industry has had quite dusty reputation, but I have noticed that when for example there are interns coming to us, they are a bit amazed that “oh, everything is digitized and can be done digitally and place independently”, so that there is digital know-how in this field and that there are also such modern positions available.” – Interviewee 13, Head of People and Culture

“It increases the interest that accounting is conducted in modern fashion, there’s an electronic financial management environment and cloud services that we use versus that the customer could bring all those paper invoices in an envelope and then we would manually make the entries.” – Interviewee 8, Accountant

Increase in expertise and growth towards consultancy

Due to the decrease in mundane routine work, according to some of the interviewees, the role of an accountant has shifted towards more meaningful jobs, as accountants can now spend more of their time on added value tasks, such as financial analysis and consulting. Nevertheless, it is not necessarily fully a question of the shift to expertise, but that the existing expertise becomes more visible to the clients, as the interviewees recognize.

“Accountants often think it’s such a routine job, but in practice they’ve been experts for their clients from the very beginning, but now it might be highlighted in a way that when we can automatically account and robots do certain things, now the accountants focus on those little more challenging tasks. So, the expertise increases.” – Interviewee 9, Senior Advisor

“Specifically, I feel that we are moving in the direction of customer service and consulting work. The more things get automated and the more efficient the work becomes -- then yes it means that where that added value then comes in the future, that is how we serve our customers. How we expand those services and how... what added value customers then get through us to their own business.” – Interviewee 10, HR Specialist

“It goes further into that financial consulting role. Those entrepreneurs look for a sparring partner from their financial management expert with whom they want to reflect, ask an opinion and to discuss about running and managing business and at best it brings financial management professionals such brilliant opportunities to expand their skills and provides a certain kind of facelift.” – Interviewee 12, Head of Services

Moreover, these changes do not only affect large companies, but technological developments have also allowed SMEs to focus on added-value tasks, as digital solutions free-up time from routine tasks and ease the distribution of tasks whereas, typically, in SMEs accountants have been responsible for all type of tasks, including e.g. manual accounting entries. Hence, it is possible that in the future, SMEs could provide similar type of services as large-sized companies as interviewee 7 illustrates:

“In SME firms, an accountant has taken care of everything including all the routine work, which is basically something that an assistant could have done, so now that everything is digital and we are able to use such software that enable multiple people to work on same files, we can use e.g. accounting students for supporting tasks allowing us, accountants to focus on chief accountant and financial manager tasks. So, digitalization has brought such opportunity to SMEs.” – Interviewee 7, CEO/Accountant

Monitoring role

In contrast to the consultative role, some respondents see that the role of an accountant has become more monitoring, meaning that their role is to ensure that everything in systems goes as planned and there are no errors in accounting. This was illustrated by interviewees 1 and 2. On the other hand, it is possible and even likely that the role of an accountant includes both aspects, monitoring tasks, and responsible consultative tasks.

“It has perhaps become more monitoring as the role is more about inspecting. Yes, of course I have to do sales invoices and such myself and that type of concrete work, but mostly it is that we have to look how has it gone and make reconciliations” – Interviewee 1, Accountant

“After all, it (role) has changed. Now the accountant is more really an expert, and the role is mainly to follow-up that everything goes well and maybe report.” – Interviewee 2, CEO/Accountant

Flexible working hours, remote working possibilities, and better distribution of work

Lastly, mainly due to the COVID-19 pandemic, but enabled by digitalization, accounting firms have shifted to remote working and towards flexible working habits. In the past, work has been tied to working hours (excluding overtime) and remote working has not been usual practice in the field for sensible reasons, as interviewee 11 notes. Digitalization, however, has brought the change by making work independent of time and place as the interviewees elaborate. This is largely since accounting materials are in digital form, they flow steadily from the clients to the systems, and the work no longer requires being in the office. Majority of the interviewees said that their company would continue to offer flexible working opportunities, but on the flip side, some companies still demand to work in the office at the agreed time, implying that in today’s world flexible working could be more dependent on a culture of an organization and preferences of an individual rather than technological solutions.

“Well, it (digitalization) has changed that now it is possible to work from anywhere. Now I am in the office, because I like to be here, as all the infrastructure is here and everything works well, it is more ergonomic work here, but you can really work from anywhere. -- It is possible to react very quickly if something urgent happens, even if I were somewhere else. There’s no need to be in the office” – Interviewee 2, CEO/Accountant

“Of course, it is so emphasized in times of COVID that where the work is done. And then also it doesn't matter whether it's 8-16 or something else, well someone might work from 10 AM to 6 PM or so. Where it has been most evident is that in financial management it doesn't matter where you work from. In the past, working was pretty much tied to office as the all the folders and papers were there, but that is not the case anymore.” – Interviewee 11, Finance Director

On the extreme, interviewee 8 mentioned that some companies have shifted to such concept where they do not provide premises at all but expect all their employees to work remotely.

“There are these extremes that I have heard of during the coronavirus pandemic, for example, that some firms have completely abandoned these rented premises to become fully remote companies. – Interviewee 8, Accountant

4.2.4 Means for maintaining the relevance of the profession

To examine what makes the profession relevant despite the digitalization disrupting the field and posing even radical changes for the future view of the professions, accountants, their managers, and other specialists were asked whether other professions (e.g., data analysts with sophisticated technology skills, but no specific knowledge in accounting) could somehow substitute accountants in the future and if not, what keeps the profession afloat. Consequently, accountants mentioned several means for maintaining their relevance in the labor market, which I report in this section.

Comprehensive understanding of financial management and interactivity

Relevance can be improved by focusing on skills that are difficult to automate. Tasks that require judgment from experience and the application of several different standards and laws are more difficult to replace. To elaborate this, interviewee 5 gave a demonstrative example of the complexity in accounting:

“If you buy, let’s say a bathtub and you are just a data processor, you put it in baths or as purchase, but it depends entirely on your company and the industry, whether it really goes to that account and it can also be case-specific, in this month it is a purchase, but in the next month it is a representation and in the following month it is a private intake of the owner. It is so ad-hoc that it is difficult to create just one rule for it, so you need to see the big picture to handle it properly.” – Interviewee 5, CEO/Accountant

Moreover, interviewees emphasized holistic financial understanding, as someone should also be able to understand the accounting processes, even if the processes are highly automated. Thus, the technical expertise of e.g. data analysts and machines was seen as complementary, whereas accountants would still remain the key user of their function. Furthermore, the interviewees highlight qualities such as the interactivity and humanity desired by the customer that the machine is not capable to provide.

“In my opinion, it requires understanding and knowledge, that a machine can’t replace, as professionals need to understand what happens there when a button is pressed or when something is automated. Then understanding larger entities, going through financial matters with customers in their context, knowing what they have planned for their business or what kind of competitive situation they have, what opportunities for expansion they have, what they are planning, what they are aiming for, then reflecting financials with customer and brainstorming is something that can’t be solved with a digital solution” – Interviewee 13, Head of People and Culture

“In the future, accountants are required to possess more of these broad-based skills and an understanding of financial management. It is not the case that, especially now, that accountants could be substituted by any other profession.” – Interviewee 12, Head of Services

Continuous learning due to changing legislation and regulation

Continuous changes in the business environment, not just technological developments but also changes in financial law and regulation, require an accountant to constantly update his or her skills. Hence, education and training should be considered as a long-term process that aids in the relevance of the profession rather than a mandatory spurt to enter the industry.

“There have been a lot of changes over the last decade, tightening in regulation and such... I must educate myself all the time, even though I have worked 30 years in the industry and yet, whenever I go to some training, I feel like I knew nothing. -- VAT related things are really tricky and a person who has not studied in this field cannot know... He does not get any of them right, no program is so smart that it would understand, no matter how great the robotics. You still need to know how to make all the settings for robotics. The robot does not know all the possible combinations for instance in case of foreign trade and then there are changes like Brexit and such that will change everything.” – Interviewee 7, CEO/Accountant

Up to date technologies

Lastly, less surprisingly, it emerged that it is crucial to keep up to date with technological know-how, as change can be quite rapid. This is essential for both companies, and individual accountants because although the old methods are still partially in use, the transition to new practices can come quickly, meaning that in the worst scenario, the lagging companies could go out of business.

“For those who still do accounting using completely traditional methods, I would recommend that they start exploring this digital world, as it may not be a good thing at all, when the change can come pretty quickly.” – Interviewee 2, CEO/Accountant

4.2.5 Changes in professional identity

Finally, as the last aspect of impacts of digitalization, in this section, I will report the findings related to the factors that may cause changes in the professional identity of accountants. The identity shifts were examined by utilizing measures (autonomy, self-regulation, and commitment) from Barbour and Lammers’ study (2015), discussions of stereotypes and by asking how the interviewees considered his/her professional identity to be changed. First, I will discuss the findings on identity-related uncertainty factors and second, I will explicate the findings on which direction the professional identity might have grown.

Anxiety and fear of due to disappearance of the social aspect of the work

Some interviewees express concerns that work is becoming less social, even though the role is understood to be closer to the customer interface. This is because, in a digital environment interaction is more formal, and the customer is no longer encountered in a more relaxed style at the office, like the quotes below illustrate. This concern might apply especially to older generations, for whom typically interactivity through technology can feel foreign or even unpleasant, but obviously it affects anyone who expects unformal social encounters and genuine interaction in work.

“Now that everything is behind that screen, all the information, then there will no longer be those prints and fetching signatures from the client with an ink pen but nowadays it is just sitting in a chair and staring at the screen. That has maybe caused a little panic to escape this field.” – Interviewee 1, Accountant

“It can be such a big change, especially for accountants who have done their entire careers in an accounting firm where they have worked in the traditional way and then suddenly it changes. One accountant said that they used to get buns from one customer every Friday, but now the tradition is gone since they don’t meet anymore. It really can be about the small things, and it can be a difficult kind of identity change for many accountants.” – Interviewee 7, CEO/Accountant

Furthermore, uncertainty about to which direction the profession is evolving can create challenges to professional identity and career planning, but it still seems rather distant. For instance, when asked whether digitalization has had an impact on the career choice interviewee 2 described his situation as follows:

“I haven't thought about what I would do if digitalization would lead to a reduction in work, but I'll think about when it comes up.”, suggesting that the profession is facing some level of uncertainty. – Interviewee 2, CEO/Accountant

Lagging stereotype

Despite all the changes and the modernization of the field, it seems that external stereotypes conflict with the reality or at least the internal image accountants have, which in turn can partly affect the accountant's identity since external groups' perceptions also shape identity, and the accountants attempts to answer such questions as “who am I” or “how I shall relate to others”. It appears that the change in stereotype occurs more slowly than the actual change. Interestingly, accountants themselves perceive the stereotype to have changed, but other groups do not see the change to a similar extent and there was no similar consensus. Typical stereotype involves images of accounting tasks being dull and antisocial, and the interviews illustrate that some believe that the profession still has that type of stigma.

“I don't think the stereotype has started to change yet, but perhaps accountants should think about their role in the future. To move in the direction that an accountant is more of an expert than an accountant, by no means underestimating accountants.”
– Interviewee 14, Reporting Development Manager

“We talked about that a week and a half ago when, for the first time in a long time, we had a more relaxed evening with the work crew. There was a discussion that in the past accountants have been stereotypically quite boring persons who just write stuff in booklets, and such stereotype still exists, even though the reality is different.”
– Interviewee 11, Finance Director

Commitment, autonomy, and self-regulation

Firstly, it emerged that commitment to the profession is related to the preferences of an individual. If an individual sees the development of technology (or any other change in the profession) as a positive thing, he or she will probably also be more committed to the

profession and vice versa. This was crystallized in the following quote, where interviewee 12 explains how concerning changes, expectations can conflict with the new reality.

“...I know that there have been such exits that a person feels that this no longer corresponds to what a person would want it to be. – It is no longer the routine work they have come to and applied for at the time, but the job requires the employee to have more extensive skills and perhaps more tolerance for uncertainty, so then there may be people who feel that they want to go to such a job where there is a narrower level of requirements, so yes such exits happen.” – Interviewee 12, Head of Services

Based on my research data, it can be concluded that for the majority, commitment to the profession has increased due to digitalization. Second, most of the interviewees perceived that autonomy and self-regulation had increased as digitalization has brought flexibility and more freedom to work, but on the other hand, this change also met their expectations, so that no significant conflict or impact on identity can be identified. Thirdly, generally, it can be stated that changes have a bigger impact on the individuals with long careers in accounting as their routines can be more entrenched.

Increased sense of professional pride, strengthened self-esteem and shift towards entrepreneur mindset

My findings suggest that as digitalization enables the transition to more meaningful and perhaps more challenging tasks, accountants perceive an improvement in their professional self-esteem. Furthermore, although the profession has experienced some sort of a facelift, it is not yet so strongly visible to external groups on an imaginary level, but for the accountants, the change is quite impactful and some of the interviewees highlighted the increase in professional pride. Also, as responsibilities increase and working becomes more independent, interviewee 1 pointed out that accountants increasingly identify as entrepreneurial, being responsible for their clients.

It (professional identity) has perhaps become more of an entrepreneurial. There is an opportunity to take responsibility for those customers and to be in constant interaction with the customer, it has grown so much and the fact that I can be immediately available to customers, for instance, if a customer has a need, I can react to it immediately and take care of it. – Interviewee 1, Accountant

“That professional identity is strengthened by the fact that you have a lot more time to spend on analyzing and researching instead of manual tasks. Of course, the better

| *you understand those numbers, the more confident you will feel.*” – Interviewee 3, Controller

Same purpose, different tools – no considerable conflict over identity

Lastly, some interviewees noted that no significant change had taken place and accountants still have the same purpose as before, but the tools are just different, and everything happens in a digital environment. Consequently, it is possible that they do not experience a conflict over professional identity as the changes are not radical enough to disrupt the whole purpose of accountancy.

| *“Well, I don't feel anything has changed in that (professional identity), but there are different tools today. The work is done differently, but I don't experience any radical change.”* – Interviewee 2, CEO/Accountant

| *“I think that the professional identity is still the same, accountants try to understand client's business and help them to perceive the financial image and give advice that help their clients to make better business decisions.”* – Interviewee 5, CEO/Accountant

4.3 Promoting and inhibiting factors in implementation of digitalization

In this section, I will report findings related to the factors that promote and inhibit the further implementation of digital technologies in accounting firms. As in the previous section, the figure below shows the Gioia data structure, which illustrates my train of thought on how the themes presented have emerged from several different observations in the research data.

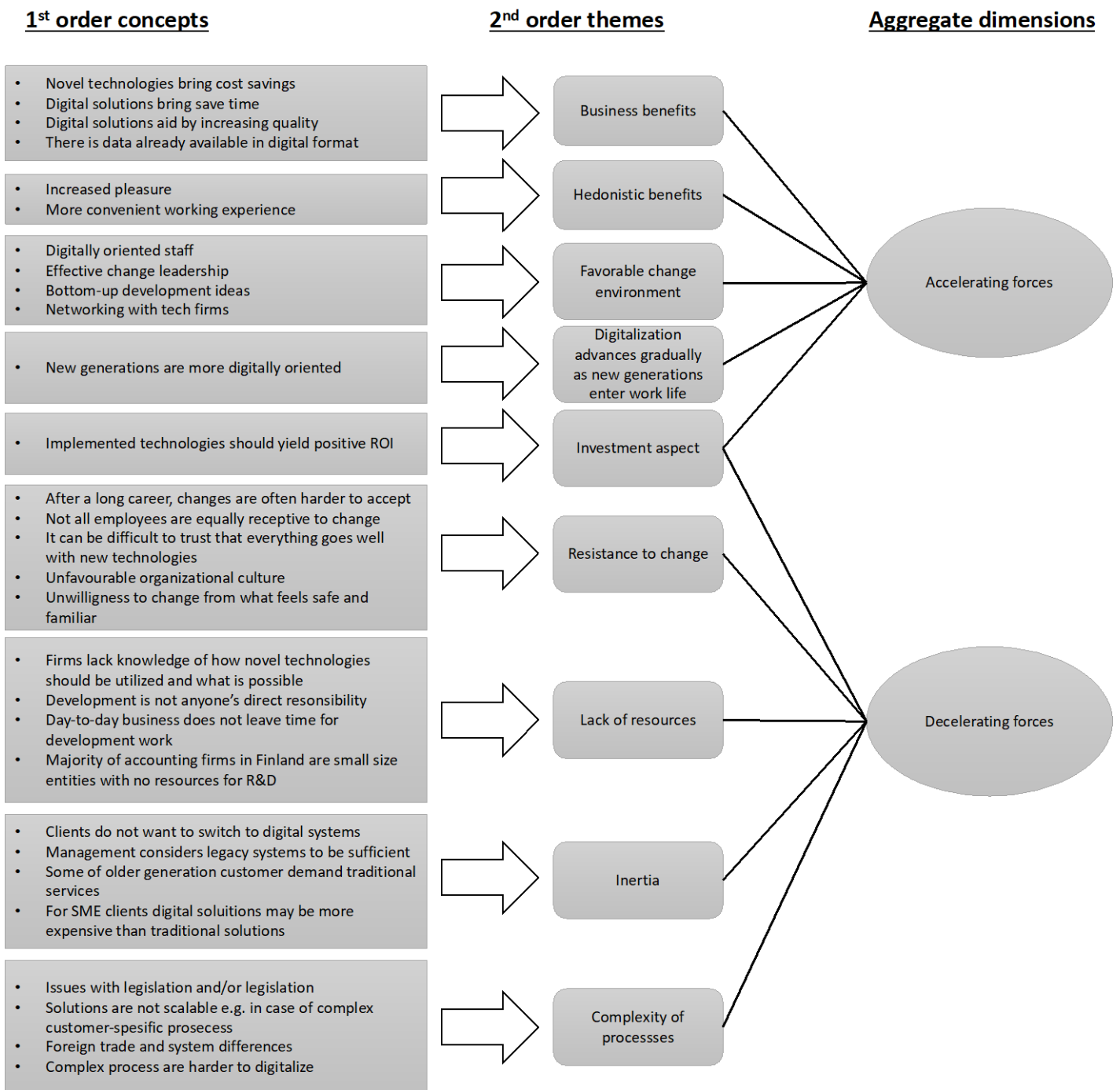


Figure 9 Data structure for promoting and inhibiting factors in implementation of digitalization

4.3.1 Promoting factors

Business benefits

Typically, in market economies, accounting firms operate in a competitive landscape, and thus the firms seek to improve or at least maintain their position in the market. Consequently, the pursuit of competitive advantage and increased business efficiency encourage companies to develop processes and hence digitalization can be understood as a way to achieve business benefits. Several interviewees pointed out that the benefits of digitalization are a clear factor that encourages companies to become more digitalized. Moreover, implemented changes might face less resistance if concrete benefits can be presented. In this context, benefits should be understood in a broad sense, such as cost savings, time savings, and improved quality. However, the benefits achieved are not really a promoting factor but rather a result of certain actions, but instead, the competitive market and the nature of the business is more clearly a promoting factor that encourages companies to innovate and embrace digital solutions.

“The easiest way to get a project up and running is to present the benefits. That is, if you can show that currently a certain task about an hour, and if we make a little investment, it will take 10 minutes in the future, then all the decision-makers are very willing to make the investment.” – Interviewee 4, Controller

“If we think about how automation should be pitched to employees and customers, then I would say it is the quality and speed that digitalization brings, or especially to customers, then perhaps for employees it is essential to discuss why such change is happening and how the change affects the whole industry” – Interviewee 15, Service Director

“One factor is time savings, making traditional, paper-based accounting is more expensive for us.” – Interviewee 2, CEO/Accountant

In addition to direct business benefits, one benefit is harnessing data for utilization, as in the current situation, data is available almost indefinitely, but companies do not have complete tools and technologies to take full advantage of it. Interviewee 11, Finance Director, explicates how already existing information becomes more widely utilized as digitalization is taken further within the organization:

“The digitization of data over the last 3-5 years has made a significant contribution to this, we have data, information, etc. in digital form and it is accessible to everyone (within the organization). That's perhaps the biggest thing.” – Interviewee 11, Finance Director

User benefits

In addition to business benefits which may affect more management levels rather than employees below the management level, it is somewhat evident that at the employee level, the changes are easier to accept when they increase the pleasure and convenience of work, for instance, by reducing mundane routine tasks or enabling remote work. The interviewees pointed out that digital solutions have been pleasant and have improved work and without posing a considerable threat to employment. Thus, user benefits can be considered as one of the promotion factors of digitalization, at least in the current stage where the benefits of implementation (e.g., increased pleasure and convenience) for employees outweigh the disadvantages experienced by employees (e.g., the threat of job losses). Similarly, user benefits can increase clients' willingness to consume more digital services, creating more demand for digital services.

“It is probably the understanding of the benefits and opportunities that it gives to employees, if I think about our staff, we for instance currently have one employee partly working from Italy and she has bought a winery with her husband from there. Perhaps the underlying idea is that this (digitalization) allows work to be done from anywhere in the world.” – Interviewee 15, Service Director

“If you think that the company's processes are cumbersome, if you have, for example, an old-fashioned accounting process that requires a huge amount of paper, those papers are transported from one accounting office to another and then from customer to customer and from office to warehouse and warehouse to car, etc., then people just want to change so that everything is either on a computer, tablet or smart phone or some other smart device. People may feel that they want digital systems because it makes their day-to-day work more convenient.” – Interviewee 2, CEO/Accountant

Favorable change environment

Moreover, my findings support the idea of a favorable change environment. Firstly, interviewees highlight the importance of networks, digitally oriented employees, and clients, who are keen on experimenting novel technologies and have knowledge on them, but more importantly are open to the changes. The following pair of quotes illustrate this:

“Openness to the change is really important, because change is usually such a bumpy road in the sense that rarely things go quite right at once and sometimes it feels like when something new is introduced, then at the point where it is not quite ready, then it’s maybe a small step back from the old.” – Interviewee 14, Reporting Development Manager

“We have a modern organization with a lot of people who are interested in digital solutions and opportunities and our customers are like that too. We are really involved in the startup and growth company scene, so there are also customers who challenge us to develop because they are on the nerves of the time and have these SaaS services and born global-style solutions, so it also requires us to have the latest solutions in use and know how to take advantage of them as well.” – Interviewee 13, Head of People and Culture

Secondly, digital solutions can seem brilliant at the idea level, but the benefits of change depend entirely on how successful its implementation is and how staff embraces the change. Thus, effective change management can be considered as one of the factors promoting digitalization in organizations. As in any other changes, organizations should find suitable strategies for implementing the changes in organizations as interviewee 14 points out:

“Although, it all starts with the courage to develop, for the development team, change leadership is vital, as you also need to be able to implement and lead change smartly” – Interviewee 14, Reporting Development Manager

Furthermore, interviewee 15 explicates, what type of strategies can be utilized to handle changes and how resistance to change can be mitigated by utilizing change agents in the process:

“We have software house trainings and our own trainings for that change and then all that practical everyday learning when implementing those automation solutions. Often a pilot experiment is done first, where there change-oriented people involved in the process. Then we gather those experiences about what works well here and what works poorly and then after that process has been built, then with these change agents, we start to implement changes to a bigger audience.” – Interviewee 15, Service Director

Consequently, it can be possible to avoid the feelings that management is rolling down the change, and instead, the change can be perceived as more people centered. Furthermore, interviewee 9 highlights the importance of bottom-up development, which means an

inclusive style of development, where staff actively feed development ideas upward in the organization.

It requires, of course, the staff to come up with a lot of development ideas and thoughts on what is going to be taken forward and whether anything is possible. We do not know if there is anything but the sky as the limit when we have the right kind of people working for us. – Interviewee 9, Senior Advisor

Thirdly, based on the views of interviewees, it is likely that the degree of digitalization will gradually increase as the modernly educated generations who have grown up with digitalization enter work-life and advance to decision-making positions in their careers over time.

“The new generation is already making a big difference. They have better understanding of IT, and they may find it easier to adopt new technologies and new software...” – Interviewee 5, CEO/Accountant

“The younger generations are accustomed to digital financial management through their education.” – Interviewee 10, HR Specialist

Investment aspect

Unsurprisingly, digital technologies and their acquisition are subject to the same investment principles as any other investment; return on investment should be positive. In other words, digitalization can be advanced in organizations, but it may not be financially viable, but some tasks should still be done manually, especially when digital solutions are not easily scalable, such as in complex processes or when tasks are infrequent, and automation does not bring sufficient cost savings or added value. Thus, the investment aspect can be considered either as a promoting or inhibiting factor, depending entirely on the situation of the company. For example, the transition from paper-based accounting can be quite a profitable investment, while in an already highly digitalized accounting firm, the investment aspect can rather limit further digitalization as significantly fewer profitable solutions are available.

“...Then of course you must consider the investment cost and you need to be able to calculate in what time the investment will pay off itself.” – Interviewee 4, Controller¹²

¹² Also, refer to the quote from interviewee 14, Reporting Development Manager on page 36.

4.3.2 Inhibiting factors

Similarly, I present factors that the interviewees perceived as barriers to taking digitalization to higher levels. However, these factors are not such that they could not be mitigated or overcome altogether, but organizations should specifically focus on finding such problem areas that can be affected.

Resistance to change

Undoubtedly, there is some degree of resistance to change in the sample organizations that is a notable inhibiting factor of digitalization. Firstly, interviewees mention that in some accounting firms, the organization culture is not receptive to the changes. A particular problem is perceived to be the relatively old average age in the sector. Higher age per se might not be a justified reason for resistance to change, but the approaching retirement age may be an explaining factor, and it might constitute slowness for change in the financial management sector. The resistance to change of people approaching retirement age can be simply explained by the fact that such people might not have clear incentives to learn new technologies that have a very short lifespan for them when for example, compared to the younger staff.

“What generally prevents the digitalization of the field and the introduction of software, and so on, is partly the people in the field. There is currently a relatively old age groups working in the sector and resistance to change is still quite strong, especially outside the metropolitan area, so that attitude and culture is something where there is a lot of work to do.” – Interviewee 10, HR Specialist

Secondly, interviewee 12 points out that employees are homogeneous in the sense that not everyone adopts new technologies as quickly so that in practice, the lagging staff’s ability to adopt limits the implementation speed of novel technologies.

“Of course, as we have about twenty employees, some are always looking forward to all new developments. But then there are those who come little behind the crowd and motivating and sustaining the abilities of that crowd may require us to spend more resources than on those who quickly embrace those things” – Interviewee 12, Head of Services

Thirdly, resistance to change can arise from distrust of novel technologies and a reluctance to switch from systems that are considered familiar and secure to new ones, as interviewee 1 discusses. Hence, resistance to change might also be based on avoidance of uncertainty. Furthermore, interviewee 11 notes how resistance can be quite emotional, in which case even small adversities can cause great resistance.

“Maybe it’s the same thing I had that I didn’t want to switch from familiar and safe to new. The problem wasn’t that it was digital software, but that I had to change the way I work and maybe there was feelings of uncertainty that things will go right now and there was some lack of trust to new system.” – Interviewee 1, Accountant

“Was it about a financial management program or some other reporting program or whatever, its implementation is where the biggest resistance come out and it can be very small things that you are used to a certain functionality, for example, that works differently in a new program or environment, or even is gone. So very small things can trigger people’s resistance to change.” – Interviewee 11, Finance Director

However, not all the resistance can be credited to digitalization, as some of the resistance is quite general by its nature, such as friction in moving to new habits. This friction can be seen to be caused, for instance, by the fact that learning new habits and skills requires time, and often accountants are expected to perform their normal works tasks at the same time and hence learning new habits can become an overlapping task for the staff.

Lack of resources

My findings suggest that lack of resources is one of the inhibiting factors in digitalization. It is certain that development work requires resourcing, but however from the interviews, it emerges that majority of accounting firms are on average small and medium-sized, and therefore these firms often do not have sufficient resources for R&D projects as interviewee 5 states:

“Finland is a small country and there are not many large accounting firms here, and those chains can be counted with the fingers of one or maybe a maximum of 2 hands, but then most of the firms are accounting firms of 1–3 people. SMEs may not have the resources to hire a separate IT guy to think about development.” – Interviewee 5, CEO/Accountant

Resources that are lacking can be understood quite broadly, such as time resources (i.e., possibility of employees to focus on a certain task), knowledge resources or know-how, and financial resources. First, in the case of small businesses, resources are often tied to day-to-day business. Therefore, development work is not anyone's direct responsibility, but it is rather an additional task or may be left out altogether. In addition, the financial resources in SMEs may limit the development work of external consultants or the hiring of a development specialist.

"I think that at the moment the reason is the lack of time, that we do not have time to get acquainted with development, especially when there have been big changes in recent years, for example, the income register" – Interviewee 5, CEO/Accountant

"All development projects require resourcing. And if the project is not resourced with sensible resources, then it has no chance of succeeding, and I think many organizations run into this same problem, that we have a small organization, 30 people, and we don't really have anyone with enough time who could take the full responsibility of development." – Interviewee 4, Controller

Second, a possible problem that might occur is that companies do not have sufficient understanding or knowledge of what is possible with novel technologies and how they can be utilized in firms' business. As a result, development work may not be done at all due to insufficient knowledge of the opportunities and know-how on how to utilize the solutions in practice.

"The first thing that comes to mind is that people may not recognize all the opportunities, they may not know what is possible and what is not and then even if they do, they may not know how to put it into practice, in other words, there might be a lack of know-how." – Interviewee 14, Reporting Development Manager

Third, often the person responsible for the development work is a different person than the end-user of the technology or system, in which case the aspirations for functionality may be difficult to implement, or the scope of the whole project may be too broad, which may cause a lack of focus in the development project.

"Perhaps the biggest problem I've seen is that the hopes and thoughts around it grow pretty wide and the focus thereby disappears from the actual doing and what is really important and feasible. People are like that would be nice and that and that and the conversation gets out of hand, so the projects easily lack the focus, and they expand

to take into account the aspirations of too many parties.” – Interviewee 11, Finance Director

Customer driven and managerial inertia

Somewhat expectedly, my findings suggest inertia to be one of the inhibiting factors that constitute slowness for taking digitalization into higher levels. At least two types of inertia or slowness of change can be identified in the interviewed organizations. The first is customer-driven inertia, which emerged in several interviews, and the second, in turn, is management’s rigidity or inability to switch from legacy systems to novel technologies. However, the first of these can be considered more problematic as mitigating it can be more challenging in the absence of control over customer organizations. In this context, customer-driven inertia suggests that the customer slows down the transition of the service company to more advanced solutions by demanding traditional services or favoring solutions that require traditional ways of operating.

“Some customers are not ready for that change but want to operate in the traditional way, especially some of the long-established industrial companies.” – Interviewee 15, Service Director

“There are a lot of those clients who want to see, discuss, and take care of things face to face, and you can’t really tell them that what if we had a Teams meeting instead to discuss the business matters.” – Interviewee 1, Accountant

On the other hand, this kind of inertia can also be caused by the service company, for instance, in a situation where modern accounting services are more expensive for the customer than traditional services (i.e., paper-based accounting), as was observed earlier in the case of some SMEs. Whereas managerial inertia refers to an organization-based problem that can thus be solved within the organization. This is elaborated by interviewee 2 in the following quote:

“It may be a decision of the management, that they do not want to make that decision to move to a new one, that even such a reason may be quite possible, that it does not succeed because it has been decided that this is a good system, and it is worked well for us now for 30 years.” – Interviewee 2, CEO/Accountant

Complexity of processes, regulation, and legislation

Lastly, the complexity of processes as well as current regulation and legislation may limit how effectively modern technologies can be utilized in organizations. The complexity of the processes and the incompatibility of the systems as a factor hindering digitalization came up with interviewees 2 and 3. Firstly, interviewee 2 finds that in the case of foreign trade, there may be challenges with systems, as the digitalization of financial management is by no means synchronized, but there may be great variation from country to country, especially outside Europe.

“If you engage in international trade and pay bills to different countries, you may have to use different systems for each country, then it may be a bit cumbersome and there may be problems and you will have to use online banking and pay from there. And since this is not quite a completely digitalized financial management around the world, it is still the case that banking systems are a little different if we go outside the EU” – Interviewee 2, CEO/Accountant

Second, in turn, interviewee 3 finds that there is a lot of customer-specific variation in the processes, which means that the processes cannot be automated in the same way as the solutions that are easily scalable:

“We have quite a lot of customer-specific variation in those processes that they may not be very clear about, for example, that certain things need to be done differently for certain customers, so in these cases it can be kind of difficult to do this kind of automation” – Interviewee 3, Controller

Hence, the lack of scalability can be considered the core issue that seems to hinder the implementation of, for instance, automation in the aforementioned situations. Lastly, regarding regulation and legislation, interviewee 15 states that for some digital solutions, there may be a limit to what is allowed to be done and to what extent robots, for example, can be used. For instance, key issues include GDPR and the use of robots for certain activities, such as the processing of personal data. Consequently, it is possible that regulation and legislation may have a somewhat restrictive effects on digitalization.

“One factor is how our legislation and other regulations respond to the fact that there is a robot that processes personal information. Some solutions have been such that, for example, there have been challenges with the income register as to what

information that robot can retrieve and how much mass it can process at a time. The robot would be able to retrieve a larger amount than what, for example, the income register has been able to produce in that time window, so this type of robot access challenge or what data it is allowed to process can be an influential factor.” – Interviewee, Service Director

5 DISCUSSION

In this chapter, I discuss how my findings answer the set questions and how they relate to the theories presented in the literature review of this thesis. The purpose of this study was to examine how the accounting profession responds to the digitalization of the field, where the objective was divided into three different objectives to provide a reasonable account of the transformation in the accounting domain and fulfill the research gap between conceptual and practical studies. The first research question concentrated on understanding what is happening in the field and how the experts in the field understand the current and future impacts of change on the profession. Second, from the research perspective, but especially for decision-makers in transforming organizations, it is fruitful to examine how transformation can be improved and what kind of barriers need to be overcome to take digitalization further in organizations. Thirdly, in such transformation, it is particularly vital to understand the mindsets of those who are at the center of change. Because if their motives can be understood, then there are qualifications to solve the emerging problems, or in the best scenario, they can be avoided altogether.

RQ1: How is the accounting profession influenced by the digitalization process?

Currently, the sample accounting firms appear to be in the early stages of digitalization. My findings do not support the idea that firms would yet make extensive use of the sophisticated technologies synthesized by Leitner-Hanetseder et al. (2021), such as AI and blockchain technologies. However, there is no contradiction, as they concentrate on describing the future prospects in their study, whereas my study describes the current situation. In the current stage, companies operate in digital environments, and old-fashioned practices (i.e., paper-based accounting) are becoming extinct as clients switch to digital. On the other hand, traditional services are still in some demand, especially among micro-enterprises and entrepreneurs of older generations. For the micro-enterprises, pricing can steer towards traditional services, while the older generations might prefer the familiar and safe choice. Furthermore, within their resources, contemporary companies are actively exploring the opportunities offered by novel technologies, such as RPA, and a clear objective for many

companies is to streamline processes and eliminate routine work, for instance, through rule-based automation. These findings are quite aligned with the ones Kokina et al. (2020) have presented. To describe the phase of development, based on Unruh and Kiron's framework (2017), financial accounting and financial management of the sample companies can be concluded to be in the digitalization phase, with more extensive digital transformation still to come.

Evidently, the implementation of novel technologies has positive impacts on the operational efficiency of accounting firms, as suggested by Vial (2019) and Deloitte (2020). Empirical findings of my study promote the understanding of growth in efficiency but do not emerge a consensus on how the efficiency is reflected in firms. Instead, three different traits are identified: increased quality, through reduced errors and added-value services such as more comprehensive financial analysis and advisory, increased volume due to enhanced processes and reduction in routine work such as manual accounting entries, and lastly, it was suggested that the time savings could be allocated to both self-improvement and organizational development. Furthermore, my findings on efficiency do not find a direct connection to Vial's (2019) view of how longer-term performance could suffer from ethical issues which the novel technologies may arise. I believe this is since there was only one hour set aside per interviewee in the field study, and thus, the conversations did not go deep enough into the subject for people to raise sensitive issues such as ethical issues. However, my discovery on how the process efficiency could cause unwanted organizational rigidity to some extent supports Vial's (2019) findings on the undesirable implications of novel technologies. In addition, in line with Asatiani et al. (2020), quite as expected, the findings suggest that digital technologies reduce errors in manual work as well as reduce industry cyclicalities due to smoother information flows, both externally, between different organizations and internally, inside the same organization. Regarding the job security, it was found that the negative impacts of digitalization mainly concern such manual work that does not require clear human judgement.

Concerning the potential and realized changes in the role and skills of accounting professionals, my results support the findings presented in the prior literature. Consistent with Bakarich and O'Brien (2021), Greenman (2017), Kokina et al. (2021), and Leitner-

Hanetseder et al. (2021), my findings suggest the role of accountants is shifting towards added-value tasks, as robots increasingly perform non-added value tasks (i.e., mundane routine work). Moreover, my findings suggest that the expertise in the profession is increasing, and the role is understood to shift in a more business-centric direction as the interviewees discussed the consultative role, in which accounting professionals could participate in solving pressing issues of their clients, instead of solely producing accounting information. In addition, in my findings also a monitoring role was identified, referring that the responsibility of the accounting professional would include overseeing that the technologies perform the tasks as intended. This role, in turn, is reasonably similar to the role of sustainer, which Kokina et al. (2021) presented and also aligned with Leitner-Hanetseder et al.'s (2021) observations. Consequently, I can, to some extent, agree with the conclusions of Leitner-Hanetseder et al. (2021) and Kokina et al. (2021) that the novel technologies can be understood as complementary to human labor and acting as a co-actor. Lastly, as for skills of an accounting professional, especially IT skills, which in this context is to be understood as knowledge in common accounting tools and systems, can be seen to be emphasized in the future.

Prior research provides decent conceptual models and frameworks for examining the professional identity, but to provide insightful information, they have to be put in use in the field. In this regard, my findings extend the research on the impacts of digitalization on the professional identity of accounting professionals as I utilized research of Brouard et al. (2017) and Barbour & Lammers (2015). According to the results of my study, digitalization has positive effects on professional identity as digitalization provides an avenue for more meaningful work that the interviewees saw as developing their self-esteem as well as giving them a greater sense of pride in the work. Also, interviewees perceived their professional identities to be more and more entrepreneurial, as digitalization enables continuous interaction with customers and the possibility of solving problems in practically real-time. However, on the contrary, digitalization was also considered to have negative effects on the professional identity, especially for less technology-oriented people, with the changes conflicting with the initial expectations of the profession. The main fear was found to be a decrease in social interaction, as interaction seems to become more formal and shift to online tools to a greater extent. Lastly, it was recognized that despite the changes in the professional

identity, stereotypes of external groups seem to lag behind, which in turn can negatively contribute to the internal image of the profession. Consequently, this may have a detrimental influence on the prestige and attractiveness of the profession. Interestingly, my findings do not seem to be solely accounting specific, but they could also provide useful insights for other professions as well.

Despite the already realized and expected changes in the field, my findings suggest that the accounting profession has prerequisites to maintain its relevancy in the business domain also in the future. In the empirical study, the interviewees highlighted various aspects: a holistic understanding of financial management and humane interaction with clients, which is difficult to replace with a robot, the need for continuous updating of knowledge created by environmental changes such as changes in legislation and regulations, and up-to-date technological know-how in relevant technologies. These observations largely support the prior research, such as Kokina et al.'s (2021) perception of accounting professionals' role as identifiers and sustainers, but also provide practical perspectives for accounting professionals in terms of what qualities might be relevant for the future.

RQ2: What factors support or inhibit the transformation of the accounting profession to higher levels of digitalization?

Where Vial's (2019) extensive literature review provides a reasonable but rather generic account of digitalization's promoting and inhibiting factors, my findings may extend the extant research by providing both to some extent new considerations, but moreover accounting industry-specific factors. Similarly, as the extant theory, I find the main decelerating factors to be resistance to change, inertia, and lack of resources. In this context, lack of resources broadly refers to organizational resources such as tangible (i.e., financial and physical assets) and intangible resources (i.e., knowledge and skills of personnel and existing technologies), which are seen to limit firms' capability to engage on digital transformation. However, as a key finding, I recognize that inertia and resistance to change are not necessarily internal to the organization but can also be customer-driven. By this, I suggest that customers of accounting firms may have sufficient leverage to keep firms in old practices, such as paper-based accounting. Consequently, a company's option could be to reconsider its customer

acquisition and pricing of paper-based accounting services. Furthermore, the complexity of processes and the limitations of regulation and law on novel technologies emerged as inhibiting factors. It turned out that processes can be quite customer-specific or such complex and yet seldom repetitive that their automation would be unprofitable. Whereas, in terms of law and regulation, the problem is that they do not allow the full potential of the technologies, but limit, for example, a robot's ability to operate in terms of processing volumes and certain types of data such as GDPR regulated information to be processed.

My suggestion of promoting factors differs from Vial's (2019) view, as he presents rather what is required or what are the necessary conditions to embrace digital transformation in organizations, whereas my findings suggest what type of factors could accelerate digitalization in accounting firms. From my findings, three key themes emerge: business benefits, user benefits, and a favorable environment for the change. First, business benefits can be understood as a key driver for digitalization as the novel technologies act as an instrument to achieve efficiency and competitive advantage in the business domain. Second, the implementation is recognized significantly less irresistible when the personnel in organizations perceive that the implemented technologies will also aid them in their work and the benefits are concrete. In particular, the interviews highlighted the understanding perspective that requires open organizational-level communication and reasoning why such changes are being made, as Markus (1983) suggests. Third, my findings support the concept of a favorable change environment, a factor suggested by various scholars (e.g., Berghaus & Back, 2018; Duerr et al., 2018; Karimi & Walter, 2015; Sebastian et al., 2017). According to my findings, openness to change is seen as extremely crucial, and therefore, for example, particularly conservative staff may hinder the implementation of changes. Furthermore, interviewees highlighted the importance of networks with technology companies and the digital orientation of staff and customers. In addition to a favorable change environment, similarly as Agarwal et al. (2011) observed, efficient change management was seen as a key determinant of successful implementation. However, for many companies in the industry, this is a key challenge, as the companies may not have a strategy or a detailed plan for implementing digitalization, let alone a specialized director of digitalization responsible for the area such as CDO or CIO.

The final factor or rather a prerequisite - sine qua non is the investment aspect. Similarly, as Matt et al. (2015) suggested, the financial aspect is a bounding force of digital transformation. But it is not just that financial resources are sufficient, but the investment should yield positive returns, for instance, in terms of saved costs or generated value. Thus, companies with different degrees of digitalization might have very dissimilar incentives. For a highly digitalized company, the investment opportunities may be significantly more saturated than for its less digitalized peers. Consequently, the investment aspect can be either a promoting or an inhibiting factor.

RQ3: How do accounting professionals adapt and react to changes caused by digitalization?

Similarly, as Asatiani et al. (2020), my findings suggest that the professionals' attitudes towards digitalization are relatively positive. All respondents identified digitalization as an opportunity as it enables upgrades in jobs, decreases the amount of mundane routine work, and increases the meaningfulness of work. Only approximately one-third of the interviewees identified threats in the phenomenon. Considering the future of the profession, the main threats identified were automation and its effects on low-skill work, the ability of the older generations to keep up with the developments, and efficiency thinking motivated by digitalization and development in general, where the employees are identified primarily as faceless resources of companies.

However, based on my interpretation, digitalization at its current level does not pose direct threats or considerable negative effects to the majority of accounting professionals, such as job losses or fragmentation of tasks (Astiani et al., 2020), but its benefits are perceived to promote work comfort and efficiency. Obviously, as an exception, in this case, there are individuals whose job description involves almost exclusively routine work without human consideration, in which case the current technologies may threaten their job security. Moreover, the results of my study strongly supported all the positive perceptions of accounting professionals observed by Asatiani et al.'s (2020)¹³. These perceptions include

¹³ Refer to Table 2 on page 21.

reduced errors due to reduction in human errors as machines perform routine tasks to a greater extent, reduced cyclicity due to smoother information flow as accounting material flows mainly in digital format, and lastly, upgrade of jobs and more in-depth analysis as due to the reduction in the routine work, accounting professionals can concentrate on added-value tasks and have more time for analytical work.

According to my findings, at the current stage of technological development, adaptation does not require major training measures, but the training is mainly provided by service providers for specific software. Furthermore, interviewees noted that employees are provided additional training in-house so that every employee would have sufficient skills to work with the novel technologies. In particular, the global coronavirus pandemic has forced the testing of company practices also in terms of educational perspective, as company employees had to move entirely to remote work, in which case all the training material had to be provided online. To conclude, as digitalization has progressed quite gradually, no drastic training needs or career change trends have been yet observed, but the re-skilling has occurred mainly through practice.

6 CONCLUSIONS

6.1 Summary of the research

This study aimed to alleviate the research gap between conceptual studies and practical implications of digitalization in the accounting domain. Hence, an exploratory field study was considered the best approach to examine the effects of digitalization on the accounting profession, how the profession responds to the phenomenon and lastly, what type of factors contribute to increasing the degree of digitalization in accounting firms. Data for the empirical study was collected with semi-structured interviews within several accounting firms and firms operating in a similar environment, after which qualitative content analysis (Denzin & Lincoln, 2018) was conducted applying the rigorous Gioia method (Gioia et al., 2013) to secure transparency and reliability of the emerging findings. This study contributes by shedding some light and deepening extant knowledge on the effects of digitalization on the accounting industry and accounting profession in at least three different ways: by compiling relevant theories in the field of accounting and information systems in the form of a literature review, by extending knowledge on the implications through the empirical research and thus also providing practical clues for future research.

First, the key findings of this study suggest that digitalization is gradually progressing in the field, and in the current state, it appears that the novel technologies (e.g., AI, blockchain and such novel technologies) are not yet exploited to the full potential, especially in SMEs. Second, the phenomenon aids by developing the roles of accounting professionals, taking them towards more significant expertise and a consultative role. The automation brought by digitalization significantly affects the job description by eliminating routine tasks, allowing accountants to concentrate on higher value-creating tasks such as deeper financial analysis and acting as a business partner for clients. In addition to the consultative role, a monitoring role was detected. Third, the effects of digitalization on professional identity are mainly positive in terms of increasing professional pride and self-esteem and raising entrepreneurial spirit. However, professional identity can also face serious conflicts, especially in less technologically oriented individuals whose initial perception of the profession differs significantly from the future outlook. Fourth, the study's findings suggest that in addition to

internal inertia, accounting firms may face customer-driven inertia, referring to the reluctance of client firms to engage in digitalized accounting, which in turn acts as a decelerating force on the accounting firm's effort to become further digitalized. Lastly, it emerges that the efficiency mindset brought about by digitalization can lead to organizational rigidity, with cohesive processes leaving less room for creative problem-solving.

6.2 Managerial implications

It is evident that accounting firms should focus on building capabilities that support fostering digitalization. Lack of resources and limited opportunities to focus on change were highlighted, especially in interviews with SMEs. However, companies with a small headcount should be able to operate more agilely than large corporates. Hence, companies should act as if they are startups, being open to change and striving to create an entrepreneurial culture that allows the breaking of old formulas and a “culture of failure.” Above all, digitalization should be reflected in the company's day-to-day life and in all decisions, such as recruiting of new employees, customer acquisitions, organization’s trainings, and events. In the end, there is not necessarily a need for a 10-person strategy team and CDO and CIO titles to be a pioneer in digital transformation.

The business benefits of digitalization alone are not sufficient to motivate employees, but solutions must also be marketed to the internal stakeholders through, for instance, the user benefits of the novel technologies. The emphasis here is on open and honest communication within the organization as to why change is happening and what the expected consequences are. Specifically, the importance of change management cannot be over-emphasized; in management, it is essential to understand the motives of employees and the emerging contradictions between these motives and the strategic objectives of the company. Then, the arising problems need to be addressed by re-aligning the motives of employees to match the company’s objectives by designing incentives that create sufficient tensions to get employees to serve the company’s long-term strategy. As my findings suggest, inertia can also be external to the organization. When inertia and resistance to change are customer-driven, the transformation should also be managed and marketed in the field, respectively, as within the organization. In addition, companies should reconsider their customer acquisition and adjust

the pricing of more traditional services (e.g., paper-based accounting), if their provision is detrimental in terms of the company's effort to become further digitalized.

Finally, on a more general level, my findings argued that digitalization could trigger organizational rigidity as cohesive processes may leave less space for creative situational problem-solving. Hence, companies need to be cautious not to get too excited on the efficiency mindset brought about by digitalization and attempt to avoid the undesirable rigidities. Instead, companies should strive to maintain a delicate balance in their processes between efficiency and flexibility to sustain their ability to respond to the constant changes in the competitive environment, especially as the industry is in a disruptive transition.

6.3 Limitations of the research

There are several limitations and considerations in the research approach and the methods I have employed, which should be considered when interpreting the results. Firstly, the research setting is prone to interviewer bias as there was only one researcher actively involved in the process. Thus, in the analysis there were no possibilities for deviating interpretations. However, the Gioia method (Gioia et al., 2013) alleviates the problem by providing data structures which make the process more transparent as it allows readers to examine where the interpretations stem from. The potential problem was also mitigated by recording the interviews and carefully transcribing them. This procedure allowed me to use direct quotes to avoid the problem of having made up insights. Second problem is also related to the setting of only one researcher that is the missing devil's advocate which means there is a risk of losing the higher-level perspective in case the interviewer relates too much on the interviewees and the distance between interviewee and interviewer is inadequate.

Thirdly, it is also noteworthy to mention the challenging research setting and consider whether the interviewees were open enough in front of a graduate student. Did the interviewees tell the full reality of rather sensitive subjects to a graduate student? Regarding the issue, I noted that some of the interviewees felt uncomfortable to discuss their weaknesses and fears and thus partly avoided these topics. I believe that this issue led to a lesser amount of rich and in-depth information, especially on the negative effects of

digitalization. Fourthly, due to the relatively small sample size (15 interviews within 14 organizations), the study's findings are not generalizable as such. Therefore, when interpreting the results, it is essential to consider company demographics¹⁴ and to avoid cognitive bias, it should be recognized that broad conclusions should not be drawn from the results of this single study.

Fifthly, my empirical research relies on only one type of data, that is semi structured interviews. In such setting, the potential issue is that interviewees may have a tendency to tell what the interviewer wants to hear, while triangulation, for instance, could have provided a more objective account of the studied phenomenon. However, the research data did not solely rely on information provided by accountants, but also sought evidence from versatile perspectives as I gathered data from other functions as well, such as controllers, financial managers, and HR managers. Sixthly, with one exception, I conducted only one interview per company. Hence, it is possible that the voice of an interviewee is not fully representative as there could have been opposing statements if more people were interviewed inside the same company. But, considering richness of the study, this was the risk worth taking as with limited time the other possibility would have been to focus on a single company, that would have given a quite unilateral view. Variables such as status and seniority naturally have a major impact on how the phenomenon is perceived. This issue is considered in the presentation of the results as I have transparently presented what role and seniority level each interviewee represents in the organization.

6.4 Suggestions for further research

In my study, I addressed several themes that were considered relevant for building an understanding on the potential effects of digitalization. Hence, in this study I was unable to concentrate on the individual themes as deeply as is fruitful, leaving several interesting undiscovered avenues for further research, such as the opportunity to deepen the understanding on each of my research themes. For instance, my study mapped several factors that promote and inhibit digitalization in accounting firms, so the natural continuum of research would be to examine how such decelerating factors can be mitigated or eliminated

¹⁴ Refer to Table 5, "Research sample company demographics"

altogether. In addition, the study revealed somewhat unexpected findings that require further examination. A particularly interesting finding was that with digitalization, organizational rigidity could increase with the introduction of cohesive processes brought by digitalization, thereby weakening the space for more creative solutions. Hence, it would be interesting to study how digitalization affects organizations' decision-making as well as their ability to respond to the further changes in the environment. Furthermore, due to the qualitative nature of the research the generalizability of the findings remains weak, so that the research could be improved by validating the findings using quantitative research methods in a better controlled setting. Namely, my research suggests that digitalization has various implications for professional identity of accounting professional but, it remains somewhat unclear how far-reaching the effects are. In this case, quantitative research could be conducted by setting measurable factors, such as factors suggested by Brouard et al. (2017) of which changes could be examined in a longer term as digitalization progresses in the accounting industry.

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8 APPENDICES

Appendix 1: Interview guide

Interview guide is constructed around the research questions, Brouard et al.s' (2016) identity framework and Barbour and Lammers' (2015) identity formation factors. All questions are coded based on which research question they answer or what aspect they address. Here, the questions are in the order in which they were to be asked in the interviews.

1. Introduction

Permission to tape (and record video if there is no other option) [General]

Role and career length in the organization [General]

Information on how the interview data is used (what is anonymized and what can be presented as it is) [General]

What are your main responsibilities and tasks? [General]

How do you view digitalization? Does it feel more an opportunity or a threat to you? [General & RQ3]

2. Interview questions

Could you describe what novel technologies are implemented in your organization (describe how it is often done in your organization) [RQ2]

Have you gained new skills or educated yourself due to digitalization e.g. to master novel technologies? [RQ3, RQ1, Skills]

What do you think are the pitfalls and bottlenecks that inhibit digitalization of accounting function? [RQ2]

What kind of support have you received and has the support been sufficient? [RQ2]

What factors support promotion of digitalization in your organization? [RQ2]

What has changed due to digitalization? [RQ1 & All]

Has your role and/or work tasks changed due to digitalization? [RQ1 & Role]

Have your responsibilities changed due to digitalization? [RQ1 & Role]

What would you develop through digitalization in your work? [RQ2]

Has the competition between professions changed? Do you think that other professions could substitute accountants? [RQ1 & Relevance]

Digitalization is understood to make work and processes more efficient, how is this efficiency reflected to your work? [RQ1, Role & Relevance]

Have you adapted to changes? Is there anything that has felt hard? [RQ3]

Has there been any change resistance in your organization regarding digitalization, what kind of? [RQ3]

Has digitalization affected your career choices, have you e.g. considered other career options inside or outside the accounting industry [RQ1, Identity, RQ3]

Has the level of autonomy changed due to digitalization? Does the level of autonomy meet your expectations? [RQ1 & Identity]

Do you feel that you can regulate your work yourself? Has the level of self-regulation changed due to digitalization? [RQ1 & Identity]

How has your professional identity changed due to digitalization? [RQ1 & Identity]

3. Closing

Thank you for participating, is it possible to contact you in case I still have further questions?

Appendix 2: Translated interview guide

1. Johdanto

Saako haastattelun nauhoittaa?

Mikä on roolisi organisaatiossa ja kuinka pitkään olet työskennellyt organisaatiossa?

Kerro haastateltavalle, miten haastatteludataa käytetään.

Mitkä ovat pääasialliset vastuusi ja työtehtävät?

Miten sinä koet digitalisaation, tuntuuko se enemmän uhkalta vai mahdollisuudelta?

2. Haastattelukysymykset

Voisitko kuvata mitä uusia teknologioita ja toimintamalleja teillä on käytössä? Miten niitä on implementoitu organisaatioon?

Oletko lisäkouluttautunut tai muuten hankkinut uutta osaamista uusien teknologioiden hallitsemiseksi?

Mitkä ovat sinun mielestäsi sudenkuopat ja mahdolliset pullonkaulat digitalisaation eteenpäin viemisessä organisaatiossasi?

Millaista tukea olet saanut muutoksen suhteen, onko tuki ollut riittävää? (Esim. organisaation tai ulkoisen palvelutarjojan järjestämät koulutukset ym.)

Millaiset asiat edesauttavat digitalisaation tuomista organisaatioon?

Mikä organisaatiossa on muuttunut digitalisaation vuoksi?

Onko sinun roolisi organisaatiossa tai työtehtävät muuttuneet digitalisaation johdosta?

Ovatko sinun vastuusi muuttuneet digitalisaation vuoksi?

Mitä sinä haluaisit kehittää organisaatiossasi digitalisaation avulla?

Koetko että digitalisaatio olisi vaikuttanut ammattien väliseen kilpailuun?

Digitalisaation ymmärretään tekevän monista työtehtävistä ja prosesseista tehokkaampia, miten tämä näkyy sinun työssäsi?

Miltä muutokset ovat tuntuneet ja miten koet, että olet sopeutunut niihin?

Onko organisaatiossasi ollut minkäänlaista vastusta digitalisaation suhteen, millaista?

Onko digitalisaatio vaikuttanut uravalintoihisi, oletko esimerkiksi miettinyt uramahdollisuuksia alan ulkopuolella tai sisäpuolella erilaisissa tehtävissä?

Onko autonomian taso muuttunut digitalisaation vuoksi? Koetko että autonomian taso työssäsi vastaa odotuksiasi?

Koetko että voit itsesäännellä työtäsi riittävästi (rytmittää, tehdä valintoja jne.), Onko itsesääntelyn taso muuttunut digitalisaation myötä?

Miten ammatti-identiteettisi on muuttunut digitalisaation vuoksi?

3. Lopetus

Kiitos osallistumisesta! Voinko olla yhteydessä teihin, mikäli ilmenee, että tutkimuksessa tarvitaan vielä tarkennusta joidenkin kysymyksien osalta?