

# **Essays on Crisis and Change From a Management- Accounting Perspective**

KUMULATIVE DISSERTATION

zur Erlangung des akademischen Grades  
doctor rerum politicarum; Dr. rer. pol.  
(Doktor der Wirtschafts- und Sozialwissenschaften)  
in der Wissenschaftsdisziplin Betriebswirtschaftslehre

eingereicht an der  
Wirtschafts- und Sozialwissenschaftlichen Fakultät  
der Universität Potsdam

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Datum der Disputation: 17. Juli 2023

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Online veröffentlicht auf dem

Publikationsserver der Universität Potsdam:

<https://doi.org/10.25932/publishup-60118>

<https://nbn-resolving.org/urn:nbn:de:kobv:517-opus4-601185>

## **Abstract (English)**

This cumulative doctoral thesis consists of five empirical studies examining various aspects of crisis and change from a management-accounting perspective. Within the first study, a bibliometric analysis is conducted. More precisely, based on publications between the financial crisis (since 2007) and the COVID-19 crisis (starting in 2020), the crisis literature in management accounting is investigated to uncover the most influential aspects of the field and to analyze the theoretical foundations of the literature. Moreover, this investigation also serves to identify future research streams and to provide starting points for future research. Based on a survey, the second study investigates the impact of several management-accounting tools on organizational resilience and its effect on a company's competitive advantage during a crisis. The results show that their target-oriented use positively influences organizational resilience and contributes to the company's competitive advantage during the crisis. The third study provides a more detailed view on the relationship between budgeting and risk management and their benefit for companies in times of crisis. For this purpose, the relationship between the relevance of budgeting functions and risk management in the company and the corresponding impact on company performance are investigated. The results show a positive relationship. However, a crisis can also affect the relationship between the company and its shareholders: Thus, the fourth study – based on publicly available data and a survey – examines the consequences of virtual annual general meetings on shareholder rights. The results show that, temporarily, particularly the right to information was severely restricted. For the following year, this problem was fixed, and ultimately, the virtual option was introduced permanently. The crisis has thus brought about a lasting change. But not only crises cause changes: The fifth study, also based on survey data, investigates the changes in the role of management accountants caused by digitalization. More precisely, it investigates how management accountants deal with tasks that are considered outdated and unattractive. The results of the study show that different types of personalities also act differently as far as the willingness to do those unattractive tasks is concerned, and career ambitions also influence that willingness. In addition to this, the results provide insights into the motivation of management accountants to conduct tasks and thus counteract existing assumptions based on stereotypes and clichés circulating within the research community.

## Abstract (German)

Diese kumulative Dissertation besteht aus fünf empirischen Studien, die aus einer Management-Accounting-Perspektive heraus verschiedene Aspekte von Krisen und Veränderungen untersuchen. In der ersten Studie, einer bibliometrischen Analyse, wird die Krisen-Literatur im Management Accounting auf Grundlage von Publikationen zwischen der Finanzkrise (ab 2007) und der COVID-19-Krise (beginnend in 2020) untersucht, um die wichtigsten Einflussfaktoren des Forschungsbereiches zu ermitteln, deren theoretische Grundlagen zu analysieren sowie zukünftige Forschungsrichtungen zu identifizieren und Ansatzpunkte für zukünftige Forschungsbeiträge zu liefern. In der zweiten Studie, basierend auf einer Umfrage, wird der Einfluss verschiedener Instrumente des Management Accountings auf die Resilienz von Unternehmen und in der Folge auf einen Wettbewerbsvorteil für resilientere Unternehmen in Krisenzeiten untersucht. Die Ergebnisse zeigen, dass der zielgerichtete Einsatz der Instrumente zur Resilienz von Unternehmen und damit zu einem Wettbewerbsvorteil beitragen. Einen detaillierteren Blick auf den Zusammenhang von Budgetierung und Risikomanagement und deren Nutzen für Unternehmen während Krisenzeiten liefert die dritte Studie. Hier wird der Zusammenhang zwischen der Bedeutung der Budgetierungsfunktionen und dem Risikomanagement im Unternehmen und deren Auswirkungen auf die Unternehmensperformance untersucht. Es kann ein positiver Zusammenhang gezeigt werden. Die COVID-19-Krise und die damit verbundenen Kontaktbeschränkungen hatten auch Einfluss auf die Interaktion von Unternehmen und Eigenkapitalgebern. Die vierte Studie untersucht, aufbauend auf öffentlich zugänglichen Daten und einer Umfrage, welche Folgen die Durchführung von virtuellen Hauptversammlungen auf das Auskunftsrecht der Aktionäre hat. Die Ergebnisse zeigen, dass das Auskunftsrecht temporär stark eingeschränkt war. Diese Einschränkung wurde im Folgejahr wieder aufgehoben. Letztendlich wurde die Option der virtuellen Durchführung dauerhaft ermöglicht. Damit hat die Krise eine nachhaltige Veränderung bewirkt. Doch nicht nur Krisen bedingen Veränderungen. Daher untersucht die fünfte Studie umfragebasiert, wie sich die Rolle der Management Accountants unter dem Einfluss der Digitalisierung verändert. Genauer, wird untersucht, wie gerne Management Accountants bzw. Controller Aufgaben durchführen, die als veraltet und wenig attraktiv gelten. Die Ergebnisse der Studie zeigen, dass unterschiedliche Persönlichkeiten eine unterschiedliche Bereitschaft zeigen, unattraktive Tätigkeiten zu verrichten und dass dies auch durch Karriereambitionen beeinflusst wird. Weiterhin bieten sie Einblicke in die Motivation von Management Accountants hinsichtlich der Übernahme von Aufgaben und wirken so Stereotypen und Klischees entgegen, die diesbezüglich in der Forschungsgemeinschaft kursieren.

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# Introduction

## 1.1. Relevance and Research Focus

In the beginning of 2020, first reports on the appearance of a novel lung disease in China emerged (Bundesgesundheitsministerium, 2022; Tagesschau, 2020). After almost three months, at the beginning of March 2020, the World Health Organization (WHO) started to speak of a pandemic in the case of the newly-named COVID-19 disease (WHO, 2020). An unprecedented pandemic crisis began, not only triggering a health emergency around the globe but also plunging nearly all economies into an economic crisis due to an immense increase in uncertainty in general, as well as due to regional and more operational effects caused by imposed lockdowns and severely restricted global shipments (Atalan, 2020; Donthu & Gustafsson, 2020; Verma & Gustafsson, 2020; Wang et al., 2020; World Trade Organization (WTO), 2020). Until now, COVID-19 and its consequences have not been completely overcome (Telenti et al., 2021; United Nations, 2022; WHO, 2023).<sup>1</sup> During the ongoing pandemic, another crisis hit Europe and other Western countries: The Russian war of aggression against Ukraine, having a massive impact on the global economy and many of its players (United Nations, 2022). After the global financial crisis that started in 2007 (Guillén & Suárez, 2010; Helleiner, 2011) and the subsequent European economic crisis (from 2010 on) (Copelovitch et al., 2016; Hall, 2012; Pisani-Ferry, 2012), the COVID-19 pandemic and the war against Ukraine are already the third and the fourth global crisis<sup>2</sup> in about 15 years having severe consequences for national economies and companies and bringing more than a few companies to the brink of extinction. The sequence of crises shows that various exogenous triggers can repeatedly lead to comprehensive external economic crises (Passetti et al., 2021). Thus, each crisis can force companies to react ad-hoc to ensure company survival (Hayne,

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<sup>1</sup> In a statement of their “International Health Regulations (2005) (IHR) Emergency Committee regarding the coronavirus 2019 disease (COVID-19) pandemic”, the WHO stated at the end of January 2023 that the pandemic could face a turning point now, as the ongoing spread of the virus meets populations with a higher level of immunization. Nevertheless, the committee states that the pandemic is still a “health emergency of international concern”. They assume that the virus cannot be eliminated and remains in circulation for the long-term. Thus, the global vaccination campaign needs to be continued. Public actions will also be necessary to handle the situation (WHO (2023)).

<sup>2</sup> In the context of this doctoral thesis, several events are named “global crises”. The economic perspective of those crises represents one of the main research foci of this doctoral thesis. Although only the supposedly biggest crises of recent years are considered, it is clear that those crises did/do not affect all countries and companies equally. In addition, the author is aware of the fact that the impacts and effects of crises differ, particularly between regions of the global South and the North (Mossig & Lischka (2022); United Nations (2022)). Besides, the author is aware of the fact that the crises are not just objects of research but have brought suffering to many people.

2022; Starbuck et al., 1978). As a consequence, crises always challenge corporate management because they require specific decisions and they also influence the company's outcome and decision-making processes (Holsti, 1978). Therefore, as part of corporate management and as a support function in the company, management accounting or "Controlling"<sup>3</sup> is required to provide the best possible assistance for corporate management by responding to changing information needs and by providing the necessary information; thus, helping to steer the company through the crisis (Endenich, 2014; Hayne, 2022).

In general, management accounting is a supporting function for corporate management (Bhimani et al., 2019; Datar & Rajan, 2021). Thus, the main task of management accounting is to ensure that the company can achieve its primary objective: value enhancement through the targeted use of scarce resources (Bhimani et al., 2019; Contrafatto & Burns, 2013; Sprinkle, 2003; Sprinkle & Williamson, 2007). Management accounting fulfills this task by creating and providing all kinds of information that the designated recipients, in turn, can use for their own purposes (Bhimani et al., 2019; Cavélius et al., 2020; Datar & Rajan, 2021; Hayne, 2022; Horngren et al., 2008). If the accounting information is interpreted correctly and applied to particular decisions correspondingly, it contributes to a higher decision quality (Horngren et al., 2008) and shows that the information provided by management accounting is an essential basis for work within the company (Contrafatto & Burns, 2013; Shah et al., 2011).

The provision of relevant information moreover has two subordinate functions: the decision-facilitating function on the one hand and the decision-influencing function on the other hand (Demski & Feltham, 1976; Luft & Shields, 2003; MacIntosh, 1994; Sprinkle & Williamson, 2007). Here, the point in time determines whether the function has a decision-influencing or decision-facilitating character (Demski & Feltham, 1976): In case of a decision-facilitating function (Demski & Feltham, 1976) it is the task of management accounting to provide the company's management with all the information required to assess decision-making situations (Contrafatto & Burns, 2013; Demski & Feltham, 1976). This includes, for example, decisions within the corporate planning and control functions (Bhimani et al., 2019;

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<sup>3</sup> In the context of this doctoral thesis, the term "management accounting", which is less common in the German-speaking area, is used as a synonym for the more widely used term "Controlling". For detailed information about the possibility of synonymous use of the two terms and the overlap of the two underlying functions, please see, for example Ahrens & Chapman (2000); A. Becker & Messner (2005); Schäffer & Binder (2008); Wagenhofer (2006). By using the term "management accounting", the author of this doctoral thesis follows the general usage in international research in this area. The same applies to the term "Controller". Hereinafter it is referred to as "management accountant".

Hornngren et al., 2008; Rasid et al., 2014). In this way, management accounting supports defining, communicating, and implementing the company's overriding goals (Datar & Rajan, 2021). The decision-influencing function in turn, is supposed to ensure that all employees in the company act in accordance with the company's goals, e.g., that their work is conducive to the company's overriding goals (Demski & Feltham, 1976). This is necessary because on the one hand, employees should be motivated to pursue the company's goals (Zimmermann, 2003). On the other hand, employees continuously follow their own objectives, which do not necessarily have to be congruent with the company goals (Anthony & Govindarajan, 2007; Merchant & Van der Stede, 2017).

In contrast to other areas of accounting, e.g., financial accounting, management accounting combines monetary and non-monetary information (Chenhall, 2003; Contrafatto & Burns, 2013), and, if necessary, considers the past and the future. Furthermore, unlike financial accounting, management accounting is not subject to any statutory regulations. The concrete design is thus free and individual. Management accounting is mainly used internally (Bhimani et al., 2019; Datar & Rajan, 2021; Hornngren et al., 2008). Overall, it can be established that information is the basis for management accounting. With its supporting function in the company, it always focuses on the management's demand. The information demand increases, among other things, with growing environmental uncertainty (Chenhall, 2003), such as in times of crisis or in times of change, and the requirements for the content may also change (Hayne, 2022).

Despite the problems a crisis causes, a crisis of such magnitude as the COVID-19 pandemic always offers a unique opportunity for (management-accounting) research. Hopwood (2009) already referred to such an opportunity in 2009 when the financial crisis struck, impacting the entire accounting field significantly. Van der Stede (2011) shares this assessment and points out to the supposedly unique opportunity such a crisis offers as a research subject. This opportunity would not exist in "times of 'normal' change" (Van der Stede, 2011, p. 606) and should be used to explore change as well as newly emerged and existing issues. A similar assessment is shared by Arnold (2009) who calls for a "fundamental reassessment of all areas business and economic scholarship, including accounting research" after the experience of the financial crisis (Arnold, 2009, p. 803). In addition, all authors agree that research should move closer to (management) accounting in corporate practice (Arnold, 2009; Hopwood, 2009; Van der Stede, 2011) and, at the same time, adopt more diverse

perspectives (Hopwood, 2009). After that, many research projects have been conducted to answer these calls and to close the existing gaps: Researchers have examined classical aspects of crisis or change in the context of management accounting or discussed crisis- or change-related new issues (e.g., S. D. Becker et al., 2016; Endenich, 2014; Janke et al., 2014; Pavlatos & Kostakis, 2015). The common aspect of the studies published in this respect is the fact that a crisis is mainly understood as a starting point for change. Thus, the crisis has also highlighted the relevance of change in practice and research. Simultaneously, this emphasizes the close link between the two topics.

Change generally means “the act or result of something becoming different” (Oxford Learner’s Dictionaries, 2023a). Thus, the word describes a process where the output is not equal to the input. Change is an inherent attribute of nearly all aspects of life, as many elements develop continuously (Chia, 1999; Hoag et al., 2002). Hence, change is also a highly relevant topic for companies. Thereby, change can happen at all levels of a company: on a global level, on a business-unit level, or the team level, and it can also affect a single employee (Van den Ven & Poole, 1995). Focusing on causes and reasons for change, companies often need change to adapt to the latest developments in the company’s environment to secure the company’s future success (Chia, 1999).<sup>4</sup> However, such developments can be either positive or negative – in that vein, not only a crisis can be a reason for necessary change. The causes for developments within the environment are manifold (Libby & Waterhouse, 1996). Significantly, technology evolves rapidly and thus, also impacts the (management) accounting (Warren et al., 2015).<sup>5</sup>

Particularly, the advancing and disruptive digitalization affecting almost all companies should be emphasized here (Bhimani & Willcocks, 2014; Möller et al., 2020). More in detail, the digitalization thereby captures and changes not only existing processes but offers the possibility to use different and larger data amounts from new data sources and in addition, to use new analytical methods to process the data (Warren et al., 2015). Entirely new business models are emerging. Thus, the whole finance function (including management accounting) will be strongly affected. As a result of the changed work situation, also the roles of the employees in the concerned functions change (Bhimani & Willcocks, 2014; Rikhardsson &

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<sup>4</sup> Next to external reasons for change, there can also be internal reasons (Van den Ven & Poole (1995)). As the focus of this doctoral thesis is on external crises and the digitalization, reasons for internal crises will not be further discussed.

<sup>5</sup> For studies investigating the use and implementation of latest technological developments in management accounting, see - for example - Carlsson-Wall et al. (2022); Kostić & Sedej (2022).

Yigitbasioglu, 2018). So, also in management accounting, tasks could change significantly and existing role models could become obsolete in a more digital future (Huerta & Jensen, 2017). Altogether, concerning the inescapable nature and the profundity of changes based on the digitalization, most of the companies are required to react and adapt to the latest developments to stay successful and to prepare their company for a digitalized future.

In summary, the topics of crisis and change, the latter mainly driven by the digitalization, are highly relevant and dynamic, and thus currently the dominating issues in the business context. Here, particularly, the increased stroke rate of crises highlights the necessity of enhanced knowledge about crisis and change. At the same time, experiences from the (recent) past show that in-depth expertise is necessary to steer companies successfully in such challenging times. Therefore, management-accounting research should try to gain further knowledge on how to deal with existing challenges, to provide topical knowledge that can be used in corporate practice and thus, helps companies overcoming current crisis situations and to prepare for future crisis situations. Therefore, this doctoral thesis considers some aspects of crises and (resulting) changes from a management-accounting perspective and also touches related disciplines. Here, the overall aim of the projects is to advance the current research in management accounting and generate new knowledge that will also serve management accounting in companies.

## **1.2. Research Program and Thesis Outline**

This doctoral thesis consists of five empirical research projects. To integrate (existing) research and corporate practice in the best possible way, mainly data from corporate practice was collected by means of standardized surveys to investigate the research questions. Table 1 shows the structure of the present doctoral thesis.

**Table 1. Structure of the doctoral thesis.**

	<b>Chapter 2</b>	<b>Chapter 3</b>	<b>Chapter 4</b>	<b>Chapter 5</b>	<b>Chapter 6</b>
<b>Title</b>	Management-Accounting Literature on Crisis – An Analysis Based on Publications Between 2007 and 2021	Organizational Resilience in the COVID-19 Pandemic – An Empirical Investigation of Antecedents and Effects	Budgetierung und Risiko-management in Krisenzeiten	Die virtuelle Hauptversammlung - Hatte das neue Format Auswirkungen auf das Auskunftsrecht der Aktionäre?	Who Does the Dirty Work? The Effect of Management Accountant’s Traits and Attitudes
<b>Co-Author(s)</b>	-	Julia Eichholz; Anja Schwering	Julia Eichholz	Neele Sassenroth	Anja Schwering
<b>Geographical Focus</b>	Worldwide	German-speaking countries	German-speaking countries	Germany	German-speaking countries
<b>Data Source(s)</b>	Bibliographic databases	Survey	Survey	Survey; Publicly available data	Surveys (two)
<b>Methodology</b>	Bibliometric analyses, e.g., (co-) citation analysis, bibliographic coupling	Structural equation modeling	Descriptives; Significance testing; Sample split analyses	Descriptives; Significance testing; Sample split analyses	Regression analyses

The research projects of this doctoral thesis will be explained in more detail in the following passages.

### ***1.2.1. Crisis Research in Management Accounting***

Generally, a crisis is “a time of great danger, difficulty or doubt when problems must be solved or important decisions must be made” (Oxford Learner’s Dictionaries, 2023b). In crisis-situations, there is a high degree of uncertainty and little control over future developments (Bundy et al., 2017; Pearson & Clair, 1998). To limit the impact of the crisis, decision-makers need to make decisions quickly (Holsti, 1978) and, therefore, too often, cannot weigh all alternatives beforehand (Bedford et al., 2022). In this general definition, the term crisis initially encompasses events of any scale between a personal crisis of a single person and a global crisis affecting all of mankind. So to say, in a business context, the span reaches from an organizational crisis of a single company to a global crisis affecting most companies all over the world.

For companies, the term crisis describes a condition that significantly threatens a company’s existence, and a crisis often leaves companies with only a narrow time frame for an appropriate response (Hayne, 2022; Passetti et al., 2021). Moreover, in a situation of crisis, companies usually lack the necessary resources to respond appropriately (Hayne, 2022;

Khandwalla, 1978). Passetti et al. (2021) point out that the COVID-19 crisis was a crisis of an unknown magnitude that exceeded previous crises. Consequently, the COVID-19 crisis brought challenges of high magnitude for the global economy, but also provided a unique object of research. Therefore, answering the question of what is the right way to deal with such a crisis and the resulting changes is essential for corporate practice and research, also to prepare better for future crises.

If a crisis occurs and affects a company, corporate management needs to react adequately. Here, certain information is necessary to understand the current situation and prepare the company's reaction. Thus, handling a crisis is closely related to management accounting with its primary function of supporting the company's management by providing useful information for corporate steering. Therefore, dealing with a crisis has been part of management-accounting research to generate knowledge and provide evidence for corporate practice. This research stream has regained momentum in the last decades, especially after the global financial crisis that started in 2007. However, how exactly the crisis issue is addressed in management-accounting research, what the roots of this literature stream are, or what future directions for further research could be, has not yet been systematically investigated. A fundamental, highly-aggregated overview is missing.

To create new insights and evidence in the field of crisis literature in management accounting, I conducted a bibliometric analysis in my **first study**. Here, I analyze the crisis literature in management accounting based on publications in the field between the financial crisis (from 2007) and the beginning of the COVID-19 crisis. I use citation analyses to identify the most influential publications, authors, journals, and countries in this topic area. Furthermore, I use co-citation analyses to identify the roots of the existing research streams in the field and conduct a bibliographic-coupling analysis to identify future research trends. Thus, the study provides a comprehensive overview of the crisis literature in management accounting.

My results show that there is no independent crisis-literature stream and that crisis literature is closely connected to the topic change. When searching for the theoretical roots of the field, I find evidence that the crisis literature in management accounting is based on four topics (design of management-accounting systems, the use of management-control systems (for strategy and behavioral control), change (process) in management accounting, and the relationship between risk management and management accounting). Analyzing the research streams in more detail makes it clear that nearly all of them are related to the topic "change".

Furthermore, dealing with the COVID-19 pandemic, COVID-19 as a starting point for change, and management accounting in the public health sector are future research trends in the field. Pointing out to those research trends for the future, the study's results can be understood as a starting point for further research. Altogether, this bibliometric analysis provides comprehensive insight into the area's status quo and identifies possible developments that may gain importance in the future. Moreover, the study is one of the first bibliometric analyses in management-accounting research, and, thus, this paper is one of the first to show how this novel, innovative form of analysis can be used to gain knowledge in the subject area.

### ***1.2.2. The Impact of Management-Accounting Instruments on a Company's Organizational Resilience and Competitive Advantage***

The results of the first study show that dealing with the COVID-19 pandemic is one of the future management-accounting topics. More in detail, it can be shown that the topics investigated regarding the crisis are manifold and, for example, include common management-accounting topics as risk management. In addition, there are further topics as the concept of resilience. The concept of organizational resilience is not new (Sutcliffe & Vogus, 2003), but it has regained momentum due to the COVID-19 pandemic. Within the scope of the COVID-19 pandemic, (organizational) resilience is often called a capability to overcome the crisis (Sharma et al., 2020). Also for companies resilience appears to be a critical issue for survival (Rai et al., 2021). The term has several definitions (Barbera et al., 2017; Duchek, 2020; Hillmann, 2020; Hutter & Kuhlicke, 2013). Besides some differences, they all agree that resilience is a supportive function in crises (Duchek, 2020). Hence, organizational resilience is defined as a superordinate function that helps to overcome a crisis better and thus represents a competitive advantage for companies in crises (Hillmann & Guenther, 2021; Marwa & Milner, 2013).

Following Lengnick-Hall and Beck (2009), resilience is a complex set of various components and is thus the outcome of the interplay of different facets. But, more precisely, it remains unclear how the capability is formed in companies and which elements are contained (Duchek, 2020; Huang et al., 2020; Lengnick-Hall & Beck, 2009). According to Sutcliffe and Vogus (2003), organizational resilience also arises from the capability to recombine a company's variant components. Thus, organizational resilience is not a fixed structure but can be understood as a meta-capability and a concept with several stages (Duchek, 2020; Sutcliffe & Vogus, 2003). Within, different capabilities of a company, which can be subsumed under



the meta-capability organizational resilience, work on three stages, namely anticipation, coping, and adaptation (Duchek, 2020). Thus, organizational resilience comprises and unfolds at the entire time-span from before to after an unexpected event.

As events such as the COVID-19 pandemic occur unexpectedly and leave little time to react adequately, it seems necessary that organizations strengthen their organizational resilience in times when company survival is not at stake. Simultaneously, it seems appropriate to investigate the topic during and after a crisis, as it offers a unique setting for research on organizational resilience (Huang et al., 2020). In that way, research can increase the knowledge about the topic and provide valuable insights for managers about where and how to develop organizational resilience with respect to future crises (Huang et al., 2020). In addition to calls for more general research on organizational resilience, Barbera et al. (2020) encourage more detailed accounting research in this area. Following this and focusing on management accounting as one aspect of the overall concept of accounting, it seems thinkable that management accounting supports organizational resilience as many other functions and concepts likewise do. Thus, it is interesting to investigate more in detail how management accounting can support a company's organizational resilience.

Following up on this, the **second study**<sup>6</sup> investigates whether specific management-accounting instruments, as budgeting, scenario planning, and risk management positively impact the organizational resilience. In addition, we analyze whether organizational resilience brings a competitive advantage for the company. The study is based on data of a survey conducted in January and February 2021. In detail, we hypothesize that the importance of a specific use of the corporate-planning function for budgeting, the existence of capabilities for scenario planning, and a risk management are associated with higher levels of organizational resilience. In a second step, we hypothesize that stronger organizational resilience positively impacts a company's competitive advantage within the crisis. To examine the hypothesized relationships, we set a structural equation model and tested it extensively based on the data.

The results of our second study provide insights into factors that influence organizational resilience. Here we find that the importance of the specific use of corporate planning for budgeting, the existence of capabilities for scenario planning, and sound risk management in a company positively impact the adaptive-capacity factor of organizational resilience. In

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<sup>6</sup> The mentioned study is co-authored by Julia Eichholz and Anja Schwering.

addition, the study highlights the importance of organizational resilience as a factor that positively affects the company's situation during a crisis, as organizational resilience leads to a higher competitive advantage. Thus, we contribute to a highly relevant field of research, as the concept of (organizational) resilience has gained momentum as a result of recent crises but has been little explored so far. More precisely, based on empirical evidence, our results establish a link between management-accounting instruments and organizational resilience. Thus, we can show the positive impact of the instruments on organizational resilience and, in the following, the company's competitive advantage.

### ***1.2.3. The Relationship Between Corporate Planning and Risk Management***

Following the results of the second study, the use of selected management-accounting instruments results in positive effects for companies. In addition, it becomes clear that risk management is especially in times of crisis, more in focus. Since the 1990s, companies have paid increased attention to risk management (Arena et al., 2010; Rasid et al., 2014). This is due to the intensification of competition and the perceived increasing number of crises (Beasley et al., 2006; Soin & Collier, 2013). In this context, risk is understood as the potential danger for a loss or for an adverse situation that endangers the company's survival (Collier et al., 2007). A company's risk management shall improve the environmental fit, and thus help to adapt the business towards these risks (Soin & Collier, 2013). Hence, known risks can be integrated into strategic considerations (Collier et al., 2007). More in detail, risk management helps to process the relevant data based on existing risks and, thus, helps to enhance the company's performance (Collier et al., 2007; Rasid et al., 2014).

Initially, companies' risk management is often carried out separately from other processes (Ittner & Oyon, 2020). After several financial scandals, the introduction of the International Committee of Sponsoring Organizations of the Treadway Commission (COSO) standard framework in 2004 (Arena et al., 2010; COSO, 2004) led to a more holistic, integrative view on risk management in most companies, which in itself is a joint product of many functions within a company (Arena et al., 2010; Beasley et al., 2006; Gordon et al., 2009; Power, 2009; Soin & Collier, 2013). Thus, risk management is also inherent part of management accounting (Bhimani, 2009; Braumann, 2018; Soin & Collier, 2013).<sup>7</sup> The

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<sup>7</sup> There are different opinions in the literature, whether risk management is a part of management accounting or a standalone function. Thus, in the studies in chapters three and four of this doctoral thesis, risk management is subsumed as part of management accounting, whereas in chapter two, based on the prevailing opinion in the

aforementioned integrative, and holistic approach is often referred to as Enterprise Risk Management (ERM). According to the COSO (2004), it is designed to support companies in dealing with uncertainty and integrated risks as well as in finding and using opportunities in order to maximize the chance to create value. The COSO ERM approach (COSO, 2017) is considered the best practice (Beasley et al., 2006; Rasid et al., 2014; Tekathen & Dechow, 2013) and is characterized by the fact that it is based on the alignment of risk and strategy (Beasley et al., 2006; COSO, 2017). Moreover, it is considered a way to increase the companies' performance (Gordon et al., 2009). Therefore, companies should include a risk perspective in all of their business processes (COSO, 2004; Power, 2009). This also applies to other management-accounting processes, e.g., budgeting.

Companies use budgeting not only to deal with the future of their business intensively but also to fulfill many other related functions as, e.g., planning, coordination, or evaluation purposes (Sivabalan et al., 2009). Thus, if risks are considered within the budgeting, the inherent risk consideration is passed on through the budgeting functions. The current crises sufficiently illustrated why the consideration of risk in the budgeting is recommended and essential for corporate practice. Evidence on the interrelationship between the design of a company's risk management and the usage of budgeting is scarce, despite there being many relevant questions to investigate, for example, how the integration of risk management could also affect the use of the budgeting for specific functions. In addition, it is thinkable that also crises could affect the usage of budgeting.

Following up on this, we investigate the relationship between budgeting and risk management with the **third study**<sup>8</sup> and, thus, contribute to the understanding of the interaction between different management-accounting facets. Based on the survey data collected for the second study, we therefore investigated different budgeting and risk-management aspects. More precisely, we examine possible changes in the usage of budgeting for different macro-functions before and during the crisis. Moreover, we investigate the effects of the company's design and state of risk-management implementation on the use of budgeting for different functions. In addition, we use a sample split to investigate whether there are significant differences between small- and medium-sized companies, and large companies. Finally, the

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reviewed and thus, determining literature, management accounting and risk management are presented as closely interrelated, but two separate functions.

<sup>8</sup> The mentioned study is co-authored by Julia Eichholz and first published in *Controlling - Zeitschrift für erfolgsorientierte Unternehmenssteuerung* 35 (1), p. 45-52 [<https://doi.org/10.15358/0935-0381-2023-1-45>].

study investigates whether risk management affects the company's situation during the COVID-19 crisis.

The results of our study show that budgeting functions are almost equally commonly used in times of business-as-usual and in times of crisis. Here, the company's focus is usually placed on the use of budgeting for control and deviation analysis. Moreover, on average, the study participants rate their company's risk management as sufficiently developed. Concerning the relationship between risk management and budgeting, we find that a good company risk management positively affects the fulfilment of the budgeting functions. In addition, the study shows that a well-developed risk-management system is associated with a better corporate performance and, overall, corporate situation. Our study results thus suggest that, given future crises, companies may need to expand their risk management accordingly and use budgeting for various functions.

#### ***1.2.4. The Impact of the COVID-19 Pandemic on Shareholder Rights***

The COVID-19 pandemic did not only bring implications for the management-accounting instruments: it is rather that the crisis also affected joint areas of management accounting and, e.g., corporate governance, since due to the restrictions on meetings, the procedures for providing information to shareholders had to be adapted. Corporate governance is generally understood as a concept to ensure good and transparent corporate management and balance all stakeholder's interests (Cromme, 2005; Schmidt, 2012; Witt, 2001). It does not represent a separate functional area in the company but rather an overarching concept that is inherently implemented in all corporate functions, especially in management (COSO, 2013; Cromme, 2005). The basis and guidelines for this are national or international standards and regulations (e.g., DCGK (Germany), Cadbury Act (UK), Sarbanes-Oxley Act (US)) that companies should comply with (Quick et al., 2018; Rühmkorf et al., 2019).<sup>9</sup> These standards and regulations are intended to help building more reliable and transparent internal control systems (COSO, 2013).

The need for a corporate-governance concept is primarily based on the principal-agent-theorem and thus, on the assumption that not all acting parties pursue the same goals and have the same information (Bednar, 2012; Berens & Schmitting, 2004; Mueller, 2006; Shleifer & Vishny, 1997). The concept, therefore, aims to reduce the information deficit of the external

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<sup>9</sup> In Germany, §161 AktG requires capital market-oriented companies to submit a declaration of conformity with the codex (AktG/04.01.2023; Regierungskommission (2022); Rühmkorf et al. (2019)).

parties, who provide capital to the company as investors vis-à-vis the management (Freidank & Pätzmann, 2004; Quick et al., 2018; Schmidt, 2012). This is to say that transparency should be increased (Schmidt, 2012) as well as the compliance of the company management with the respective law (Regierungskommission, 2022). Thereby, the overarching goal is to create (another) control option for the investors over the management (Witt, 2001) to ensure the investors' objective; namely to get an appropriate return on their investment (Davis, 2005; Shleifer & Vishny, 1997).

Following Indjejikian (1999), the principal-agent-theorem can also be understood as the basis of the management-accounting function. Within that perspective, management-accounting information is used to align the owner's and the employee's goals. In practice, this is often achieved by targeted (monetarily) behaviour incentivization. Thus, conflicts of interest are solved and the employees are incentivized to maximize the firm value. Next to that shared underlying idea, corporate governance and management accounting share further similar goals: supporting and controlling corporate management to ensure that the company remains successful. In the long term, value should be added (Freidank & Pätzmann, 2004). Moreover, they share the closeness of the functions to corporate management. This is to say, that although there are separate departments, the responsibilities overlap. Both functions mainly process information and distribute them to different recipients.

Despite this, management accounting and corporate governance take different perspectives (corporate governance takes an external view; management accounting an internal view) and are based on other fundamentals. Management accounting does not follow legal requirements and corporate governance is, at least, based on standards and regulations. The claim for corporate governance and, especially, information gathering in Germany rises from shareholders' rights, which shareholders receive when they acquire shares of a company. For example, the investment allows them to attend and vote at the annual general meeting (AGM) (AktG/04.01.2023). Here, they can co-decide on essential company resolutions (among other things, on the composition of the supervisory board, which is the controlling body for stock corporations (Butzke, 2011; Regierungskommission, 2022; Witt, 2001). Even beyond the election of shareholder representatives, the AGM is an essential tool for communication between the company and its shareholders and provides the latter with information (Butzke, 2011; Wunderlich, 2022).

Management accounting has a central function during the AGM. As the board is about to answer the shareholders' questions (AktG/04.01.2023), the management-accounting team prepares the answers in the back office or collects the necessary data. In general, management-accounting work begins long before the meeting takes place, since it is the responsibility of the management-accounting team to prepare the relevant corporate data for shareholders in the run-up to the AGM. Accordingly, management accounting is, to a certain extent, not only the provider of information for internal purposes but it is also involved in the provision of information for shareholders.<sup>10</sup>

During the COVID-19 pandemic, the legal basis for the AGM was changed to allow virtual AGMs in times of contact restrictions (GesRuaCOVBekG/27.03.2020; Wunderlich, 2022). According to the new legislation, the shareholders' right to ask questions was – in the beginning – significantly restricted and reduced to a question option. As a result, the shareholder's right to information was limited. From the point of view of the information recipient (shareholder), the provision of information in the crisis has thus changed significantly. Currently, there are no thorough investigations about what changes occurred and how this affected the position of shareholders. Likewise, related investigations from the management-accounting perspective are missing, as management accounting (in its supporting function in the preparation and execution of the AGM) was also affected.

Thus, the **fourth study**<sup>11</sup> focuses on the impact of the COVID-19 pandemic on AGM and shareholder rights. Our study examines the implementation of virtual AGM and, in particular, the effect on the shareholder's right to information. Here, we analyze the invitations to the AGM of the 160 German DAX companies from 2019-2021 in a first step and conduct a survey among those companies. More precisely, we extensively analyzed the letters of invitation with regard to the introduction of the new legislation and the company's respective implementation. As a supplement, we conducted a survey to collect the company's opinion about the option and implementation of a virtual AGM.

Our results of the invitation analysis show that almost all companies used the option to hold a virtual AGM in 2020. In general, the virtual AGMs have been well attended. In addition,

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<sup>10</sup> Freidank and Sassen (2020) state, that the Controlling [sic!] department collaborates on the data provision and preparation of the required disclosures of a company. Thus, it is conceivable that the Controlling department also collaborates in the data preparation for the AGM, as it involves the same data basis and a similar concern.

<sup>11</sup> The mentioned study is co-authored by Neele Sassenroth.

it becomes clear that the companies implemented the new legislation, which resulted in an encroachment on the shareholder's right to information. These changes are noticed by companies, shareholders, and interest groups and critically discussed. Having learnt from the first season of virtual AGMs in 2020, the legislator reacted and adopted a new version of the law for the following year. With the amendment of the law prior to the annual-meeting season 2021, the shareholder's right to information was reinforced. Asking the companies for their opinion about the option of virtual AGMs, the assessment was, on average, a positive one. Most of the companies perceive virtual AGMs as more cost-efficient and easier to conduct, and they stated they would be open to holding virtual AGMs in the future as well.

Meanwhile, the legislator has reacted to the developments and to the – on average – positive experiences with virtual AGMs: the legislation, which was intended as a transitional solution, has been implemented on a long-term basis so that virtual AGMs can now be held regularly in Germany (AktG/04.01.2023). Focusing on the impact on the main management-accounting task during AGMs, namely to prepare the answers for the board, a chance was missed here, as the legislator did not anchor the during-pandemic-solution of an extended time-span for the shareholder's right to ask. Companies can voluntarily offer the possibility to ask ahead of the AGM in future, but the offer is not mandatory anymore. Thus, the primary workload for management accountants again accrues during the AGM. A possible distraction of the time-span to ask questions could have led to relief and more detailed preparation of the answers. Nevertheless, in the overall view, the possibility of a virtual AGM is a positive example of change following a crisis experience.

### ***1.2.5. Role Change in Management Accounting***

As per the research projects presented above, a crisis event such as the COVID-19 pandemic raises many questions in management accounting and can lead to changes within management-accounting-related topics. But besides that, there are many other factors that cause changes in management accounting, too (Wolf et al., 2020). Hence, management accounting as a discipline faces constant change, and thus, change has always been a topic in management-accounting research (Burns & Scapens, 2000). For some time now, more complex environmental conditions (Baines & Langfield-Smith, 2003; Rieg, 2018) and the advancing digitalization (Oesterreich et al., 2019) have been among the strongest external influences to which companies, and thus also their management-accounting teams, are exposed.

The advancing digitalization brings new technical implementation options to companies and also a larger volume of data with and from which information can be generated (Cavélius et al., 2020; Warren et al., 2015; Wolf et al., 2020). As a result, the basis of management-accounting work – and thus many tasks – changes (Endenich & Trapp, 2021; Warren et al., 2015). The adjustments entail changes in the daily working routine of management accountants and, therefore, also for their roles (Bhimani & Willcocks, 2014; Heinzelmann, 2018; Möller et al., 2020). Consequently, the increasing digitalization reinforces the (already existing) idea of transforming the role of management accountants. Digitalization allows automatization of a lot of routine work and time-consuming tasks, and allows management accountants to focus on other, non-routine, tasks. These non-routine tasks need the input of human knowledge and are considered less easy to automate (Korhonen et al., 2021).

A similar distinction is made with regard to management-accountant roles: As far as the transformation of the role is concerned, the prevailing opinion in the literature is that management accountants need to move away from the rather traditional, passive roles (such as, e.g., bean counter, analyst, watchdog, scorekeeper) to more proactive and more business-oriented roles, and become a so-called business partner who carries out more non-routine tasks (De Loo et al., 2011; Maas & Matějka, 2009). Management accountants who understand their role as a business partner focus on the interaction with the corporate management and on an advisory function. That way they are able to add value to the company in the future and, at the same time, secure their so-called “right to exist” in the company (Burns & Baldvinsdottir, 2005; Emsley, 2005; Granlund & Lukka, 1998). However, the above-mentioned transformation is described as complex and not easy (Burns & Baldvinsdottir, 2005; Wolf et al., 2020), lengthy, diverse and, thus, is to some extent controversially discussed (Byrne & Pierce, 2007; Rieg, 2018; Seal & Mattimoe, 2014; van den Steen, 2022; Wolf et al., 2020). The discussion also involves the question of to what extent the transformation is implemented and which difficulties occur within the process (Guo, 2018; Horton & Wanderley, 2018; Wolf et al., 2020). Current studies show that many management accountants still take on a more traditional role in their companies (Cavélius et al., 2020; Rieg, 2018) and, thus, also in the future (De Loo et al., 2011; Fourné et al., 2018). The seemingly faltering transformation gives reason to continue to critically question the propagated change and the associated role-model clichés. To this end, it is conceivable to investigate the topic quantitatively, as the vast majority of existing studies is qualitative, i.e., interview or case studies in which respondents self-assess their roles



(De Loo et al., 2011; Rieg, 2018). This way, new insights from a different perspective can contribute to the current debate and narrow the research gap.

Thus, the survey-based **fifth study** focuses on the currently discussed, possible future developments regarding the role of the management accountant. More precisely, the project examines whether and for what reasons management accountants perform so-called dirty-work tasks. These tasks are perceived as unpopular and unattractive and are assigned to the role image of the “bean counter”, which is considered outdated. Based on the first of two data collections, we clarify whether management accountants in corporate practice perceive the same type of tasks as unattractive that is described as such in the literature. Here, our results confirm the prevailing classification into dirty-work / not-dirty-work tasks. After that, a second survey is set up to investigate possible impacts of certain types of personality as well as career ambitions on the management-accountant’s willingness to do dirty work. The results of our second analysis show that certain personality types are more likely to perform these tasks and that personal career ambitions also influence whether management accountants are more likely to perform dirty-work tasks. In this connection we find that management accountants with higher career ambitions are more likely to perform dirty-work tasks. This finding contradicts the prevailing view in the literature that management accountants with career ambitions always try to make a good impression by performing attractive tasks and therefore emulate the role model of the business partner. Thus, the study adds another perspective to the existing discussion based on quantitative data. Furthermore, it links currently existing research in the field of dirty work in management accounting and establishes a connection to the controversy about role models.

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# **Management-Accounting Literature on Crisis – An Analysis**

## **Based on Publications Between 2007 and 2021**

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### **Abstract**

This bibliometric study examines how management-accounting research has addressed the crisis issue and how this research field has developed from the beginning of the financial crisis in 2007 until 2021. The results from several bibliometric techniques ((co)-citation analysis, bibliographic coupling, and cartographic analysis) and a qualitative content analysis provide in-depth insights into the structure of the research field, theoretical roots, and current research gaps as well as future research trends. Thereby, the field of crisis literature in management accounting appears homogenous and closely connected to the topic of change. The results show that there is no standalone crisis research stream but that the focused crisis research is based on research on standard management-accounting topics, such as (1) design of management-accounting systems, (2) the use of management-control systems (for strategy and behavioral control), (3) change (process) in management accounting, (4) and the relationship between risk management and management accounting. Additionally, this paper presents three possible future research streams and derived from this, two possible future research directions. The results of this research thus provide an outlook on potential future developments on the topic of crisis and management accounting and point to further research opportunities. Moreover, the applied method is not widespread in management accounting and thus, the study also contributes to the diversification and development of the method.

**Keywords:** Bibliometric Analysis; Citation; Co-citation; Crisis; Crisis Literature; Literature Review; Management-Accounting Research.

**JEL Classification:** M41.

### **Acknowledgements:**

I gratefully acknowledge helpful comments from Ziaul Munim and Ilan Alon and all participants of the 2021 Eden Doctoral Seminar on Bibliometric Literature Analysis as well as the participants of the 2022 Berens Doctoral Colloquium, and the New Directions in Management Accounting Conference 2022. Any errors are my own.

## 2.1. Introduction

In recent years, there have been several global crises of various causes (e.g., financial, macroeconomic, pandemics, and wars). All of them appeared suddenly, have impacted the global economy to a high degree over the past 15 years (International Monetary Fund (IMF), 2022), and have exposed many companies to major challenges.<sup>1</sup> In general, crises can be understood as a particular situation and a trigger for change. Crises are defined as unexpected events, which rarely occur, but can destroy those who are affected. A crisis is characterized by the fact that the subjects involved must take action quickly, leaving little time for decision-making (Holsti, 1978). After the occurrence of the crisis, the affected have to deal with the new situation.

In corporate practice, the management has to ensure the company's survival, especially in times of crisis. As a result, management accounting as a management-support system is affected by crises (Van der Stede, 2011), too. In general, management accounting is understood as a supportive function in a company, aligning all actions in a company with the overall goal of increasing the company's value (Bhimani et al., 2019) and providing targeted information to specific stakeholders. The provision of information should align the decisions of all employees with the company's goals (Sprinkle & Williamson, 2007). Specifically, and first of all, the target group of management accounting is the management, but management accounting also delivers information to recipients of all other company departments. In contrast to financial accounting, the provided information is a mixture of financial and non-financial information (Contrafatto & Burns, 2013), not subject to any regulation, and mainly future-oriented. Thus, management accounting supports the corporate-steering process as comprehensively as possible. In particular situations, e.g., when companies face times of external change, management accounting should also provide an appropriate response to those changes (Atkinson et al., 1997).

It is therefore necessary that management-accounting research addresses crises to provide most recent findings to corporate practice. Hence, after the global financial crisis the

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<sup>1</sup> The addressed crises do not affect all countries equally. However, based on the annual development of the total global GDP (in comparison to the previous year) as a macro crisis indicator heavy decreases can be seen as a consequence of the global financial crisis (since 2007) and the COVID-19 pandemic (since 2020) (International Monetary Fund (IMF) (2022)). As the study focuses on literature development in an international research field, a global view on the crises is taken. Therefore, individual crises at the country level are not discussed. For the same reason, no company-specific crises are discussed.

request emerged that management-accounting research understands a crisis as a unique opportunity to explore existing and new issues more deeply (Hopwood, 2009; Van der Stede, 2011). So, the crisis topic has been brought into sharper focus of both practice and research, and the recurring crises further highlight the importance of the topic. To the best of my knowledge, no studies investigate the existing body of management accounting that focuses on crises. To fill this gap, a hybrid approach consisting of a quantitative analysis (using bibliometric tools) and a qualitative analysis (content analysis) was chosen to conduct a review of the literature from 2007 to 2021 (Massaro et al., 2016). The period was selected as the global financial crisis produced strong and long-lasting restrictions that affected many parts of life worldwide. To provide a comprehensive overview of the literature, the following research questions will be answered: (1) What are the most influential aspects of management-accounting literature in this period?, (2) What are the theoretical roots of the management-accounting crisis literature published since the financial crisis (2007/2008)?, (3) What are the relevant topics and directions for further research on crises in management accounting?

Suitable analyses were performed to answer these questions.<sup>2</sup> A bibliometric analysis uses quantitative, statistical methods to examine the literature, whereas qualitative content analysis adds value through in-depth reviews (Mustikarini & Adhariani, 2021). Inherently, this bibliometric analysis offers the chance to provide a more comprehensive overview of the existing literature in the field and of related areas. For this purpose, the bibliometric data of three databases (Web of Science, Scopus, Dimensions) were combined. At first, a citation analysis was conducted to find the most influential aspects of the literature. In a second step, a co-citation analysis was conducted to find out which existing research streams of the literature had an impact on crisis literature in management accounting. Such an analysis offers extensive insights into the field's intellectual structure (Zupic & Čater, 2015). To gain deeper insights into the theoretical roots of the sample literature, the streams were further defined by a cartographic analysis and a comprehensive content analysis. Finally, a future-oriented bibliographic coupling analysis and content analysis uncovered recent streams, emerging topics and future research gaps.

The present study's findings inform (not only) management-accounting researchers about the theoretical development in the crisis literature, in closely related neighbour topics,

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<sup>2</sup> Explanations of bibliometric terms and techniques can be found in the glossary, see Appendix A1.

and about potentially interesting research gaps and future research directions. The findings moreover emphasize that research streams from various topics have influenced the development of the crisis literature, as (1) design of management-accounting systems, (2) the use of management-control systems (for strategy and behavioral control), (3) change (process) in management accounting, and (4) the relationship between risk management and management accounting are identified as the theoretical roots of the respective crisis literature. In accordance with this, literature on crises has evolved from various other topics. Besides, it turns out that all four research streams also – to a great extent – deal with change. Thus, the study illustrates the close interrelationship between crisis and change from a management-accounting perspective.

Concerning current research gaps and insights into future research trends, the results of the future-oriented analyses show that the COVID-19 pandemic has had a massive impact on research in the field. This is also reflected in the emerging research streams dealing with the topics (1) dealing with the COVID-19 pandemic and (2) COVID-19 as a starting point for change. Moreover, another research stream has emerged: (3) management accounting in the public health sector. This stream of research, although it has existed before, has regained momentum during the pandemic. Derived from these new developments, two directions could be interesting for future management-accounting research: (1) the contribution of management accounting to more socially just and environmentally sustainable economic systems, and (2) the use of management accounting in healthcare.

This study contributes to the existing crisis literature in management accounting by comprehensively analyzing the existing literature. Such a comprehensive overview helps to structure the current literature and knowledge and makes it easier for interested parties to get into the topic. In terms of content, the study identifies the most influential papers, authors, and countries. Beyond profound information about the crisis literature in management accounting, this study provides insights into the theoretical roots of the field while focusing on related, influential existing streams of literature. In addition, the study points out to research gaps and future research potential. Considering the abovementioned aspects, the study represents a valuable basis for future research and, finally, is one of the first to apply bibliometric analyses in management-accounting research. Thus, the author contributes to the diversification and development of literature reviews in management accounting.

The remainder of the paper is organized as follows: Section 2 presents the methodology and describes the data-extraction process. Section 3 shows the citation-analysis results, presenting the most influential papers, authors, and journals. Section 4 summarizes the results of the co-citation and the content analysis of the existing research streams. Section 5 discusses future research streams, and section 6 concludes.

## **2.2. Study Design**

### ***2.2.1. Bibliometric Analysis***

Bibliometric analysis is a quantitative method of studying literature (Ding et al., 2001) focusing on scientific publications (Garfield, 1955). It allows using different bibliometric data and various methods and parameters depending on the subject. Due to the high level of availability of these data and the technical advancements, bibliometric analysis is an appropriate way to handle large datasets (Feng et al., 2017). Within such analyses, bibliometric data are examined using various quantitative methods. Hence, it is possible to explore data with different foci, such as authors, topics, and countries. Bibliometric studies are also suitable for obtaining an overview of the intellectual structure of a research area, identifying past and future research trends, finding key publications, and discovering interrelationships (Gurzki & Woisetschläger, 2017). That offers the chance to study not only a focused field of literature but also related areas. This possibility of more overarching analyses distinguishes the chosen method from other methods used in literature reviews, such as systematic literature review or meta-analysis (Donthu et al., 2021). Due to the structured approach and the application of statistical methods, the obtained results are transparent and reproducible (Cao & Alon, 2020). This fact raises the quality of literature studies to a new level, as they are no longer dominated by subjective opinions (Aria & Cuccurullo, 2017a; Donthu et al., 2021).

Currently, bibliometric analysis increasingly gains popularity due to the spread of the internet and the resulting data availability as well as the dissemination of methodological knowledge and programs, and is finding its way into many areas of business research (e.g., management, entrepreneurship, innovation) (Donthu et al., 2021; Rialp et al., 2019). However, so far, only very few bibliometric studies have been published in management accounting. For example, a query in the ISI Web of Science (WoS) database with the keywords “management

account\*” and “biblio\*” leads to seven results; four of them not fitting into the field of management accounting.<sup>3</sup>

The existing bibliometric management-accounting research was found to deal with the following topics: Japanese literature on management accounting (Yoshikawa et al., 1994) and sustainability management accounting in eastern European countries (Zyznarska-Dworczak, 2018). In addition, Balstad and Berg (2020) investigate, within a bibliometric study based on WoS and Scopus data, which journals publish management-accounting studies, and which sources are the most cited in those journals. As a result, they found that Accounting, Society and Organisation (AOS) and Management Accounting Research (MAR) are the most cited ones. Besides dealing with journals and publications in management accounting, the three abovementioned articles are the first to do so with the help of a bibliometric study. The willingness to use bibliometric analyses to investigate (existing) subject areas offers a wide range of possibilities in management accounting.

Consequently, the present study also explores one of these possibilities. Since the analysis combines data sets from three data sources, using different software solutions was limited. To conduct the bibliometric analyses (Aria & Cuccurullo, 2017a), the package bibliometrix for R and biblioshiny – an app providing a web surface for bibliometrix – were used (Secinaro et al., 2020). Biblioshiny was used for the evaluation of analysis results and the creation of graphics.

### ***2.2.2. Sample-Selection Process***

The basis of each bibliometric review is a bibliographic data collection from scientific database(s). As the field of management accounting seems to be relatively small, ISI WoS database, Scopus database, and Dimensions database were selected and combined to enrich the number of results. While WoS and Scopus are well-known commercial databases (including high-quality journals) with restricted access (Balstad & Berg, 2020), the Dimensions database is openly available. Dimensions is a suitable complement to WoS and Scopus, as it also lists

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<sup>3</sup> The query was made at the beginning of the preparation of the study in November 2021. In addition to the mentioned findings, Hersford et al. (2007) conducted a bibliographic analysis focussing on the general development of management-accounting research between 1981 and 2000. The study is published as chapter of the “Handbook of Management Accounting Research Volume 1” (Chapman et al., 2007). Therefore, it does not appear in the database query.



newer journals and online-publishing opportunities. This can increase the number of results, especially when considering more contemporary topics and very recent publications.

A two-step process following Alon et al. (2018), Cao and Alon (2020), and Fetscherin et al. (2010) was applied to identify the relevant keywords and to gather the relevant data. Table 1 displays the exact keyword development and the data-extraction process.

**Table 1. Keyword development and data-extraction process.**

<b>1. Keyword development</b>		<b>Number of results in</b>		
<b>Step</b>	<b>Keywords/ logic statement</b>	<b>WoS</b>	<b>Scopus</b>	<b>Dimensions</b>
1	("managerial account*" OR "management account*") AND "crisis"		55	
2	("managerial account*" OR "management account*" OR "management control") AND "crisis"		98	
3	("managerial account*" OR "management account*" OR "management control") AND ("crisis" OR "Coronavirus disease 2019" OR "COVID-19" OR "Sars-Cov-2" OR "pandemic")	121		
<b>Most-relevant-word analysis</b>				
	<b>Author's keywords</b>	<b>Occurrences</b>		
	covid-19		18	
	management accounting		15	
	management control		12	
	crisis		7	
	economic crisis		7	
	accounting		5	
	budgeting		4	
	financial crisis		4	
4	("managerial account*" OR "management account*" OR "management control" OR "budgeting") AND ("crisis" OR "Coronavirus disease 2019" OR "COVID-19" OR "Sars-Cov-2" OR "pandemic")	261		
<b>2. Data extraction and sample preparation</b>				
<b>Refine through filters</b>				
	LANGUAGE: English			
	PUBLICATION YEARS: 2007-2021	244	430	446
<b>After exclusion</b>		66	46	29
	Removing duplicates			-40
<b>Final sample in total</b>				<b>101</b>

As a first step, keywords for an initial search were developed. As the study focuses on two topics, (1) management accounting and (2) crisis, several keywords from both areas were used for an initial search in WoS database in November 2021. For management accounting, keywords ("managerial account\*" OR "management account\*" OR "management control") which were used in previous studies on similar topics (Ascani et al., 2021; Endenich & Trapp,

2020; Shakil et al., 2020)<sup>4</sup> were reused. The same process was applied to the second topic (“crisis” OR “Coronavirus disease 2019” OR “COVID-19” OR “Sars-Cov-2” OR “pandemic”) (Shakil et al., 2020).<sup>5</sup> For this purpose, the search field “Topic” was used to reduce the results to those articles with the keywords appearing in the title, abstract, or keywords (Cao & Alon, 2020; Feng et al., 2017). Extending the search on the field “abstract” leads to a significant increase in the total number of searched words in which the searched keywords can occur. In combination with choosing generic terms as keywords, this significantly increases the probability that relevant publications will be identified. After filtering for results in English only (Evans, 2010; Moed, 2005), and for a publication date between 2007 (beginning of the financial crisis) and November 2021, 121 results were left. The search for the document type was deliberately not limited to “Article” in order to increase the sample size. As a consequence, the sample also includes books, conference papers, and proceedings (Tranfield et al., 2003; Verma & Gustafsson, 2020), but the majority consists of published articles. To confirm and enrich the results, an additional most-relevant-word analysis in biblioshiny was performed based on the previously identified sample (Bahoo et al., 2020). Within this analysis, the authors keywords of the corresponding publications were analyzed and regarding their number of occurrences sorted. Thus, it can be verified, whether important keywords are missing within the current search terms. The results of the analysis show, that the top eight of the most important keywords (“covid-19”, “management accounting”, “management control”, “crisis”, and “accounting”) except the keyword “budgeting” were already included.<sup>6</sup> As a result, “budgeting” was added as an additional keyword increasing the number of results in WoS to 244. Using this combination of keywords, the search within Scopus led to 430 results, while in Dimensions, 446 results were found.

In a second step, the abstracts were read in order to decide which results to include in or exclude from the final sample (Zott et al., 2011). For inclusion in the sample, the documents had to deal with management accounting and crisis. The main exclusion criteria were non-subject topics, e.g., articles dealing with the management of the COVID-19 pandemic from all other disciplines. Likewise, e.g., publications from the area of public budgeting were excluded,

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<sup>4</sup> An asterisk at the end of the search term can be used in search engines as a substitute for any other letter (Endenich & Trapp (2020)).

<sup>5</sup> In selecting the keywords, special attention was placed on including the most common designations for the various crises. While both the financial and economic crisis are referred to as “crises”, different terms are used for the COVID-19 crisis. Therefore, further terms were defined as keywords for this purpose.

<sup>6</sup> The additional query of the two other top-eight keywords “financial crisis” and “economic crisis” was omitted, since these are already covered by the query for the keyword “crisis”.

as they do not focus on management accounting in companies, but rather on the management and accounting of states and public facilities. If, after reading the abstract, it was still unclear whether a document should be included in the study or not, the whole paper was read to make an informed decision (Bretas & Alon, 2021). Finally, the results of the three databases were merged into one file, using the bibliometrix R-package. During the process, 40 duplicates were removed.

The remaining 101 publications dealing with management accounting and crisis were published in 67 sources between 2009 and 2021, with an average citation per document of 10.61 (1.142 per document per year).<sup>7:8</sup> The majority of documents is multi-authored (75 articles), the total number of authors is 226. The collaboration index, which shows the relation between the total number of authors in multi-authored articles (202 authors), to the total number of multi-authored articles (75 articles), is 2.69 (Elango & Rajendran, 2012).

**Figure 1. Annual scientific production.**

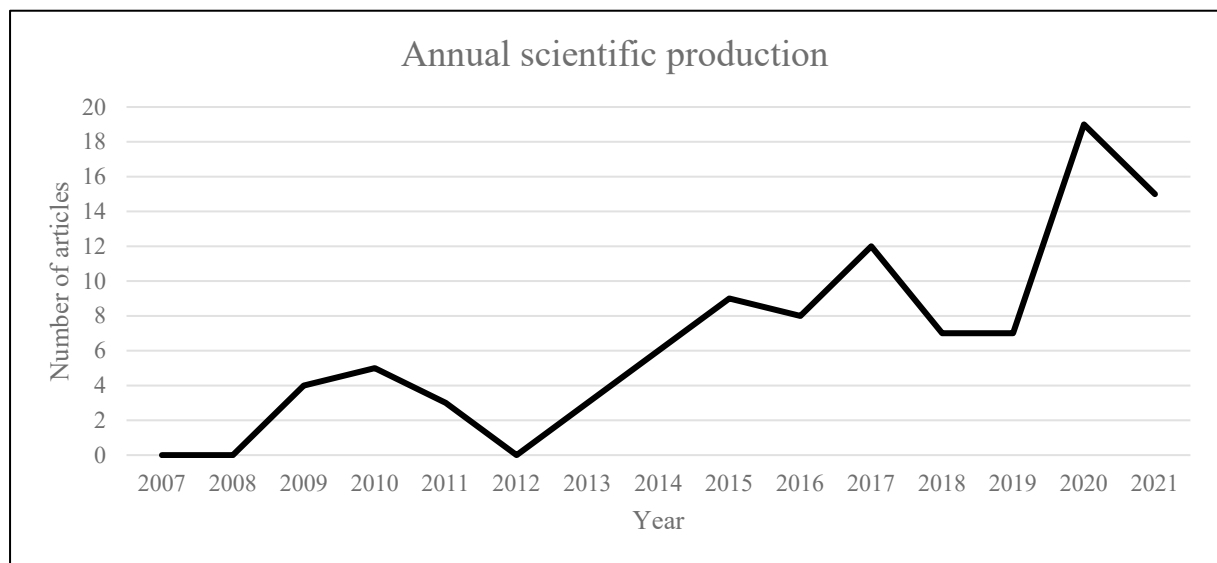


Figure 1 shows constant growth in the field since the start of the financial crisis. Since 2009, the annual scientific production has increased with an annual growth rate of 12.77%. There is noticeable another peak in the period under consideration (in 2016-2017). The peak occurred, slightly delayed, after the period of the economic crisis which followed the financial crisis in European countries (Becker et al., 2016).

<sup>7</sup> A full list of all 101 publications included in the sample can be found in Appendix A2.

<sup>8</sup> The earliest publication in the final sample was published 2009, therefore the date differs from the original focused time period.

As a first result, the data shows an increasing interest in the topic crisis in the area of management-accounting research since the financial crisis. This was to be expected in that such an event shifts the current focus of management-accounting research.

### **2.3. Citation Analysis: Identifying Influencers in Crisis Literature in Management Accounting**

The research field of management accounting is relatively small compared to other areas of economics or accounting. However, the research community is scattered worldwide, as events such as accounting conferences all over the world show. Since management accounting is a purely internal discipline of corporate management and not subject to any external regulations (e.g., by the legislators), there is no general understanding of the concept. Thus, regional differences in management accounting have developed over time due to influences from the respective economic area and education systems (Ahrens & Chapman, 2000; Heinzelmann, 2018). These differences are also reflected in the research; the field appears thoroughly heterogeneous. In the following, a more detailed citation analysis provides insights in the structure and influencers of the sub-area crisis research in management accounting.

Identifying the most influential authors, papers and journals is vital to understand a research-field's development (Mustikarini & Adhariani, 2021). Consequently, in a first step, the most influential journals and countries, authors, and publications that have dealt with crisis topics since the beginning of the financial crisis in 2007 were identified. This was done through a performance citation analysis, which can be used to measure the influence of the research subjects (Donthu et al., 2021; Kim & McMillan, 2008; Rossetto et al., 2018): The more often a subject is cited, the more important it is (Rossetto et al., 2018; Zupic & Čater, 2015). The used indicator for this analysis is the total local citation score (TLC), which indicates how often a study was cited by other studies within the retrieved data set (Fetscherin & Heinrich, 2015). This key figure can be standardized by determining the total local citation score per year (TLC/t) (Cao & Alon, 2020).

**Table 2. Most influential journals and countries.**

<b>Panel A: Influential journals based on total number of papers.</b>			<b>Panel B: Influential journals based on TLC.</b>			
<b>Rank</b>	<b>Journal</b>	<b>Total Papers</b>	<b>Rank</b>	<b>Journal</b>	<b>TLC</b>	<b>TLC/t</b>
1	AAAJ	8	1	AOS	308	20.53
2	JOAC	8	2	MAR	218	14.53
3	AOS	4	3	AAAJ	89	5.93
4	APMAJ	3	4	EAR	50	3.33
5	BAR	3	5	TAR	44	2.93
6	CAR	3	6	AMR	41	2.73
7	MAR	3	7	AMJ	33	2.20
8	COC	2	8	CPA	33	2.20
9	JAAR	2	9	BAR	32	2.13
10	JoMaC	2	10	ASQ	31	2.07

<b>Panel C: Influential countries based on total numbers of papers.</b>			
<b>Rank</b>	<b>Country</b>	<b>Total Papers</b>	<b>MCP Ratio</b>
1	United Kingdom	10	0.40
2	Australia	6	0.17
3	Russia	6	0.00
4	Germany	5	0.20
5	Greece	5	0.60
6	Spain	5	0.00
7	USA	5	0.20
8	New Zealand	4	0.25
9	France	3	0.67
10	Italy	3	0.67

Note: A list with the abbreviations of the journals can be found in Appendix A3.

For this study, the ten most influential journals were determined in two ways. First, the number of published papers was counted; and second, an evaluation of the TLC and TLC/t was performed, leading to the same ranking irrespective of the indicator. As a result, there are two different rankings of the journals, which are illustrated in Table 2, Panels A and B. Four of the listed journals appear in both rankings (Accounting, Auditing & Accountability Journal (AAAJ), AOS, British Accounting Review (BAR), and MAR). These journals are ranked as Q1 journals (ScimagoJR, 2022). Further, if the TLC values are compared with the number of papers published, AOS and MAR generate considerably higher values per paper than the other two journals (AAAJ and BAR).<sup>9</sup> As a result, it can be noted that there is a gap after the two top-ranked journals. In both cases, the remaining journals rank almost equally in terms of publications and according to the TLC values. Thus, concerning the crisis literature in management accounting, the prevailing analysis confirms the results of Balstad and Berg (2020), which also identify the two journals (AOS and MAR) as the most cited.

<sup>9</sup> To compare the average TLC per paper in a certain journal (TLC/p), I divided the total TLC value of the journal by the number of papers in the sample. TLC/p per Journal: AOS= 77.00; MAR= 72.67; AAAJ= 11.13; BAR= 10.67.

Looking at the ten most influential countries, the affiliation countries of the corresponding authors are analyzed based on their total number of papers (Panel C). The figures show that the UK is the most productive country, followed by several countries with equal ranks (rank 2-7). It is noticeable that the European countries are strongly represented (six), while Asian and African countries are not. This result is in line with the assumption that management accounting is particularly widespread in Western accounting systems. Moreover, the four high-class journals mentioned earlier in the paper are published either in the USA (MAR, BAR) or in the UK (AOS, AAAJ) (ScimagoJR, 2023), which corresponds with the findings on the most influential countries. The multi-country-publication ratio (MCP) is another key figure for analyzing influential countries as it offers a measure for the determination of international cooperation. The higher the value, the higher the proportion of international cooperation. It is found that there are large differences in the level of international cooperation (e.g., MCP=0, Russia, Spain; MCP=0.667, France, Italy).

**Table 3. Most influential authors.**

Rank	Name Author	Name University	Total Papers	Papers Fract.	TLC	H-Index	G-Index
1	Mahlendorf, M.	Frankfurt School of Finance & Management, Germany	3	1.08	6	2	2
2	Janke, R.	WHU – Otto Beisheim School of Management, Germany	1	0.33	6	1	1
3	Weber, J.	WHU – Otto Beisheim School of Management, Germany	1	0.33	6	1	1
4	Kostakis, H.	London School of Hygiene and Tropical Medicine, UK	2	1	4	2	2
5	Pavlatos, O.	University of Macedonia, Greece	3	1.5	4	3	3
6	Endenich, C.	ESSEC Business School, France	3	2.25	2	3	3

Note: Authors sorted based on TLC. Due to the significantly higher number of papers as well as the values at H- and G-index from M. Mahlendorf, authors with a TLC =6 were ranked out of alphabetical order.

Table 3 presents the ranking of the most influential authors based on TLC. In addition, the H- and G-indexes are mapped indicating how strongly a scientist is perceived in the scientific community (Egghe, 2006; Hirsch, 2005).<sup>10</sup> The results show that the first three ranks are occupied by authors (Janke, Mahlendorf, Weber) who collaborated on a successful paper. The same applies to the fourth and fifth rank (Kostakis and Pavlatos). The two related papers

<sup>10</sup> For detailed information regarding the calculation from H-and G-indexes please refer to Hirsch (2005) for H-index and to Egghe (2006) for G-index. Here, the values refer to the sample under consideration.

again rank first on the list of the most influential publications (see Table 4): Endenich (rank 6 of the most influential authors) wrote the most influential single-authored paper (rank 3 of the most influential publications). When comparing these results with the total global citations figures (TGC), it becomes apparent that the order of ranks is only achieved by means of TLC due to the fact that this method only partly corresponds to TGC. The TGC value shows the total number of citations of all publications that are included in the database (Cao & Alon, 2020).

**Table 4. Most influential publications.**

Rank	Author(s)	Year	Journal	TLC	TLC/t	TGC
1	Janke, R.; Mahlendorf, M.; Weber, J.	2014	MAR	6	0.857	32
2	Pavlatos, O.; Kostakis, H.	2015	AA	4	0.667	17
3	Endenich, C.	2014	JAAR	2	0.286	15
4	Neu, D.; Rahaman, A.; Everett, J.	2010	CAR	1	0.091	43
5	Soin, K.; Collier, P.	2013	MAR	1	0.125	52
6	Mclaren, J.; Appleyard, T.; Mitchell, F.	2016	BAR	1	0.200	15
7	Hopwood, A.	2009	AOS	0	0.000	95
8	Chandar, N.; Miranti, P. J.	2009	ABR	0	0.000	5

Note: Articles sorted based on TLC and TLC/t. A list with the titles of the publications can be found in Appendix A4.

## **2.4. Theoretical Roots of Crisis Literature in Management Accounting**

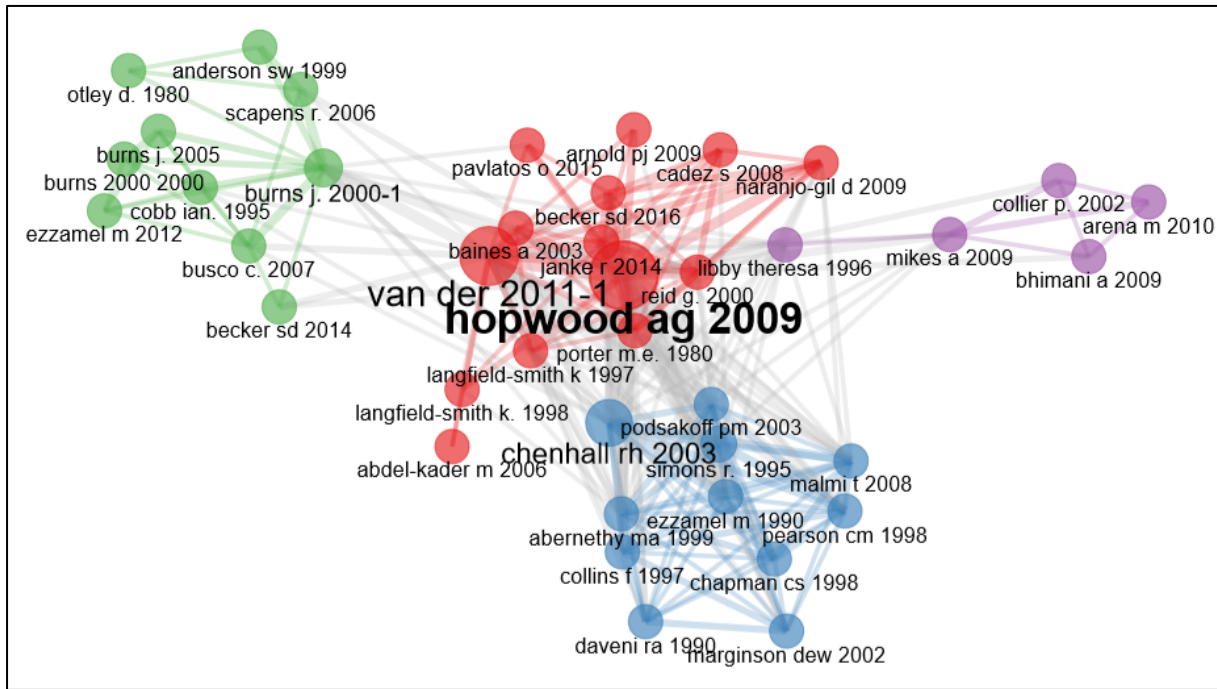
In contrast to other forms of literature reviews, the advantage of a bibliometric analysis is the simultaneous analysis of the focused sample and the related literature around that sample. Thus, it is possible to not only focus on the sample but to add further in-depth analysis of the theoretical roots of the literature, as well as possible future developments. This allows an even more comprehensive overview of the focused field and a better embedding in the broader management-accounting research field.

### **2.4.1. Identifying Research Streams**

To identify the theoretical roots that have shaped the developed crisis literature since the financial crisis in 2007, a co-citation analysis was made. This dynamic analysis helps to understand a field's intellectual structure (Ding et al., 2001; Donthu et al., 2021; Rossetto et al., 2018) and is used for science-mapping purposes while also offering the possibility to measure the similarity of publications (McCain, 1990). The technique assumes that those publications that are frequently cited together also deal with similar topics (Kim & McMillan, 2008; Zupic & Čater, 2015). Again, the more publications are cited, the more influential they are (Vogel & Güttel, 2013). Furthermore, to identify the most influential papers, this analysis

also allows locating thematic clusters (Donthu et al., 2021). A co-citation analysis is, thus, particularly suitable for a retrospective analysis to identify research streams and their knowledge base (Mustikarini & Adhariani, 2021; Small, 1999). Focusing on crisis literature in management accounting and their knowledge base, four main research streams were identified by means of bibliometrix. The results of the co-citation analysis are summarized in Figure 2.<sup>11</sup>

**Figure 2. The theoretical roots of crisis literature in management accounting.**



In addition, following Bahoo et al. (2020), a cartographic analysis was conducted to identify the keywords for each research stream. Within the analysis, publications were clustered based on similar keywords of the authors. Here, it was assumed that the authors determine their keywords based on the content of their article and that similar articles generate similar keywords (Ding et al., 2001). The keywords indicate the topics explored by the considered research streams (see Figure 3).

<sup>11</sup> As the research field and the sample are relatively small and the parameters (e.g., TLC/ TGC) low, no thresholds were set. Thus, all publications from the sample were included in the co-citation analysis.



**Figure 3. Cartographic analysis of the theoretical roots of crisis literature in management accounting.**



#### *2.4.2. Review of the Existing Research Streams in the Literature*

The theoretical roots of the crisis literature that has been published since the beginning of the crisis in 2007 are presented below. The papers that are part of these research streams and discussed in the following paragraphs were identified by means of a co-citation analysis.<sup>12</sup> In order to be considered “part of the main research streams”, the papers had to be co-cited within the sample of 101 publications.<sup>13</sup> It can be deduced from the co-citation that the papers deal with similar topics (here; the topics of the research streams). Since new topics always develop from other existing topics and, for example, from environmental influences or the zeitgeist, the topics of the papers discussed in the following do not have to be related directly to the topic crisis. Therefore, largely, these papers were published before 2007; and thus, not all of them are part of the sample of the 101 crisis papers in management accounting that were published between 2007 and 2021.

<sup>12</sup> A complete list of all analyzed publications can be found in Appendix A5.

<sup>13</sup> As the research field is quite small and the citation scores quite low, there were no further thresholds set.

In terms of content it becomes clear that there is no existing, self-contained crisis research stream in management accounting but that the papers dealing with crisis are based on several thematical roots (presented below as individual research streams) focusing on the core topics of management accounting. The roots of the field comprise management accounting and its systems and usage as well as the ongoing changes (in management accounting), and risk management. To be highlighted here is the strong connection to the concept of change, which can be found directly or indirectly across all research streams.

#### *2.4.2.1. Design of Management-Accounting Systems (Red Cluster)*

This first research stream is the most extensive in the present analysis. The commonality of the associated papers is their focus on the configuration of management-accounting systems (MAS) and on the necessary changes to help companies adapt to (future) external conditions while continuing to be successful. With the start of the financial crisis in 2007, the research stream has gained unexpected new momentum in terms of thematic focus: Two calls for research (Hopwood, 2009; Van der Stede, 2011) are identified, dividing the existing research stream into two timelines; pre-crisis (publications prior to 2007) and post-crisis (publications after 2007). In terms of content, research is required to look at management-accounting systems from a new angle: The crisis.

Hopwood (2009) points out that the crisis sharpened the view in terms of theoretical and practical problems that need to be fixed. Hence, he states the necessity to broaden the research focus and to critically scrutinize the boundaries of practice. He also calls on research to move in closer to corporate practice again and to explore corporate-practice complexity (Hopwood, 2009). In her critical review, Arnold comes to the same conclusion, referring to it as one of the biggest tasks highlighted by the crisis (Arnold, 2009). According to Hopwood, the crisis offers a unique opportunity to explore specific topics such as organizational responses to a crisis of such magnitude from the perspective of management accounting. In his reflection, Van der Stede (2011) also emphasizes the great opportunity the crisis offers for research in management accounting. For example, it provides the opportunity to take a fresh look at existing topics (e.g., planning, budgeting) and to investigate new ones (e.g., examining changes).

Some research follows the requests to consider the crisis as a unique research object and to combine it with existing management-accounting questions. Janke et al. (2014), for example, use a survey to examine the reciprocal relationship between the interactive use of management-

control systems (MCS) and external factors such as the perception of a financial crisis. They find that perceptions of a damaging, external crisis lead to increased interactive use of MCS. In turn, the use of these systems leads to increased perceptions of adverse crisis-effects among managers. Pavlatos and Kostakis (2015) also use the crisis as an opportunity to focus on changes in usage and importance of traditional and advanced management-accounting techniques in Greek companies before (2008) and after the crisis (2013). The starting point of their study is the consideration that changes in the corporate environment also cause changes within the company and management accounting. Their research finds that, during a crisis, companies use techniques that are more modern, while the importance of traditional methods decreases. In addition, their results show that strategic techniques in particular had become more critical. Becker et al. (2016) examine how the 2008 crisis affects the importance of budgeting functions.<sup>14</sup> They find that in companies that are strongly affected by the crisis the budgeting function of performance evaluation becomes less important. In contrast to this, the importance of the planning and resource-allocation functions increases.

However, not only the financial crisis highlighted the need for changes in management accounting: The need for changes was discussed long before the crisis in 2007. For this reason, the following paragraphs discuss papers identified by the co-citation analysis that deal with the theoretical roots of the crisis-related papers and consider external pressures on management accounting in a more general sense.

Competitive pressure and a greater demand for company efficiency and competitive advantages highlight the necessity of a change in management accounting (Baines & Langfield-Smith, 2003; Porter, 1980). In particular, the relationship between strategy and MAS is emphasized here (Langfield-Smith, 1997). This is especially interesting because a well-matched corporate strategy and company environment lead to higher performance (Dent, 1990). Thus, management accounting tailored to the company strategy should also contribute to higher company performance (Govindarajan, 1988). Langfield-Smith (1997) takes a critical look at existing research applying the contingency approach and case studies to examine the use of MCS for strategy purposes at that time. Although stating that strategy is an important issue, she finds very few studies on the topic and identifies open research questions in this connection.

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<sup>14</sup> Becker et al. (2016) mention a slightly different starting point for the crisis (2008), but refer to the same event, namely the financial crisis starting in 2007.

Concerning the ongoing globalization and increasing competition, Chenhall and Langfield-Smith (1998) use a survey to investigate the extent to which far-advanced management-accounting methods with a stronger focus on strategy are used and what the benefits are. They find that the investigated Australian companies also implement newer techniques, though the traditional ones are still more widespread. In addition to these findings, the newer techniques proved to have fewer benefits. Abdel-Kader and Luther (2006) conduct a similar survey among companies of the UK food and drink sector. They also conclude that traditional techniques are still widespread, at least within the studied industry. On the other hand, Naranjo-Gil et al. (2009) try to find out why advanced techniques spread so differently. Thus, they investigate how the CFO's characteristics influence the willingness to innovate in the field of management accounting. They also look at the effect of those characteristics on the impact of strategy and historical performance on innovation. Their results contribute to a better understanding of why some organizations are more likely to adopt techniques that are more advanced while others do not. Here, younger, less tenured and more business-oriented CFOs, for example, are more willing to adopt innovative systems.

Besides the studies that are presented above, other studies have been conducted that approach the optimal design of MAS by applying the contingency theory. This theory aims at explaining how certain external circumstances (then called contingency) define the design of MAS (Reid & Smith, 2000). Reid and Smith (2000) investigate the influence of the timing of certain external contingent events on the development of MAS in young Scottish micro firms. Using a sample of 150 interviews, they determine inter alia that the timing of a cash-flow crisis, the shortfall of financing, and crucial technical innovation correspond to the development of the information system. Simultaneously, they point out to limitations in transferring the contingency theory from a large-companies context to small ones. Baines and Langfield-Smith (2003) investigate the antecedents of change in management accounting by using the contingency theory. They find that external change, namely increased competitive pressure, leads to changes in companies, such as an increased differentiation strategy focusing on the customer. This leads to advanced production methods, an increased use of non-financial management-accounting information, and management-accounting techniques that are more advanced. Cadez and Guinding (2008) try to design an integrated contingency model of strategic management accounting following an exploratory approach. Their results support the theory that there is no one-size-fits-all strategic MAS, and they find that company size and strategy significantly influence the successful application of strategic MAS.

In sum, this first research stream clearly shows that the corporate environment including global crises force companies to undergo changes. This also applies to the area of management accounting as management accounting usually supports corporate management and its decisions. Researchers often use contingency theory to discuss and examine adaptations that were necessary due to external influences. Finally, if crises are interpreted as an extreme type of external environmental influence to which companies have to react, it is obvious that the emerging research on crisis-related topics resorts to this stream and investigates the effects of crises on the wide variety of MAS.

#### *2.4.2.2. The Use of MCS (for Strategy and Behavioral Control) (Blue Cluster)*

The papers which are part of the second research stream focus on the use of MCS for strategy issues and behavioral control. In contrast to the MAS from research stream one, this term includes systems that are used to achieve goals and systems that can explicitly be used for control activities (Chenhall, 2003). The central paper of this research stream is the one by Chenhall (2003). In his literature review, Chenhall (2003) describes the then current state of contingency research on MCS design. He identifies the influence of strategy as the most significant new trend within this research area and requests further investigation of the role of MCS in current circumstances, not ignoring the sociological effects that can influence an MCS in use. As a basis for his paper on the MCS, Chenhall draws on a work by Simons (1995), who outlines a theoretical framework model for the interaction of MCS. This framework along with the classification of four different control systems, including diagnostic and interactive MCS, provides a solid basis for subsequent research. The main difference between the four control systems is the way managers deal with their employees (communication, exchange of information etc.). Several other papers of this research stream also focus on the behavior of individuals, especially managers (Chapman, 1998; Marginson, 2002).

Malmi and Brown (2008) take up Simon's idea of the interaction of MCS and argue for a stronger focus of research on MCS packages. This would fill a research gap (Simons, 1995) and at the same time respond to a warning by Chenhall (2003), who cautions that research on isolated MCS could lead to the under-specification of such systems (Chenhall, 2003; Marginson, 2002).

Furthermore, Simons (1995) concludes that MCS are increasingly used to control the strategy process. The relationship between strategy and MCS has ever since been widely

studied: Marginson (2002), e.g., examines how the use of MCS influences the independent strategic behavior of managers at the middle-management level. He finds that different components of the MCS influence the behavior differently, including the role of the management accountant in the organization. Another common feature of the papers is the fact that the studies consider budget as an MCS. This highlights budgeting as a major feature within the MCS (Abernethy & Brownell, 1999).

In this connection, Abernethy and Brownell (1999) examine the role and use of budget by top management in companies undergoing a strategic change. They find that the use of the budget moderates the relationship between strategic change and performance. The relationship is, thus, more positive when companies use the budget interactively. Ezzamel and Bourn (1990) examine a similar topic, namely the role of accounting-information systems in companies facing a financial crisis. They find that the accounting-information system, which seems quite unimportant in good times, becomes more important in uncertain times of crises and helps to identify problems and possible solutions. It thus contributes to reducing uncertainty, by providing useful information. Additionally, Chapman (1998) understands management accounting in companies as a continuous process of information processing used to coordinate corporate activities. In his case study, he investigates whether the accountant's role in implementing the process differs in different states of environmental uncertainty (low and high). The results show that the accountability process and the accountant's role vary by company. Also, the levels of importance and intensity of budget use and communication differ. Collins et al. (1997) use a crisis context to examine the relationship between strategy and budget use. They assume that the budget use depends on the type of strategy chosen (Miles & Snow, 1978). It becomes clear that crises influence the companies' strategy, while the strength of the crisis impact determines the strategy itself.

In addition, there are two papers in the research stream that investigate crises: First, a study on the content of managerial communication in times of crisis. The results show that managers of successful firms focus on critical external issues. On the other hand, managers of unsuccessful firms tend to misjudge the crisis and do not pay sufficient attention to external factors (D'Aveni & MacMillan, 1990). Pearson and Clair (1998) suggest a more holistic approach towards organizational crises and crisis management. Their integrative model creates a way to understand crisis management as a multi-disciplinary approach. In doing so, they also address the individuals and their role in the organization. In addition, a paper on common-

method bias and its avoidance is part of the stream (Podsakoff et al., 2003). This is due to the number of papers in the stream using surveys of individuals to conduct the necessary data for their research.

Altogether, the papers in this second research stream mainly focus on the use of MCS within the scope of corporate-strategy implementation and, moreover, on the associated behavioral control of respective employees. Since crises are usually unpredictable, they often overturn the implementation of the previously defined strategy. Thus, the research question how crises affect strategy and control of employees is interesting and relevant. The findings could be used to learn from past crises and prepare for the future. Compared with the role of MAS in the first research stream, the second stream examines systems that are more specific. However, the tendency to fall back on the classic principles of management accounting and integrate renowned papers on the subject is also evident here.

#### *2.4.2.3. Change (Process) in Management Accounting (Green Cluster)*

In terms of content, the papers of the third research stream deal with changes in management accounting and, in particular, with the change process itself. Thus, this research stream is thematically very similar to the first one (red). The streams differ, however, in the way the authors approach the subjects: Here, the third research stream is characterized by the use of case studies as a research method. Following this approach, research often uses institutional theory to study the change process. The central paper here is that of Burns and Scapens (2000), in which they develop a framework for the conceptual consideration of management-accounting change based on institutional theory. Fundamental to this is their understanding that management-accounting processes are anchored in the organization, that they represent organizational rules and routines, and are thus inseparable from the organization (Burns & Scapens, 2000; Scapens, 1994). If the organizational context changes, the management-accounting processes also change and vice versa. According to Burns and Scapens (2000), the framework should help to better understand the change, and serve as a basis for future research. They also recommend to further develop the framework.

Previously, Cobb et al. (1995) examine the change process of management accounting in a bank with a longitudinal case study. The study discusses how external factors, namely globalization, technological progress, and product innovations, influence MAS and, in particular, reporting. The authors show that these influences change the collaboration between

management accounting and other organizational functions leading to new information channels. However, the change process is not linear and depends on internal factors. Anderson and Young (1999) take on a similar perspective and examine the relationship between assessing an activity-based costing system and environmental factors that influence the implementation process. In doing so, they find that acknowledgement not only depends on the system but also on the implementation process, which is influenced by contextual factors.

After Burns & Scapens' (2000), a wide variety of other case studies has been published. This is reasonable as, based on contingency theory, it is assumed that there is not one universal MAS that is suitable for all companies (Otley, 1980). Burns and Baldvinsdottir (2005), for example, also take an institutional perspective and examine the process that management accountants undergo when changing roles. They find that the process is not linear, too, but complex and that it is embedded in the organizational environment in many different ways. The dynamic process is influenced by various factors (technical and non-technical), e.g., employee attitudes, self-perceptions and perceptions of others, and the presence of proactive actors driving the process.

In a review of his past work as a management-accounting researcher, Scapens (2006) looks at the changes that had taken place in this field of study over the previous 35 years. In doing so, he re-explains the schema and identifies extensions and limitations of the 2000 framework. With Scapens as editor-in-chief, MAR published a special issue on change in management accounting in 2007. In their editorial, Busco et al. (2007) emphasize that studies on this topic are up-to-date. It figures that a scheme for the systematic analysis of management-accounting change is needed that allows for reflexive consideration. Two case studies appeared in subsequent years that address budgeting and change: Ezzamel et al. (2012) examine in the context of UK educational institutions how opposing logics affect the role of adoption and budgeting techniques. In doing so, they show that though budgeting enables change, it can undergo change itself. Becker (2014) examines how the institutionalized activity of budgeting is abandoned in companies and whether these changes are sustainable. He investigates the reasons for the process, and the consequences of the decision. He finds that organizational and environmental factors are at work and that dominant actors act competently. Moreover, the abandonment does not follow a fixed scheme. The adaptation to new circumstances, such as a crisis or a related change in environmental conditions, requires processes that make adaptations possible in the first place.



Accordingly, it is obvious that the crisis literature in management accounting also builds on the research stream which deals with the change (process) in management accounting itself. Moreover, this stream of research also complements the two previous streams since necessary changes not only have to be well designed but they also have to be implemented within the systems and into the employees' minds.

#### *2.4.2.4. The Relationship Between Risk Management and Management Accounting (Violet Cluster)*

The last research stream of crisis literature in management accounting establishes a link to the closely interrelated discipline of risk management because of the fact that crises often represent an existential risk for companies. The papers discussed in the following paragraphs show that there are many interfaces between these both, at the strategic and operational levels.

At first, the study of Libby and Waterhouse (1996) seems less fitting in the research stream: In their paper, Libby and Waterhouse (1996) use survey results to show that, contrary to previous study results, management-accounting and control systems are changing at the operational level. These changes are initiated by organizational and environmental factors and predominantly affect the decision-making support systems (Libby & Waterhouse, 1996). Within their study, they do not refer to "risks". But, they use a comprehensive list of MCS as well as focus on (external) reasons for change, which could be understood as risks (e.g., the increase in competition on the market). Thus, their paper fits nevertheless in the stream as it provides a starting point for manifold future research within the fields of management accounting, risk and change. Collier and Berry (2002) examine in their case study of four companies how managers perceive risk and manage risk within the scope of the management-accounting process. They draw on the theory that risk is socially constructed, and that risk in general and corresponding risk management are essential for all companies. Nevertheless, the concrete design of risk management varies depending on the respective circumstances in the companies. However, there are also commonalities among the four cases they analyze: In all companies, risks were considered during the top-down budgeting process but excluded from the final budgeting process. Accordingly, there is a separation of process and result, which is relevant for risk management, as those two issues have to be considered, during construction and application. Furthermore, the authors find risk shifts within the companies, which can influence the employee's participation in the process and the risk perception of employees. In

sum, Collier and Berry result that risk is inseparable from the management-accounting process of budgeting, but needs to be considered situation specific.

Later, also in response to the financial crisis, the topic of enterprise risk management (ERM) emerged. It gained a lot of attention due to economic scandals and new regulations the legislators adopted (Arena et al., 2010; Mikes, 2009). The *MAR* devoted a special issue (“Risk management, corporate governance and management accounting: Emerging interdependencies”) to the topic. In the corresponding introductory editorial, Bhimani (2009) demonstrates interdependencies between ERM and management accounting and emphasizes the small amount of research conducted until then. He mentions the importance to introduce risk management and communicate it transparently within the company. Moreover, risk management influences many management processes in the company and it must not be considered in isolation. As a result, the relationship between management accounting and risk management increasingly intertwines. However, the lack of a universally valid definition of risk management hinders a uniform approach towards implementation; and, hence, the way such a concept is implemented depends on the individual company and its environment (Bhimani, 2009). However, Mikes (2009) makes an attempt and examines this relationship conducting a case study with two banking institutes. She explores the kind of risk-management mix (here, e.g., ERM based on the shareholder-value concept or internal control) companies implement based on the existing calculative culture in the company. The calculative culture is also a determining factor in the alignment of MCS with organizational context. Overall, she finds that the implementation process of ERM varies widely and that it is influenced by calculative culture. Arena et al. (2010) contribute to closing the knowledge gap regarding ERM and its organizational linkages and specifically look at how ERM is implemented and how it changes the mindset of employees in the process. To do this, they conduct a case study with three companies in the non-financial sector. Their results show that ERM interacts with existing management (accounting) systems. Moreover, there is a change in the mindset of those involved when the risks under consideration are real to them and have consequences (Arena et al., 2010).

The in-depth content analysis of the four research streams reveals the literature that is the basis for crisis literature published between 2007 and 2021. It becomes clear that the literature considered as the basis often comprises fundamental topics of management accounting (e.g., change, MAS, MCS, and strategy) that are revisited and re-examined by other authors in light of crises. Thus, some publications follow the calls by Hopwood (2009) and Van der Stede

(2011). In addition, there are publications on change processes, i.e., on the implementation of new ideas as well as on the connection to neighboring topics such as risk management. It turns out that not only the area of management accounting faces crises, but it can only contribute to crisis management from its own perspective. Therefore, it is not surprising that researcher who deal with crisis issues in management accounting resort to classic papers discussing the fundamentals of the discipline.

## **2.5. Future Research Trends**

### ***2.5.1. Identifying Future Research Streams***

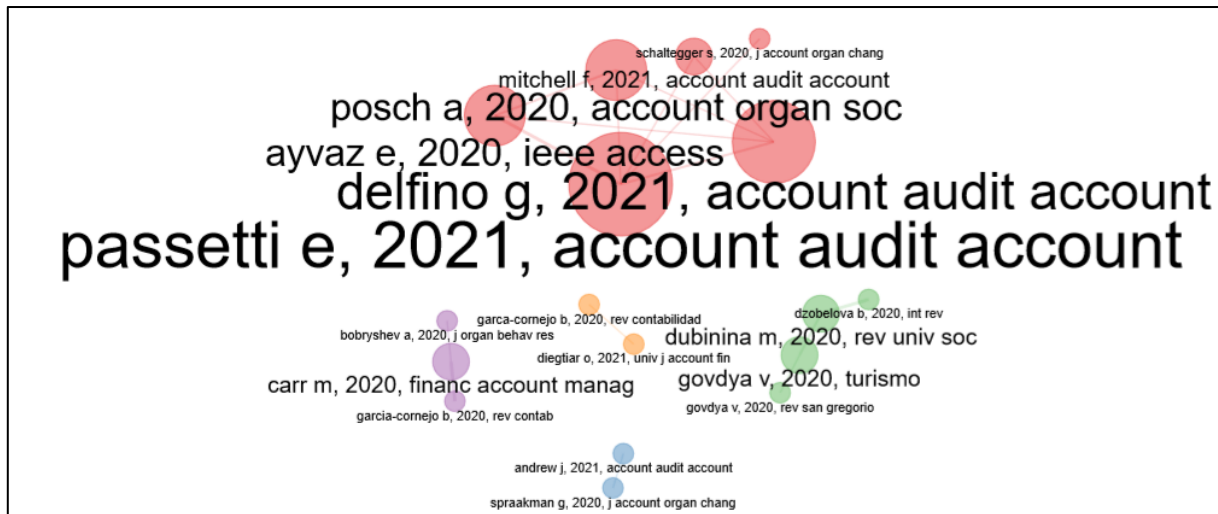
After using a backward-looking analysis to define the roots of the existing crisis literature in management accounting, a forward-looking analysis is used to examine the topics that currently gain relevance in the research field.

Bibliographic coupling is another method for science mapping and focuses on the relationships between research subjects (e.g., authors or publications) (Donthu et al., 2021). A bibliographic-coupling analysis indicates how often two publications cite the same third document (Boyack & Klavans, 2010; Rialp et al., 2019). Within the analysis, the papers are clustered based on shared references (Donthu et al., 2021). The method is thus suitable to highlight the current research front. Therefore, a restriction is made regarding the publication date to obtain even more precise results (Zupic & Čater, 2015). Following that, and as this analysis aims to identify emerging future research trends, the publication period was narrowed down to 2020-2021 for the following analysis. Figure 4 shows a bibliographic coupling of all publications from the dataset published in 2020 or 2021. This parameter ensures that only the most recent – and relevant – publications are analyzed below.<sup>15</sup>

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<sup>15</sup> A complete list of all publications analyzed can be found in Appendix A6.

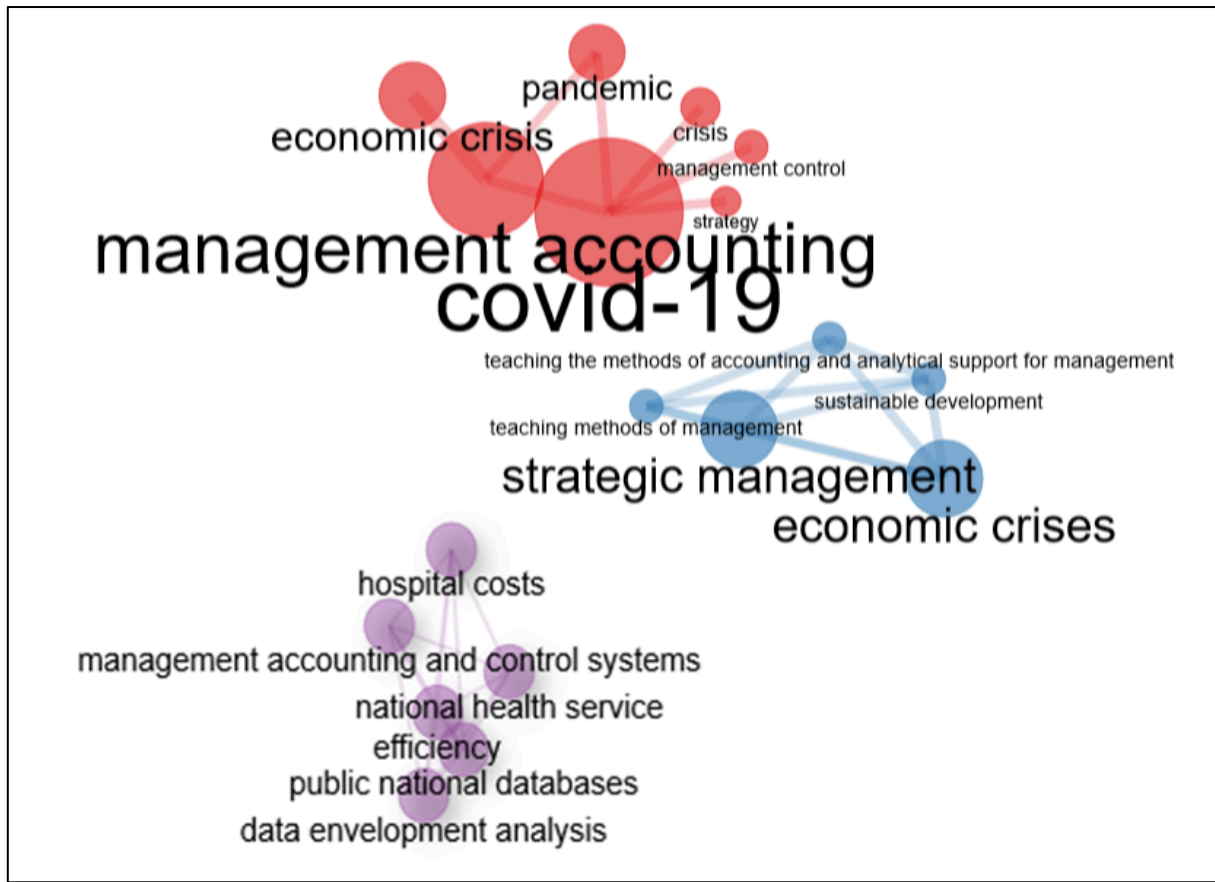
**Figure 4. Future research streams.**



In total, five new research streams emerge. Compared to the existing research streams discussed above, the future ones are characterized by smaller clusters and varying quality, and the proportion of quantitative studies is significantly lower. Due to the quality of some publications and the quality of the journals in which the publications appeared, two research streams (green and yellow) are not further analyzed in the following paragraphs.

In addition, a cartographic analysis was made for the remaining three future research streams, and the results are illustrated in Figure 5. This further analysis of the authors' keywords provides an initial indication that the three emerging streams differ from the existing streams in terms of content.

**Figure 5: Cartographic analysis of future research streams.**



### **2.5.2. Review of the Future Research Streams**

Building on the bibliographic coupling and the additional cartographic analysis, emerging research streams in management-accounting crisis research are identified and discussed in the sections below.

#### **2.5.2.1. Dealing with the COVID-19 Pandemic (Red Cluster)**

The largest cluster deals with various responses to the COVID-19 pandemic and its impact. It examines, e.g., the contribution of management accounting in helping companies to cope with the crisis and responding quickly (Passetti et al., 2021). Their case-study results show that, in times of crisis, management accounting can help to react quickly. In another case study, Delfino and van der Kolk (2021) examine how the quick change to home-office affects management-control methods in terms of managing employee behavior. It turns out that the work situation impacts employee motivation and requires changes in management-control methods. Two other papers in the stream aim at giving advice on acting proactively before a crisis occurs: Ayvaz et al. (2020) develop a system based on artificial-intelligence techniques – integrated

into a balanced scorecard as an early warning system – that is supposed to detect future crises in advance. The system is intended to prepare companies for crises early and, thus, supports management accounting. Schaltegger (2020) goes one step further in his review, calling for consistent efforts to prevent crises in the future instead of mitigating the consequences afterwards. Precisely, he calls for a radical change in thinking including a shift towards a more sustainable, equitable economic system.

In general, this first future research stream is slightly reminiscent of the existing ones: The aim of the publications is to bring about a change in management accounting itself in order to be able to respond better to the crisis and to support the company in getting through it. However, what is new is the fact that proactive methods are being explored and, above all, that there is a call not only for a change in management-accounting systems but also in fundamental ways of thinking towards a reorientation of the economic system. This also gives rise to a new research direction: The contribution of management accounting to more socially just and environmentally sustainable economic systems.

#### *2.5.2.2. COVID-19 as a Starting Point for Change (Blue Cluster)*

The idea that already emerged from the first research stream, namely that the global economic system needs a change, is taken up more strongly by the second research stream: Seeing the crisis as a starting point for change is the central idea in the second research stream. For example, Andrew et al. (2021) examine how Australia uses public budgeting policies to provide financial support to businesses and citizens in order for them to cope with the COVID-19 pandemic financially. It becomes clear that the current economic system is inequitable and that the function of management accounting is to help make the system work. The authors moreover encourage to rethink the economic system and the role and purpose of management accounting. Spraakman (2020), for example, recognizes that the crisis is an opportunity to rethink his research and teaching. He believes that more integrated approaches to management accounting must be taught in the future to prepare tomorrow's acting individuals for future crises. He also plans to explore the contents which are relevant for practice within the scope of qualitative studies.

Consequently, this research stream focuses on the connection of the two academic disciplines: research and teaching. According to the authors, it is not enough to find new ways

of doing things in research; but they also see it as a duty to communicate the new approaches in teaching in order to pass on these insights to future generations of workers.

### *2.5.2.3. Management Accounting in the Public Health Sector (Violet Cluster)*

Looking at the third upcoming research stream, García-Cornejo and Pérez-Méndez (2020) and Carr and Beck (2020) examine the effects of the economic crisis of 2008-2013 on public hospitals. They find that, during crises, hospitals are severely affected by austerity measures. García-Cornejo & Pérez-Méndez use archival data from Spanish hospitals to examine the relationship between the use of advanced cost systems and hospital efficiency. They show that the use of an advanced cost system increases efficiency. Carr & Beck follow another approach and examine physicians' responses to the use of MCS. They find that the use of MCS in the context of hospitals is more multifaceted than in other (non-health) organizations. In hospitals, a strict focus on the bottom line is always juxtaposed with the overarching goal of healing patients. For the successful use of MCS, this has to be respected. Furthermore, measures that are well adapted to the context and data availability increase the acceptance of clinicians toward MCS.

Although the two papers in this research stream refer to a previous crisis, it can be assumed that the topic remains highly relevant in light of the COVID-19 crisis. The COVID-19 crisis led to an overload of healthcare systems in many countries and clearly highlighted problems. Often, the need for hospitals to operate on a profit-oriented basis also played a role. Based on these thoughts, another research direction is moving into focus: The use of management accounting in healthcare.

In general, there are commonalities but also differences between the recent and emerging research streams: On the one hand, the first streams each deal with management accounting itself. On the other hand, new and different topics – such as the redesign of the economic system or the focus on health care – have emerged more recently (streams two and three). This development indicates that the view of management-accounting research is getting wider and that future research focuses no longer strictly on profitable companies.

Finally, another significant commonality is the understanding that a crisis should be the cause and impetus for change. This again emphasizes the close relationship between the topic's crisis and change.

## 2.6. Conclusion

To the best of my knowledge, this study is the first to use bibliometric and content analyses to examine the crisis literature in management accounting. The sample comprised 101 publications, and several bibliometric tools were used to provide in-depth insights into the field. Thus, the research questions (1) What are the most influential aspects of management-accounting literature in this period? (2) What are the theoretical roots of the management-accounting crisis literature published since the financial crisis (2007/2008)? (3) What are the relevant topics and directions for further research on crises in management accounting? could be answered.

The study's findings provide (management-accounting) researchers and interested practitioners with comprehensive information on the field of crisis literature in management accounting published between 2007 and 2021. First, a citation analysis was made to find out the most influential authors, countries, journals, and publications of the focused field. As results, the most influential paper (Janke, R.; Mahlendorf, M.; Weber, J., 2014: "An exploratory study of the reciprocal relationship between interactive use of management-control systems and perception of negative external crisis effects" (published in MAR)) and author (Matthias Mahlendorf) were identified. Furthermore, AOS turned out to be the most influential journal and the UK to be the country the most affiliated authors with and thus, the most publications affiliated with. To get deeper insights into embedding crisis research into the whole management-accounting field, a co-citation analysis was conducted to find the roots of the existing crisis literature. It turned out that there is no independent crisis research stream, but that the existing publications are based on four main research streams: (1) design of management-accounting systems, (2) the use of MCS (for strategy and behavioral control), (3) change (process) in management accounting, (4) the relationship between risk management and management accounting. The closeness to the topic of change is worth mentioning in this connection as well as the fact that the preoccupation with management accounting per se is formative for the research during this period. Finally, a bibliographic-coupling analysis combined with content analysis uncovered recent research streams. These are strongly related to the COVID-19 pandemic: (1) dealing with the COVID-19 pandemic, (2) COVID-19 as a starting point for change, (3) management accounting in the public health sector. Within the publications considered here, there are calls for future research covering directions that fit the context of time very well: (1) the contribution of management accounting to more socially just



and environmentally sustainable economic systems and (2) the use of management accounting in healthcare. Thus, the future research streams regarding crises in management accounting differ from existing streams to the extent that the future focus will be placed rather on the application areas of management accounting than on management-accounting applications and systems. The mentioned topics offer significant research potential for the future and, thus, research gaps to close.

As a result, the study contributes to research in the field in several ways: First, the prevailing study offers a comprehensive overview of the focused field and related literature and thus features a knowledge base about the literature in the area. Second, the future-oriented part of the study represents a good starting point for other researchers interested in examining the emerging topics further. Third, regarding the used method, the study contributes to the diversification and development of methods in management accounting and thus sets a new accent that will hopefully find imitation.

Nevertheless, this study has limitations. It provides an overview of the literature that existed at the time the underlying queries in the databases were posed. Possible limitations are related to the bibliometric analysis and the three databases WoS, Scopus, and Dimensions. Thus, their limitations also affect the study (Rialp et al., 2019). It needs some time until the most recent publications are cited in other papers. Therefore, it appears useful to revisit the subject and redo the analysis in a few years (Bahoo et al., 2020). A repetition of the analysis may also be useful from a content perspective, as the publication process usually takes some time. Therefore, many research topics related to the COVID-19 pandemic were not covered at the time of data collection. In addition, there are limitations of the study regarding the chosen bibliometric methods. For example, the number of citations is, in turn, influenced by a variety of factors. Thus, the number of citations can give an indication of the importance and influence of the publications but not necessarily of their quality. Furthermore, it is possible that the citation figures are influenced, for example, by the citation of one's own work. It is also possible that essential publications were left out due to filtering, e.g., for English texts (Bretas & Alon, 2021). The manual analyzing process is also prone to errors. Future research could, on the one hand, be used to overcome the limitations of this study, but on the other hand future research could also deal with one of the designated current research gaps.

## Appendix

### A1. Glossary bibliometric terms.

Term (Abbreviation)	Definition
Annual scientific production	The growth rate of the number of publications in the focused area per year (Aria & Cuccurullo, 2017a).
Authors keyword	Keywords defined by the authors to describe the content of the publication. These are to be distinguished from other keywords, some of which are additionally assigned by publication databases (e.g., named “keywords plus”) (Aria & Cuccurullo, 2017a).
Bibliographic coupling	A method based on measuring the number of shared references between different citing publications (Zupic & Čater, 2015). Basic assumption: The more shared references, the more similarity and connection between the focused publications. Static indicator remains constant over time, as references are normally not changed (Donthu et al., 2021; Zupic & Čater, 2015).
Bibliographic data	It is provided in certain databases and includes meta-data to publications, e.g., additional information on the authors, citations and references, and publication (process) (e.g., journal, year, volume) (Zupic & Čater, 2015).
Bibliometric method	Bibliometric methods enable an analysis of literature based on quantitative and, thus, objective data (as opposed to the well-known subjective methods of literature analysis) (Zupic & Čater, 2015).
Cartographic analysis	A form of analysis of publications concerning the authors keywords provided. Articles tagged with the same keywords are clustered together. Basic assumption: If the same authors keywords are used, articles deal with similar content (Bahoo et al., 2020; Ding et al., 2001).
Citation analysis	The basic form of bibliometric analysis. Analysis of the number of citations of a publication. Basic assumption: The more often a publication is cited, the more influential and important it is (Zupic & Čater, 2015). It enables the creation of rankings but, e.g., not enables a statement on the collaboration of authors (Üsdiken & Pasadeos, 1995). A dynamic indicator that usually increases over time.
Co-citation analysis	An analysis based on common citations of more than one publication. Focuses on the idea that two publications, which are often cited together, also show similarities in terms of content (Zupic & Čater, 2015). Enables deep insights into the relationship of the cited publications (Donthu et al., 2021; Üsdiken & Pasadeos, 1995). Feasible for publications, authors, or journals.  [Within the present analysis, the method is only used to count the co-citations between publications.]
Collaboration index	Indicates how many co-authors have contributed to a publication on average (Aria & Cuccurullo, 2017a).  Calculation: Total authors of multi-authored articles/total number of multi-authored articles (Elango & Rajendran, 2012).
Fractionalized articles	The number of fractionalized articles per author is calculated as: $Fract. Articles (AU_j) = \sum_{h \in AU_j} \frac{1}{n.of\ CoAuthors(h)}$ whereas $AU_j =$ is the set of documents co-authored by Author j, and $h =$ is a document included in $AU_j$ . Basic assumption: The share of collaboration of all authors is equal (Aria & Cuccurullo, 2017b).
G-Index	Developed by Egghe (2006) and understood as a measure of the author’s impact. Definition: Number of publications (g) received in total minimum $g^2$ citations (Donthu et al., 2021).

## A1. Glossary bibliometric terms (continued).

Term (Abbreviation)	Definition
H-Index	Developed by Hirsch (2005), “as a[n] [...] index to characterize the scientific output of a researcher.” (p.16569) Measures the influence of an author. Definition: Number of papers (h) which are at least cited h times (Donthu et al., 2021).
Intellectual structure of a field	Information about the relationships between, e.g., publications, authors, developments, research streams, and other interrelationships in a research field. Attempt to understand and represent the interrelationships in the research field by applying various methods.
Keyword	A keyword is assigned to make publications easier to find in databases and to define the content in more detail. Also used to retrieve specific results from databases.
Multi-country-publication ratio (MCP ratio)	Indicates the number of countries in which the participating authors are based and thus measures the proportion of international collaborations in relation to all publications of a country (Aria & Cuccurullo, 2017a).
Most-relevant-word analysis	An analysis of the used authors keywords in the sample, with regard to their frequency of appearance (Aria & Cuccurullo, 2017a).
Multi-authored document	A document published by at least two authors.
Publication	A subject of analysis in bibliometric studies. The exact format (e.g., article, preprint, book chapter, presentation) depends on the chosen limitation by the author of the study.
Science mapping	Method, using different bibliometric analyses to find out more about the relationships between acting authors, publications, and topics in a research field. The aim is to provide not only structured but also visualizable results (e.g., a map of the focused area) (Zupic & Čater, 2015).
Total global citations (TGC)	Key figure indicating how often a publication is cited in all publications available in the chosen database(s) (Bahoo et al., 2020).
Total local citations (TLC)	Key figure indicating how often a publication is cited in all publications within the chosen sample (Bahoo et al., 2020).
Total local citations per publication (TLC/p)	Standardized key figure indicating how often a publication in a journal is cited within the chosen sample. Calculation: TLC from the journal/ number of publications in the sample.
Total local citations per year (TLC/t)	Standardized key figure indicating how often a publication is cited in all publications within the chosen sample per year (Bahoo et al., 2020). Calculation: TLC/ number of years.

## A2. Publications included in the sample.

Number	Author(s)	Year	Document type	Title
1	Narayan, A.; Kommunuri, J.	2021	Article	New Zealand governments budgetary response to the Covid-19 pandemic
2	Kober, R.; Thambar, P.	2021	Article	Paradoxical tensions of the Covid-19 pandemic a paradox theory perspective on the role of systems in helping organizations survive crises
3	Passetti, E.; Battaglia, M.; Bianchi, L.; Annesi, N.	2021	Article	Coping with the Covid-19 pandemic. The technical, moral and facilitating role of management control
4	Velayutham, A.; Rahman, A.; Narayan, A.; Wang, M.	2021	Article	Pandemic turned into pandemonium. The effect on supply chains and the role of accounting information
5	Andrew, J.; Baker, M.; Guthrie, J.	2021	Article	Accounting inequality and Covid-19 in Australia
6	Mitchell, F.; Norreklit, H.; Norreklit, L.; Cinquini, L.; Koeppel, F.; Magnacca, F.; Mauro, S.; Jakobsen, M.; Korhonen, T.; Laine, T.; Liboriussen, J.	2021	Article	Evaluating performance management of Covid-19 reality in three European countries. A pragmatic constructivist study
7	Delfino, G.; Van der Kolk, B.	2021	Article	Remote working management control changes and employee responses during the Covid-19 crisis
8	Truant, E.; Broccardo, L.; Culasso, F.; Vrontis, D.	2021	Article	Management accounting systems to support stressing events. Evidence from the food sector
9	Stewart, C.; Khan, A.	2021	Article	A strategy for using digital mindsets and knowledge. Technologies to move past pandemic conditions
10	Govdya, V.; Balaeva, D.; Degaltseva, Z.; Silina, T.; Ordynskaya, M.	2020	Article	Organizational and methodological aspects of the management accounting development in conditions of economic uncertainty
11	Velte, P.; Stawinoga, M.	2020	Review	Do Chief Sustainability Officers and CSR committees influence correlated outcomes? A structured literature review based on empirical-quantitative research findings
12	Schaltegger, S.	2020	Article	Unsustainability as a key source of epi- and pandemics. Conclusions for sustainability and ecosystems accounting
13	Dubnina, M.; Olisaeva, A.; Morozkina, S.; Tochiewa, L.; Molamusov, Z.	2020	Article	Teaching anti-crisis management accounting as a factor in ensuring sustainable economic development of enterprises in the context of cyclical processes in the economy

## A2. Publications included in the sample (continued).

Number	Author(s)	Year	Document type	Title
14	Govdya, V.; Ordynskaya, M.; Velichko, K.; Tochueva, L.; Olisaeva, A.	2020	Article	Problems and prospects of management accounting. Improvement for innovation and investment activities in agricultural enterprises
15	Posch, A.	2020	Article	Integrating risk into control system design. The complementarity between risk-focused results controls and risk-focused information sharing
16	Spraakman, G.	2020	Article	Ramifications of Covid-19 on management accounting teaching and research
17	Dzobelova, B.; Dovtaev, S.; Kuzina, A.; Shadieva, M.; Elgaitarova, N.	2020	Review	Analytical support of the management accounting system in an unstable economy condition
18	Bobryshev, A.; Chaykovskaya, L.; Dudaev, G.; Serebryakova, E.; Karlov, D.	2020	Article	The concept of management accounting in the conditions of uncertainty and risk
19	Kasik, J.; Snapka, P.	2020	Article	A general model based on the Du-Pont system of financial analysis for identification analysis and solution of a potential crisis in a business
20	Garcia-Cornejo, B.; Perez-Mendez, J.	2020	Article	Influence of cost systems on efficiency. An analysis of Spanish hospitals using public national databases
21	Ayvaz, E.; Kaplan, K.; Kuncan, M.	2020	Article	An Integrated Lstm neural networks approach to sustainable Balanced Scorecard-based early warning system
22	Carr, M.; Beck, M.	2020	Article	Clinician responses to management control. Case evidence from a university hospital during the fiscal crisis
23	Asonitou, S.; Hassall, T.	2019	Article	Which skills and competences to develop in accountants in a country in crisis
24	Erokhin, V.; Endovitsky, D.; Bobryshev, A.; Kulagina, N.; Ivolga, A.	2019	Article	Management accounting change as a sustainable economic development strategy during prerecession and recession periods evidence from Russia
25	Valuekas, D.	2019	Article	Budgeting reconsidered exploring change initiative in a bank
26	Jimenez, B.	2019	Article	Assessing the efficacy of rational budgeting approaches fiscal recovery planning and municipal budgetary solvency

## A2. Publications included in the sample (continued).

Number	Author(s)	Year	Document type	Title
27	Farkhouthdinov, I.; Isavnin, A.	2019	Article	Target-costing as a tool of cost formation for product with high share of purchased components
28	Kabir, M.	2019	Article	Management accounting dynamics in Bangladesh areas and factors behind the changes
29	Huikku, J.; Karjalainen, J.; Seppala, T.	2018	Article	The dynamism of pre-decision controls in the appraisal of strategic investments
30	Jamaluddin, A.; Husin, N.; Omar, N.	2018	Article	The role of management accounting in a turnaround strategy
31	Zadorozhnyi, Z.; Murayskiy, V.; Shevchuk, O.	2018	Article	Management accounting of electronic transactions with the use of crypto-currencies
32	Pavlatos, O.; Kostakis, H.	2018	Article	The impact of top management team characteristics and historical financial performance on strategic management accounting
33	Van der Stede, W.	2017	Article	Global management accounting research some reflections
34	Brandau, M.; Endenich, C.; Luther, R.; Trapp, R.	2017	Review	Separation integration and now a historical perspective on the relationship between German management accounting and financial accounting
35	Nitsenko, V.; Mukoviz, V.; Sharapa, O.	2017	Article	Accounting of transaction expenses of economic entities
36	Arunachalam, M.; Chen, C.; Davey, H.	2017	Article	A model for measuring financial sustainability of local authorities. Model development and application
37	Yang, L.	2017	Article	Financial management conservatism under constraints tax and expenditure limits and local deficit financing during the great recession
38	Ferry, L.; Ahrens, T.	2017	Article	Using management control to understand public sector corporate governance changes localism public interest and enabling control in an English local authority
39	Bourmistrov, A.; Kaarboe, K.	2017	Article	Tensions in managerial attention in a company in crisis. How tightening budget control resulted in discomfort zones for line managers
40	Becker, S.; Mahlendorf, M.; Schaeffer, U.; Thaten, M.	2016	Article	Budgeting in times of economic crisis

## A2. Publications included in the sample (continued).

Number	Author(s)	Year	Document type	Title
41	Mclaren, J.; Appleyard, T.; Mitchell, F.	2016	Article	The rise and fall of management accounting systems. A case study investigation of EVA
42	Cunningham, I.; Baines, D.; Shields, J.; Lewchuk, W.	2016	Article	Austerity policies precarity and the non-profit workforce. A comparative study of UK and Canada
43	Makrygiannakis, G.; Jack, L.	2016	Article	Understanding management accounting change using strong structuration frameworks
44	Elliot, V.	2016	Article	Institutional entrepreneurship and change a contemporary history of the Swedish banking industry and its performance management systems
45	Anessi-Pessina, E.; Barbera, C.; Sicilia, M.; Steccolini, I.	2016	Review	Public sector budgeting. A European review of accounting and public management journals
46	Yang, C.; Modell, S.	2015	Article	Shareholder orientation and the framing of management control practices. A field study in a Chinese state-owned enterprise
47	Pavlatos, O.; Kostakis, H.	2015	Article	Management accounting practices before and during economic crisis. Evidence from Greece
48	Odar, M.; Kavcic, S.; Jerman, M.	2015	Article	The role of a management accounting system in the decision-making process. Evidence from a post-transition economy
49	Lorain, M.; Domonte, A.; Pelaez, F.	2015	Article	Traditional budgeting during financial crisis
50	Gunarathne, N.; Lee, K.	2015	Article	Environmental management accounting (EMA) for environmental management and organizational change. An eco-control approach
51	Ibrahim, A.	2015	Article	Economic growth and cost stickiness evidence from Egypt
52	Janke, R.; Mahlendorf, M.; Weber, J.	2014	Article	An exploratory study of the reciprocal relationship between interactive use of management control systems and perception of negative external crisis effects
53	Adler, R.	2014	Article; Book Chapter	The impact of financial crises on accounting education
54	Baxter, R.; Bedard, J.; Hoitash, R.; Yezege, A.	2013	Article	Enterprise risk management program quality determinants value relevance and the financial crisis

## A2. Publications included in the sample (continued).

Number	Author(s)	Year	Document type	Title
55	Huber, C.; Scheytt, T.	2013	Article	The dispositif of risk management reconstructing risk management after the financial crisis
56	Soin, K.; Collier, P.	2013	Editorial Material	Risk and risk management in management accounting and control
57	Asel, J.; Posch, A.; Speckbacher, G.	2011	Article	Squeezing or cuddling the impact of economic crises on management control and stakeholder management
58	Van der Stede, W.	2011	Article	Management accounting research in the wake of the crisis some reflections
59	Rahaman, A.; Neu, D.; Everett, J.	2010	Article	Accounting for social-purpose alliances confronting the HIV-Aids pandemic in Africa
60	Lukka, K.; Modell, S.	2010	Article	Validation in interpretive management accounting research
61	Fay, E.; Introna, L.; Puyou, F.	2010	Article	Living with numbers accounting for subjectivity in-with management accounting systems
62	Hopwood, A.	2009	Article	The economic crisis and accounting implications for the research community
63	Chandar, N.; Miranti, P.	2009	Review	Integrating accounting and statistics forecasting budgeting and production planning at the American telephone and telegraph company during the 1920s
64	Dommsoru, S.; Ogarca, R.; Vinatoru, S.	2009	Article	Internal audit and management control contiguous levers for modern organization management
65	Andreica, R.; Andreica, A.; Pargaru, I.; Lepadatu, G.	2009	Article	Cost budgeting for a performant management during crisis situation
66	Fox, E.	2020	Editorial Material	Budgeting in the time of Covid-19
67	Diegtiar, O.; Bezuhlyi, O.; Tararyuev, Y.; Suslova, T.; Romanchenko, T.	2021	Article	Certain aspects of the management accounting system for small and medium-sized enterprises
68	Wall, F.	2021	Article	Compliance to unpleasant actions of crisis management some remarks from a management control perspective
69	Carlsson-Wall, M.; Iredahl, A.; Kraus, K.; Wiklund, M.	2021	Article	The role of management controls in managing heterogeneous interests during extreme situations the Swedish migrant crisis in 2015



## A2. Publications included in the sample (continued).

Number	Author(s)	Year	Document type	Title
70	Dubinina, M.; Olisaeva, A.; Morozkina, S.; Tochueva, L.; Molamusev, Z.	2020	Article	Teaching anti-crisis management accounting as a factor in ensuring sustainable economic development of enterprises in the context of cyclical processes
71	Garca-Cornejo, B.; Perez-Mendez, J.	2020	Article	Influence of cost systems on efficiency an analysis of Spanish hospitals using public national databases
72	Adib, M.; Zhang, X.	2019	Article	The risk-based management control system. A stakeholders perspective to design management control systems
73	Pavlatos, O.; Kostakis, H.	2018	Article	Management accounting innovations in a time of economic crisis
74	Ma, X.	2018	Article	Study on application of dynamic programming algorithm in accounting management
75	Fan, S.	2018	Article	Research on management accounting system based on data mining
76	Becker, S.; Mahlendorf, M.	2017	Book Chapter	The influence of the economic crisis on the tasks and roles of management accountants
77	Goretzki, L.; Strauss, E.	2017	Book	The role of the management accountant local variations and global influences
78	Egorova, L.; Khalturin, R.	2017	Article	Problems of implementing strategic managerial accounting in non-profit organizations
79	Truhachev, V.; Kostyukova, E.; Bobrishev, A.	2017	Article	Development of management accounting in Russia
80	McLaren, J.; Appleyard, T.; Mitchell, F.	2016	Article	The rise and fall of management accounting systems a case study investigation of EVA
81	Broccardo, L.; Culasso, F.; Giacosa, E.; Truant, E.	2016	Article	The diffusion of management control systems in Italy. A comparison between family and non-family firms
82	Bobryshev, A.; Elchaninova, O.; Tatarinova, M.; Grishanova, S.; Frolov, A.	2015	Article	Management accounting in Russia. Problems of theoretical study and practical application in the economic crisis
83	Bobryshev, A.; Yakovenko, V.; Tunin, S.; Germanova, V.; Glushko, A.	2015	Article	The concept of management accounting in crisis conditions
84	Endenich, C.	2014	Article	Economic crisis as a driver of management accounting change. Comparative evidence from Germany and Spain

## A2. Publications included in the sample (continued).

Number	Author(s)	Year	Document type	Title
85	Mitroi, A.; Grigore, A.	2011	Article	Specific methods of environmental management accounting in material flow cost accounting
86	Ndiweni, E.	2010	Article	A trail of unintended consequences management accounting information in a volatile environment
87	Sales, X.	2010	Conference Paper	Managing strategic risks from management control approach
88	Bedford, D.; Spekle, R.; Widener, S.	2020	Preprint	Budgeting and employee stress in times of crisis evidence from the Covid-19 pandemic
89	Mshaikh, J.	2021	Proceeding	The economic impact of budgeting amidst Covid-19 pandemic
90	Bardovic, J.; Gašparík, J.	2021	Article	Enablers of participatory budgeting in Slovakia during the Covid-19 pandemic
91	Gomez-Conde, J.; Malagueño, R.; Lopez-Valeiras, E.; Rosa, F.; Lunkes, R.	2020	Preprint	The effect of management control systems during the Covid-19 pandemic. Does the market appreciate the breadth of vision
92	Redburn, F.	2021	Article	Budgeting for existential crisis. The federal government as societies guarantor
93	Khoruzhy, L.; Katkov, Y.; Katkova, E.	2020	Article	Adapting management accounting and budgeting to the spread of the virus Covid-19
94	Yakubov, R.	2021	Article	Selecting cost management models in post-pandemic settings
95	Galic, M.; Biškupec, P.; Galic, M.	2021	Proceeding	Assessment of management controlling in pandemic times
96	Kuczynska-Cesarz, A.	2021	Article	Management accounting instruments as a security engineering tools used in solving crisis problems threats
97	Endenich, C.	2014	Article	Economic crisis as a driver of management accounting change
98	Aliyu N.; Jamil, C.; Mohamed, R.	2014	Article	The mediating role of management control system in the relationship between corporate governance and the performance of bailed-out banks in Nigeria
99	Ferry, L.; Ahrens, T.	2017	Article	Using management control to understand public sector corporate governance changes

**A2. Publications included in the sample (continued).**

<b>Number</b>	<b>Author(s)</b>	<b>Year</b>	<b>Document type</b>	<b>Title</b>
100	Cosenz, F.; Noto, L.	2015	Article	Combining system dynamics modelling and management control systems to support strategic learning processes in SMEs. A dynamic performance management approach
101	Widener, S.	2014	Chapter	Researching the human side of management control using survey-based methods

Note: The order of the listed papers is the same as the order given by the software biblioshiny.

### A3. Abbreviations of journals.

<b>Abbreviation</b>	<b>Journal</b>	<b>Country</b>	<b>Scimago Ranking</b>
AA	Advances in Accounting	USA	Q3
AAAJ	Accounting, Auditing & Accountability Journal	UK	Q1
ABR	Accounting and Business Research	UK	Q2
AMJ	Academy of Management Journal	USA	Q1
AMR	Academy of Management Review	USA	Q1
AOS	Accounting, Organizations and Society	UK	Q1
APMAJ	Asia-Pacific Management Accounting Journal	Japan	No ranking available.
ASQ	Administrative Science Quarterly	USA	Q1
BAR	British Accounting Review	USA	Q1
CAR	Contemporary Accounting Research	USA	Q1
COC	Corporate Ownership and Control	Ukraine	Q4
CPA	Critical Perspectives on Accounting	USA	Q1
EAR	European Accounting Review	UK	Q1
JAAR	Journal of Applied Accounting Research	UK	Q3
JoMaC	Journal of Management Control	Germany	Q2
JOAC	Journal of Accounting and Organizational Change	UK	Q2
MAR	Management Accounting Research	USA	Q1
TAR	The Accounting Review	USA	Q1

Note: Last Scimago data retrieval on 20/01/2023.

#### A4. Most influential publications.

Rank	Author(s)	Year	Journal	Title
1	Janke, R.; Mahlendorf, M.; Weber, J.	2014	MAR	An exploratory study of the reciprocal relationship between interactive use of management control systems and perception of negative external crisis effects
2	Pavlatos, O.; Kostakis, H.	2015	AA	Management accounting practices before and during economic crisis: Evidence from Greece
3	Endenich, C.	2014	JAAR	Economic crisis as a driver of management accounting change: Comparative evidence from Germany and Spain
4	Neu, D.; Rahaman, A.; Everett, J.	2010	CAR	Accounting for social-purpose alliances: Confronting the HIV/AIDS pandemic in Africa
5	Soin, K.; Collier, P.	2013	MAR	Risk and risk management in management accounting and control
6	Mclaren, J.; Appleyard, T.; Mitchell, F.	2016	BAR	The rise and fall of management accounting systems: A case study investigation of EVA™
7	Hopwood, A.	2009	AOS	The economic crisis and accounting: Implications for the research community
8	Chandar, N.; Miranti, P. J.	2009	ABR	Integrating accounting and statistics: Forecasting, budgeting and production planning at the American Telephone and Telegraph Company during the 1920s

### A5. Existing research streams – all analyzed publications.

Cluster	Author(s)	Year	Type of paper	Title
1	Hopwood, A.	2009	Introduction	The economic crisis and accounting: Implications for the research community
1	Van der Stede, W.	2011	Reflection	Management accounting research in the wake of the crisis: Some reflections
1	Janke, R.; Mahlendorf, M.; Weber, J.	2014	Quantitative	An exploratory study of the reciprocal relationship between interactive use of management control systems and perception of negative external crisis effects
1	Becker, S. D.; Mahlendorf, M.; Schäffer, U.; Thaten, M.	2016	Quantitative	Budgeting in times of economic crisis
1	Arnold, P. J.	2009	Reflection	Global financial crisis: The challenge to accounting research
1	Langfield-Smith, K.	1997	Critical review	Management control systems and strategy: A critical review
1	Chenhall, R.; Langfield-Smith, K.	1998	Quantitative	Adoption and benefits of management accounting practices: An Australian study
1	Naranjo-Gil, D.; Maas, V. S.; Hartmann, F. G. H.	2009	Quantitative	How CFOs determine management accounting innovation: An examination of direct and indirect effects
1	Pavlatos, O.; Kostakis, H.	2015	Quantitative	Management accounting practices before and during economic crisis: Evidence from Greece
1	Porter, M. E.	1980	Theoretical	Competitive strategy: Techniques for analyzing industries and competitors
1	Reid, G. C.; Smith, J. A.	2000	Qualitative	The impact of contingencies on management accounting system development
1	Abdel-Kader, M.; Luther, R.	2006	Quantitative	Management accounting practices in the British food and drinks industry
1	Baines, A.; Langfield-Smith, K.	2003	Quantitative	Antecedents to management accounting change: A structural equation approach
1	Cadez, S.; Guilding, C.	2008	Quantitative	An exploratory investigation of an integrated contingency model of strategic management accounting

### A5. Existing research streams – all analyzed publications (continued).

Cluster	Author(s)	Year	Type of paper	Title
2	Chenhall, R.	2003	Review	Management control systems design within its organizational context: Findings from contingency-based research and directions for the future
2	Simons, R.	1995	Theoretical	Levers of control: How managers use innovative control systems to drive strategic renewal?
2	Ezzamel, M.; Bourn, M.	1990	Qualitative	The impact of environmental uncertainty, managerial autonomy and size on budget characteristics
2	Malmi, T.; Brown, D.	2008	Editorial	Management control systems as a package—Opportunities, challenges and research directions
2	Abernethy, M.; Brownell, P.	1999	Quantitative	The role of budgets in organizations facing strategic change: An exploratory study
2	Collins, F.; Holzmann, O.; Mendoza, R.	1997	Quantitative	Strategy, budgeting, and crisis in Latin America
2	Pearson, C.; Clair, J.	1998	Theoretical	Reframing crisis management
2	Chapman, C. S.	1998	Qualitative	Accountants in organisational networks
2	Marginson, D.	2002	Qualitative	Management control systems and their effects on strategy formation at middle-management levels: Evidence from a UK organization
2	Podsakoff, P.; MacKenzie, S.; Lee, J.-Y.; Podsakoff, N.	2003	Review	Common method biases in behavioral research: A critical review of the literature and recommended remedies.
2	D'Aveni, R. A.; MacMillan, I. C.	1990	Quantitative	Crisis and the content of managerial communications: A study of the focus of attention of top managers in surviving and failing firms?
3	Burns, J.; Scapens, R. W.	2000	Theoretical	Conceptualizing management accounting change: An institutional framework
3	Burns, J.; Baldvinsdottir, G.	2005	Qualitative	An institutional perspective of accountants' new roles – The interplay of contradictions and praxis
3	Busco, C.; Quattrone, P.; Riccaboni, A.	2007	Introduction	Management accounting: Issues in interpreting its nature and change
3	Ezzamel, M.; Robson, K.; Stapleton, P.	2012	Qualitative	The logics of budgeting: Theorization and practice variation in the educational field

### A5. Existing research streams – all analyzed publications (continued).

Cluster	Author(s)	Year	Type of paper	Title
3	Otley, D.	1980	Review	The contingency theory of management accounting and control: 1980–2014
3	Scapens, R. W.	2006	Review	Understanding management accounting practices: A personal journey
3	Anderson, S. W.; Young, M. S.	1999	Qualitative	The impact of contextual and process factors on the evaluation of activity-based costing systems
3	Becker, S. D.	2014	Qualitative	When organisations deinstitutionalise control practices: A multiple-case study of budget abandonment
3	Burns, J.; Scapens, R. W.	2000	Qualitative	The changing nature of management accounting and the emergence of "hybrid" accountants
3	Cobb, I.; Helliar, C.; Innes, J.	1995	Qualitative	Management accounting change in a bank
4	Mikes, A.	2009	Qualitative	Risk management and calculative cultures
4	Libby, T.; Waterhouse, J. H.	1996	Quantitative	Predicting change in management accounting systems
4	Arena, M.; Arnaboldi, M.; Azzone, G.	2010	Qualitative	The organizational dynamics of enterprise risk management
4	Bhimani, A.	2009	Editorial	Risk management, corporate governance and management accounting: Emerging interdependencies
4	Collier, P. M.; Berry, A. J.	2002	Qualitative	Risk in the process of budgeting



## A6. Future research streams - all analyzed publications.

Cluster	Author(s)	Year	Type of paper	Title
1	Passetti, E.; Battaglia, M.; Bianchi, L.; Amnesi, N.	2021	Quantitative	Coping with the COVID-19 pandemic: The technical, moral and facilitating role of management control
1	Mitchell, F.; Nørreklit, H.; Nørreklit, L.; Cinquini, L.; Koeppe, F.; Magnacca, F.; Mauro, S.G.; Jakobsen, M.; Korhonen, T.; Laine, T.; Liboriussen, J.M.	2021	Quantitative	Evaluating performance management of COVID-19 reality in three European countries: A pragmatic constructivist study
1	Delfino, G. F.; van der Kolk, B.	2021	Qualitative	Remote working, management control changes and employee responses during the COVID-19 crisis
1	Schaltegger, S.	2020	Viewpoint	Unsustainability as a key source of epi-and pandemics: Conclusions for sustainability and ecosystems accounting
1	Posch, A.	2020	Quantitative	Integrating risk into control system design: The complementarity between risk-focused results controls and risk-focused information sharing
1	Ayvaz, E.; Kaplan, K.; Kuncan, M.	2020	Technical development	An integrated LSTM neural networks approach to sustainable balanced scorecard-based early warning system
2	Andrew, J.; Baker, M.; Guthrie, J.	2021	Qualitative	Accounting, inequality and COVID-19 in Australia
2	Spraakman, G.	2020	Personal reflection	Ramifications of Covid-19 on management accounting teaching and research
3*	Govdya, V. V.; Balaeva, D. A.; Degaltseva, Z. V.; Silina, T. A.; Ordynskaya, M. E.	2020	Theoretical	Organizational and methodological aspects of the management accounting development in conditions of economic uncertainty
3*	Dubinina, M. A.; Olisaeva, A. V.; Morozkina, S. S.; Tochieva, L. K.; Molamusov, Z. K.	2020	Theoretical	Teaching anti-crisis management accounting as a factor in ensuring sustainable economic development of enterprises in the context of cyclical processes in the economy
3*	Govdya, V.V.; Ordynskaya, M. E.; Velichko, K. A.; Tochieva, L. K.; Olisaeva, A. V.	2020	Theoretical	Problems and prospects of management accounting improvement for innovation and investment activities in agricultural enterprises

### A6. Future research streams - all analyzed publications (continued).

Cluster	Author(s)	Year	Type of paper	Title
3*	Dzobelova, B. V.; Dovteav, S. A., Kuzina, A. F.; Shadieva, M. Y.; Elgaitarova N. T.	2020	Theoretical	Analytical support of the management accounting system in an unstable economy condition
4*	Bobryshev, A. N.; Chaykovskaya, L. A.; Dudaev, G. S.-H.; Serebryakova, E. A.; Karlov, D. I.	2020	Quantitative	The concept of management accounting in the conditions of uncertainty and risk
4	García-Cornejo, B.; Pérez-Méndez, J. M.	2020	Quantitative	Influence of cost systems on efficiency. An analysis of Spanish hospitals using public national databases
4	Carr, M.; Beck, M. P.	2019	Qualitative	Clinician responses to management control: Case evidence from a university hospital during the fiscal crisis
5*	Oleg A. Diegtiar, O. A.; Bezuhlyi, O. V.; Tararyev, Y. O.; Suslova, T. O.; Romanchenko, T. V.	2021	Theoretical	Certain aspects of the management accounting system for small and medium-sized enterprises

Note: Publications marked with an asterisk are not further analyzed due to quality issues.

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# Organizational Resilience in the COVID-19 Pandemic – An Empirical Investigation of Antecedents and Effects

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## Abstract

Various exogenous triggers can lead to global economic crises that affect almost every business sector and let many companies struggle, and some even face insolvency. In such situations, organizational resilience is often considered a means to ensure competitive advantages. However, although the concept has gained popularity in recent years, empirical research on both antecedents and effects of organizational resilience is still scarce. Thus, we first examine potential management-accounting determinants of organizational resilience as risk management or corporate planning. A survey conducted in January and February 2021 led to a dataset of 129 observations. We find that a risk-management orientation is positively associated with both the adaptive-capacity factor of organizational resilience and the planning factor that considers crisis events and emergencies. With regard to corporate planning, we find that the importance of the planning function of budgeting and capabilities for scenario planning are positively associated with the adaptive-capacity factor of organizational resilience. Second, we investigate the effects of organizational resilience and find that adaptive capacity increases a company's competitive advantage both during business-as-usual and in times of crisis. Our findings inform practitioners about the role of future-oriented management-accounting practices such as risk management and corporate planning in increasing organizational resilience and, consequently, the positive outcomes of organizational resilience.

**Keywords:** Competitive Advantage; Corporate Planning; COVID-19 Crisis; Organizational Resilience; Risk Management; Scenario Planning.

**JEL:** M41.

## Acknowledgments:

We gratefully acknowledge helpful comments from Thorsten Knauer, the participants of the 2023 ACMAR Annual Conference, and two anonymous reviewers for JMAC as well as the 2023 EAA Annual Congress. We gratefully acknowledge the financial support from the Dr. Hans Riegel-Stiftung (Grant AH-0978-2011) for our project. Any errors are our own.

### 3.1. Introduction

Currently, global crises determine the overall economic situation: The COVID-19 pandemic which began at the end of 2019 has severely affected the global economy (Coccia, 2021; Donthu & Gustafsson, 2020; P. Sharma et al., 2020). For example, worldwide real GDP decreased by 3.4% in 2020 (Statista, 2022). Since the pandemic outbreak, phases of brief relaxation have been followed by new waves of infection, which in many countries entailed restrictions in public life (Cheema-Fox et al., 2021; Coccia, 2021). Lockdowns and other measures have affected companies in almost every business sector (Verma & Gustafsson, 2020). Closely following the pandemic, the next crisis occurred, based on the Russian war of aggression against Ukraine. This crisis also heavily impacted the global economy, as sanctions were imposed and essential commodities heavily increased in price (United Nations, 2022). In addition, the global climate crisis threatens the previous life model of many societies and the economic system in general. Although it shows a different, more undefined character compared to the other crises, which are immediately striking, it is clear that global humanity needs to act now to preserve the opportunity to do something against climate change (H. Lee et al., 2023).

However, not all companies are affected equally hard, and some seem to cope better with the effects of the crises than others. In this regard, a much-discussed concept concerning the ability to deal with a crisis is (organizational) resilience. In a company environment, organizational resilience often refers to the ability of dealing with an unexpected situation such as a crisis (A. Sharma et al., 2020). The term has been defined and discussed intensively (e.g., Ducheck, 2020; Linnenluecke, 2017; Sutcliffe & Vogus, 2003), but there is little evidence of how (management-) accounting practices could support building up organizational resilience (Barbera et al., 2020; Barbera et al., 2017). Simultaneously, the constant emergence of new crises illustrates the importance of the topic. Thus, practitioners and academics are particularly interested in determining how companies can acquire organizational resilience through the use of future-oriented management-accounting practices such as risk management and corporate planning and, in the following, sustain a competitive advantage. These practices are central management-accounting tools commonly used to identify risks, manage uncertainty, and plan the company's future. Hence, their usage secures that companies deal intensively with their (uncertain) future and, therefore, creates awareness in this regard.

Against this background, our study investigates potential antecedents of organizational resilience from a management-accounting perspective and, additionally, the effect of

organizational resilience on a company's competitive advantage in a crisis. More in detail, we consider two factors of organizational resilience that have been established by Whitman et al. (2013): planning and adaptive capacity. Here, the planning factor of organizational resilience acknowledges the occurrence of crises and emergencies and refers to the preparedness for such events. In contrast, the adaptive-capacity factor relates more generally to a mindset and culture in the company. Regarding possible antecedents of organizational resilience, we examine determinants from a management-accounting perspective that decision-makers can actively influence, that are future-oriented, and which are typically used to deal with uncertainty. First, we investigate risk management which is often considered a key area of management accounting (Bhimani, 2009; Braumann, 2018; Soin & Collier, 2013). Risk management supports companies by considering risks and chances in the formulation of their strategy (Beasley et al., 2006; Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004, 2017). The updated COSO framework for enterprise risk management (ERM) states that an integrated, holistic approach to risk management can enhance organizational resilience because an ERM enables companies to identify major risks and to build up necessary capabilities that allow a fast response to those risks (COSO, 2017). When risk management is so comprehensively anchored in the company, it leads to a mindset that enables a build-up of organizational resilience which is also determined by the mentality of the company members but goes beyond the horizon of risk management. Hence, we expect that a more pronounced risk-management orientation should increase organizational resilience (McManus et al., 2008; Ponomarov, 2012).

Another central area of management accounting is corporate planning (Anthony & Govindarajan, 2007; Bhimani et al., 2019). In this respect, we consider the importance of the planning function of budgeting as a second determinant of organizational resilience. The planning function of budgeting refers to the use of (short-term) budgets for coordination, resource allocation, alignment with the company's objectives, and assignment of decision-making and spending authority. The planning function can be distinguished from the control function and evaluation function of budgeting (Bergmann et al., 2020). We argue that a stronger focus on the planning function relates to a specific mindset that enables companies to anticipate crises better and to build up necessary slack resources that help cope with crises. Therefore, we expect that the importance of the planning function of budgeting is positively associated with organizational resilience.

Additionally, we consider capabilities for scenario planning as another determinant of organizational resilience. Scenario planning is a helpful instrument that enables companies to identify threats and crises and determine suitable paths of action in a crisis situation (Marren & Kennedy, 2010; Phelps et al., 2001). However, to successfully implement scenario planning, different capabilities such as a sufficient data basis, technological infrastructure, know-how, and employee capacities are a prerequisite. Hence, we expect that capabilities for scenario planning are positively associated with organizational resilience.

In general, organizational resilience is not just built as an end in itself but helps the company to respond to unexpected situations and external pressure. Companies who invest in this capability, expect to have an advantage when it comes to unexpected events and change. Thus, concerning the effects of organizational resilience, we argue that resilience positively affects a company's competitive advantage in times of crisis.

To examine (1) whether the target-oriented use of future-oriented management-accounting practices can support organizational resilience and (2) whether organizational resilience positively affects a company's competitive advantage in times of crisis, we use survey data collected from German companies in January and February 2021. At this time, the COVID-19 pandemic had been going on for almost a year. Even though vaccination campaigns were imminent at the end of 2020, the global situation remained tense and uncertain. Companies were still experiencing the impact of the crisis. Therefore, almost all companies had to deal with the consequences of the pandemic. Moreover, the respondents should have been able to evaluate the impact of the crisis on their company. Our data set contains 129 responses from company representatives. Using structural equation modeling, we find statistical support for our predictions. Specifically, we find that a risk-management orientation is positively associated with both the adaptive-capacity factor of organizational resilience and the factor that considers planning for explicit crisis situations. Thus, factors influencing the culture of a company determine a company's organizational resilience. Interestingly, results show that the importance of the planning function of budgeting and capabilities for scenario planning are positively associated with the adaptive-capacity factor of organizational resilience but not with its planning factor. We find organizational resilience in terms of the adaptive-capacity factor positively affects a company's competitive advantage in times of crisis. Additional analysis reveals that the adaptive-capacity factor of organizational resilience is also positively associated with a company's competitive advantage during business-as-usual times.

These empirical findings show that a target-oriented use of management-accounting practices such as risk management and corporate planning positively impacts organizational resilience and, in the following, positively influences a company's competitive advantage.

Our study contributes to both theory and practice. From a theory perspective, our findings contribute to a growing stream of research on organizational resilience (Bracci & Tallaki, 2021; Duchek, 2020; Hillmann, 2020; Hillmann & Guenther, 2021). More precisely, we investigate how management-accounting practices such as risk management and corporate planning can impact organizational resilience (Barbera et al., 2020). Thus, we establish links between different research fields, such as management accounting and organizational resilience, so that further research can build on our results, for example, to investigate further antecedents in neighbored disciplines or to further validate the used scales. We also add to the literature on management-control systems in (economic) crises (e.g., Becker et al., 2016; Colignon & Covaleski, 1988; Collins et al., 1997). In this context, we do not consider the direct relationship between management-control systems and crises (impact) but examine an additional factor, i.e., organizational resilience.

Our findings inform practitioners about the positive effect of organizational resilience on the company's competitive advantage in a crisis situation. Here, the relevance of organizational resilience should especially be stressed because resilience cannot easily be valued in monetary terms (A. V. Lee et al., 2013). In addition, a link to competitiveness is hard to establish. As a result, resilience often receives little attention in monetarily-oriented companies (A. V. Lee et al., 2013; Stephenson et al., 2010). Moreover, our study identifies influencing factors on organizational resilience that can be actively shaped by decision-makers. More precisely, we find that risk management and aspects of corporate planning are associated with organizational resilience. In this regard, we present another advantage of comprehensive risk management which are not easily identified (Baxter et al., 2013).

The paper proceeds as follows. Section 2 provides a background on organizational resilience and presents the development of the hypotheses. Section 3 describes the design and methodology of our study, while Section 4 presents our empirical results. Finally, section 5 concludes and discusses limitations and directions for future research.

## 3.2. Background and Hypotheses Development

### 3.2.1. Organizational Resilience

Organizational resilience is a meta-capability<sup>1</sup> that allows companies “to cope effectively with unexpected events, bounce back from crises, and even foster future success” (Duchek, 2020, p. 215). With the help of this capability, companies can even survive events that pose an existential threat to the company’s continued existence (Lengnick-Hall et al., 2011). Other similar capabilities, such as agility (ability to recognize opportunities quickly, make changes, and avoid breakdowns), robustness (ability to maintain functions and processes despite disruptions), or flexibility (ability to adapt quickly to changing environmental conditions), are more common but not as far-reaching for companies. To differentiate resilience from these more common concepts, Duchek (2020) stresses (1) the ability of resilience to answer to unexpected events instead of providing solutions to day-to-day business challenges (Lengnick-Hall et al., 2011) and (2) the adaptation aspect that allows resilient companies to come out stronger after a crisis (Madni & Jackson, 2009). A. V. Lee et al. (2013) even argue that resilience could be a source of competitiveness for the company: Resilience stems, for example, from a strong leadership style, an increased awareness of the corporate environment, and fast responses to changes which are also essential assets of competitive organizations.

Resilience is a multifaced, complex construct that should not be considered an outcome in terms of the ability to recover but rather as a capability that leads to resilient outcomes in all phases of a crisis (Duchek et al., 2020; Linnenluecke & Griffiths, 2011; Sutcliffe & Vogus, 2003). There are “three successive resilience stages: anticipation, coping, and adaptation” (Duchek, 2020, p. 217), in which certain capabilities work that together form the meta-capability resilience. In the anticipation stage, *before* a crisis, anticipatory capabilities are necessary; these allow companies to detect critical developments before they occur and to react accordingly. These capabilities should also enable companies to increase situation awareness and sensemaking (Barbera et al., 2017). However, crises cannot be avoided by simply acting with foresight (Duchek et al., 2020). For that reason, in the coping stage, activities are necessary for an appropriate, company-specific response *during* a crisis (Barbera et al., 2017) in order to secure the company’s continued existence. Lastly, in the adaptation stage *after* a crisis, adaptive

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<sup>1</sup> In literature, organizational resilience is inconsistently labeled capacity or capability (Hillmann & Günther (2021)). Within this study, we are following the wording from Duchek (2020) and use the term “capability”. The term also better reflects the dynamic nature of organizational resilience.

capabilities enable organizations to recover from the crisis, take chances, and become stronger. Resilient companies may use external shocks to improve (Duchek, 2020) and develop new capabilities (A. V. Lee et al., 2013).

Although the relevance of organizational resilience before, during, and after a crisis has been widely acknowledged, many companies fail to recognize the importance of resilience and do not invest enough in developing that capability (A. V. Lee et al., 2013). Against this backdrop, several studies have focused on developing a measurement tool for organizational resilience such that organizations can assess their resilience capabilities (e.g., A. V. Lee et al., 2013; Mallak, 1998; McManus et al., 2008; Somers, 2009; Stephenson, 2010). In this respect, A. V. Lee et al. (2013) identified and validated two factors of organizational resilience: planning and adaptive capacity.<sup>2</sup> These two factors capture behavioral and social aspects of organizational resilience and can also be linked to the stages view of organizational resilience. Specifically, the planning factor of resilience relates to both the anticipation and coping stages because it acknowledges the fact that crises may occur and refers to explicit strategies and measures to ensure an effective crisis response, such as the development of emergency plans, crisis simulations, and recovery priorities (Stephenson, 2010).

On the other hand, the adaptive-capacity factor of resilience is more strongly related to general values and mindsets in the company and thus addresses aspects of the coping and adaptive stages. For example, adaptive capacity refers to employee innovation and creativity, which may be helpful both during the crisis and in the learning processes after the crisis. Other aspects of adaptive capacity relate to necessary slack resources and relevant information, and knowledge that enables a swift move from a business-as-usual to a crisis mode (Stephenson, 2010).

Even though these two perspectives on resilience offer insights into the antecedents of resilience, it is nevertheless important to explicitly investigate the determinants of organizational resilience. In the following, we develop hypotheses for possible determinants from a management-accounting perspective that decision-makers can actively influence

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<sup>2</sup> Please note that the factors of our organizational-resilience measure refer to “adaptive capacity” and “planning”. For reasons of stringency, we adopt these designations for the factors from the original developers. In addition, we would like to explicitly point out that the designation “adaptive capacity” does not mean the reference to the adaptation stage of the organizational-resilience stages. As outlined below, we argue that this aspect of organizational resilience does not only refer to the adaptation phase but is also relevant to the coping stage. Similarly, the designation “planning” does not only refer to the anticipation stage.



(Barbera et al., 2020). More specifically, we consider a risk-management orientation, the importance of the planning function of budgeting, and the capabilities for scenario planning as possible determinants of organizational resilience. In addition, we investigate the effects of organizational resilience in the first year of the COVID-19 crisis with regard to the competitive advantage of companies.

### ***3.2.2. Antecedents of Organizational Resilience***

#### *3.2.2.1. Risk-Management Orientation*

Risk management is a concept considered closely related to organizational resilience (Settembre-Blundo et al., 2021). For both anticipation of a crisis and coping with a crisis, companies must understand which risks they are likely to face and how they can be managed once they materialize. In this respect, companies should focus not only on business-related risks but also on emergencies such as fires or accidents and high-impact crises such as natural disasters, economic downturns, the emergence of new technologies, and political instabilities (Williams et al., 2017; Zhou et al., 2010). In addition, elaborate risk management helps companies to increase situation awareness in view of crises in such a way that risks are identified and considered depending on the crisis type. This awareness allows companies to plan coordinated and suitable responses (McManus et al., 2008).

Hence, we argue that companies that exhibit a higher risk-management orientation are more likely to comprehensively identify, assess, and manage risks with regard to crisis situations. Risk-management orientation is defined as an organizational culture that prioritizes risk management and provides standards of behavior regarding organizational development and responsiveness to risk-related information (Ponomarov, 2012). Hence, a risk-management orientation can lead to a proper mindset and, at the same time, a preparedness of a company. In line with our argumentation, the COSO framework also establishes a positive link between a holistic, integrated ERM and organizational resilience (COSO, 2017). Similar to the concept of organizational resilience, ERM should be implemented in all areas and processes of the company. So, risk management should be executed continuously and, thus, also takes place before, during and after events like a crisis. Despite this, the concepts focus on different events or, more in detail, risks: ERM focuses on many identified and quantified risks a company is or could be exposed to, whereas organizational resilience does not explicitly focus on identified possible events but tries to prepare for any kind of unexpected events. Nevertheless, ERM

should create an awareness for unexpected events and should help to find suitable coping strategies.

Thus, we expect that a risk-management orientation positively affects both factors of organizational resilience, as both concepts push a preparedness for future events on a more operative level and, on a more strategic level, require and promote a similar mindset:

*H1a: A risk-management orientation is positively associated with the organizational-resilience factor planning.*

*H1b: A risk-management orientation is positively associated with the organizational-resilience factor adaptive capacity.*

### *3.2.2.2. Importance of the Planning Function of Budgeting*

Short-term planning represents a central part of budgeting and is considered one of the most important management-control systems in companies and organizations (e.g., Anthony & Govindarajan, 2007; Bhimani et al., 2019; Merchant & Van der Stede, 2017). In general, budgeting describes processes under which plans are made and set into action (Datar & Rajan, 2021). In this respect, budgets can be used for both short-term planning and performance evaluation, on the one hand, and long-term strategy formulation, on the other hand (Hansen & Van der Stede, 2004). However, the majority of research has focused on the short-term use of budgets, where budgets may serve different macro functions such as planning, control, or motivation and performance evaluation (Arnold & Artz, 2019; Becker et al., 2016; Hansen & Van der Stede, 2004; Sivabalan et al., 2009).

The planning function of budgeting refers to the development of action plans and affects aspects such as the management of operative capacities, the determination of costs and prices, and the coordination of resources across the organization (Bergmann et al., 2020; Sivabalan et al., 2009). Closely related to the planning function is the control function of budgets. It refers to using budgets as a monitoring device comparing a company's actual financial performance with budgeted performance (Sivabalan et al., 2009). Finally, the motivation and performance-evaluation function of budgeting refers to the use of budgets as targets for employees and/or business units with the intention to cause high levels of effort and performance (Arnold & Artz, 2019; Hansen & Van der Stede, 2004). Hence, budgets may be used as a basis for variable compensation.

The planning function of budgeting may be especially relevant for building up organizational resilience. For example, a deep understanding of the company's situation and environment is necessary to anticipate crises. Consequently, a company focusing on planning is likely to gather more detailed information, which might inform about current and possible future threats (Becker et al., 2016). Moreover, in the coping stage of a crisis, slack resources are helpful in responding appropriately to the changing circumstances (Bourgeois, 1981; Cyert & March, 1963). More comprehensive planning also enables companies to identify potential slack resources and determine appropriate organizational slack levels.

Taken together, we expect that a stronger focus on the planning function of budgeting enables companies to respond better to crises due to an increase in both factors of organizational resilience.

*H2a: The importance of the planning function of budgeting is positively associated with the organizational-resilience factor planning.*

*H2b: The importance of the planning function of budgeting is positively associated with the organizational-resilience factor adaptive capacity.*

### *3.2.2.3. Capabilities for Scenario Planning*

In general, scenario planning is an instrument of strategic planning that deals with high levels of environmental uncertainty coming along with the long-term perspective of strategic planning (Chermack et al., 2017; Peterson et al., 2003; Pollard & Hotho, 2006). It aims at telling various stories about possible future outcomes while reflecting internal and external uncertainties (Chermack, 2011). Bradfield et al. (2005) identify four main areas of purpose in scenario work: (1) making sense of a puzzling situation, (2) developing strategy, (3) anticipation, and (4) adaptive organizational learning. Similarly, Schoemaker (1995) argues that scenarios can generate better strategic options, assess the robustness of a company's core competencies, identify early warning signals, and evaluate different plans and options. Thus, in terms of change and crises, scenario planning enables companies to anticipate significant threats more easily and to account for possible disruptions (Phelps et al., 2001). Consequently, scenario planning may shift a company's situation from being crisis-prone to crisis-prepared (Pollard & Hotho, 2006), which reflects organizational resilience in the anticipation stage.

With regard to the coping stage of crises, scenario planning may also be a helpful instrument for short-term planning (Armstrong, 1983; Atkinson et al., 2012; Marren & Kennedy, 2010; Palermo & Van der Stede, 2011). In the form of “what-if analyses” alternative courses of action during a crisis can be analyzed, and appropriate short-term measures can be planned.

However, scenario planning is a complex process consisting of several steps: defining the scope of analyses, data collection, building scenarios, and choosing options (Phelps et al., 2001). Thus, scenario planning requires a lot of time and commitment (Chermack et al., 2017). Different capabilities are necessary to successfully implement scenario planning in the short and the long run and, consequently, to build organizational resilience. For example, data collection requires the capability of assessing, choosing, and storing data. Moreover, employees need the know-how and temporal resources to conduct scenario analyses. Additionally, these capabilities for scenario planning can also be used to increase organizational resilience in view of a crisis. Thus, a comprehensive database, sufficient know-how, and temporal resources entail better responses to crises. Finally, the decision-makers in the company have to know about the added value of scenario analyses. As a result, if companies have those tangible and intangible capabilities for scenario planning, this could lead towards an increased awareness of the benefits of scenario analyses and offer the chance to realize scenario planning. Thus, the capabilities for scenario planning could improve the preparedness of a company, as well as its coping capabilities. So, capabilities for scenario planning could be positively associated with organizational resilience. Consequently, we argue that capabilities for scenario planning positively affect both factors of organizational resilience.

*H3a: Capabilities for scenario planning are positively associated with the organizational-resilience factor planning.*

*H3b: Capabilities for scenario planning are positively associated with the organizational-resilience factor adaptive capacity.*

#### *3.2.2.4. Organizational Resilience and Competitive Advantage*

Organizational resilience can be a source of competitive advantage both during business-as-usual and in crisis situations (Hillmann & Guenther, 2021; Marwa & Milner, 2013). For example, A. V. Lee et al. (2013) argue that there is a link between being resilient and being competitive. More precisely, both resilient and competitive organizations rely on strong leadership, high levels of situation awareness, an ability to manage threats and weaknesses, and an ability to adapt to rapid and/or major change (A. V. Lee et al., 2013; Stephenson, 2010). Thus, situation awareness and adaptive capacities enable companies to respond to crises, extreme situations, and changes in the market environment. Consequently, resilient companies adapt faster than their competitors.

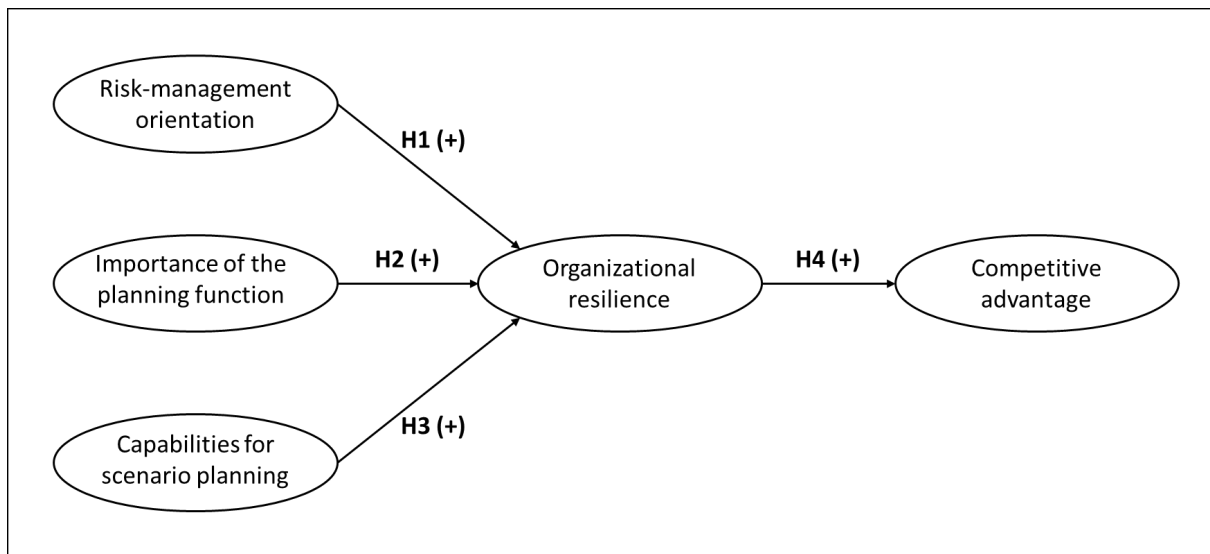
While organizational resilience may provide companies with a competitive advantage in regular times, it may even be more beneficial in times of crisis. For example, Reeves and Deimler (2009) argue that it is not sufficient to just survive in crisis situations. Instead, the ability to adapt during crises leads to sustainable competitive advantages. Hence, organizational resilience ensures a company's survival, leads to adaptation, and successful coping with a crisis (e.g., Gao et al., 2017; Ortiz-de-Mandojana & Bansal, 2016; Stephenson, 2010; Wang et al., 2022). Consequently, resilient companies should be less negatively affected than their competitors and thus show sustained competitive advantages in a crisis. Taken together, we predict that both factors of organizational resilience lead to a competitive advantage in times of crisis.

*H4a: The planning factor of organizational resilience is positively associated with a competitive advantage in times of crisis.*

*H4b: The adaptive-capacity factor of organizational resilience is positively associated with a competitive advantage in times of crisis.*

The hypothesized research model is summarized in Figure 1.

**Figure 1. Theoretical Model.**



### **3.3. Research Method**

#### **3.3.1. Sample Description**

To collect data for our empirical analysis, we conducted a survey among German companies over a six-week period from January to February 2021. For sampling, we used the data from the *Dafne* database by Bureau van Dijk. Our three selection criteria of (1) firm solvency, (2) an annual revenue of at least €50 million, and (3) the latest account date between 2017 and 2020 yielded a total of 11,319 companies. We randomly selected 2,000 companies and sent paper-based questionnaires via postal mail. Respondents were asked to return the questionnaires via postal mail, e-mail, or fax or to answer the questions online via a link provided using the *Unipark* platform. In total, 135 questionnaires were returned (6.75%), out of which 129 could be used for analyses (6.45%). This implies a good overall data quality with only minor losses due to poor response quality.

Table 1 gives a detailed overview of our sample. The respondents mainly included directors (44.19%) and employees (24.81%) of management accounting/“Controlling” departments, suggesting a sufficient knowledge of risk management and the planning process in the respective company. Additionally, an average work experience of 12.3 years within the current firm indicates an adequate understanding of the departments and the company in general. Regarding company characteristics, nearly half of the firms (49.61%) reported a total annual revenue between €50 and €149 million, 17.05% declared a total annual revenue between €150 and €249 million, and 24.03% stated a total annual revenue between €250 and €999

million. Concerning industry distribution, our sample contains firms operating in a wide range of fields, among which product manufacturers (11.63%) and utilities/servicing/disposal (10.85%) are the most common.

**Table 1. Characteristics of sample data.**

<b>Description</b>	<b>Frequency</b>	<b>Percent of sample</b>
<i>Industry Breakdown</i>		
Automotive	12	9.30
Chemicals/Pharmaceuticals	9	6.98
Utilities/Servicing/Disposal	14	10.85
Financial Services	5	3.88
Retail/Commerce/E-Commerce	9	6.98
IT/Telecommunications	4	3.10
Consumer Goods	5	3.88
Transport/Logistics	12	9.30
Machinery and Plant Engineering	12	9.30
Product Manufacturers	15	11.63
Construction	10	7.75
Real Estate	6	4.65
Other	16	12.40
<i>Total Annual Revenue (in million euros)</i>		
Less than 50 <sup>3</sup>	3	2.33
Between 50 and 149	64	49.61
Between 150 and 249	22	17.05
Between 250 and 999	31	24.03
1,000 and more	9	6.99
<i>Ownership Structure</i>		
Listed	16	12.40
Private	93	72.09
State owned	15	11.63
Nonprofit	5	3.88
<i>Firm Age (in years)</i>		
Less than 50	46	35.66
Between 50 and 99	54	41.86
Between 100 and 149	23	17.83
150 and more	6	4.65
<i>Respondents' function</i>		
Managing Director/CEO	15	11.63
CFO	20	15.50
Director of Management Accounting	57	44.19
Management Accountant	32	24.81
Other	5	3.88

*Note:* The percentages may not add up to 100% due to rounding. (n=129)

To test for a potential non-response bias in our data, we compared the answers to our constructs of interest for early and late respondents (Arnold & Artz, 2015). Following the idea of Armstrong and Overton (1977), we assumed structural similarity of the populations of late

<sup>3</sup> Due to a time lag between survey conduction and the sampling criterion of a minimum annual revenue of €50 million as of the last balance-sheet date, there are a certain number of companies with an annual revenue of less than €50 million.

respondents and non-respondents. As we found no significant differences among the constructs of interest, we inferred that a potential non-response bias is unlikely to affect our results.

The common-method bias could also affect our inferences since we use the same method to collect data for both exogenous and endogenous variables (Podsakoff et al., 2003). Hence, we followed the recommendations by Podsakoff et al. (2003) to control and assess the common-method bias in our survey. First, we thoroughly designed our questionnaire and framed the survey as a study of “planning in times of COVID-19”. Thus, we covered the focus on organizational resilience and its link to the other investigated variables. Moreover, we assured the participants that their personal data would be treated anonymously. Finally, to statistically assess a possible influence of the common-method bias, we used Harman’s (1976) single-factor test and included all items of our constructs in a single explanatory factor analysis. The test revealed six factors with an Eigenvalue  $>1$ . The highest total variance explained by a single factor (33.87%) was below the 50 percent threshold and, thus, indicative of no common-method bias problems.

### ***3.3.2. Variable Measurement***

We developed a standardized questionnaire based on a thorough literature review of risk management, corporate planning, organizational resilience, and crises.<sup>4</sup> Whenever possible, we used existing, validated scales and refined them as necessary to fit the purpose of our study. Moreover, for some aspects, we developed items and scales ourselves. To validate our survey design, we pre-tested and discussed the questionnaire with two academics and two practitioners in the field of management accounting/“Controlling”. If not indicated otherwise, the questionnaire consisted of items to be rated on a five-point Likert scale (1 – “do not agree” to 5 – “fully agree”), additionally giving the respondents the possibility to check “not specified” if applicable.

We conducted a factor analysis to verify our constructs for the use in our model. Table 2 presents a full overview of the factor loadings and complementary reliability and validity

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<sup>4</sup> Concerning aspects of corporate planning and the competitive advantage, we asked respondents to answer the questions with regard to both the situation before the crisis (i.e., until the fourth quarter of 2019) and during the crisis (i.e., starting from the first quarter of 2020). Concerning the importance of the planning function and capabilities for scenario planning, we rely on the answers that refer to the situation *before* the crisis. Since we consider these factors to be determinants of organizational resilience, the situation before the crisis should already be relevant. In contrast to this, we base the analysis of competitive advantage on the responses that consider the situation *during* the crisis.



measures. All of the variables used in our analysis led to only one factor with an Eigenvalue  $>1$ , so no rotation is necessary (Hair et al., 2019). In order to assure convergent validity, we only retained items when the factor loadings exceeded the commonly applied threshold of at least 0.6 (Hair et al., 2019). To assess the reliability of our constructs (Mooi et al., 2018), we used Cronbach's alpha as well as composite reliability (CR) (Cronbach, 1951; Raykov, 1997). Applying the common thresholds of at least 0.7 for Cronbach's alpha and CR (Hair et al., 2019), all of our constructs satisfied the thresholds. In addition, convergent validity was examined using average variance extracted (AVE) (Fornell & Larcker, 1981). All of our constructs exceeded Fornell and Larcker's (1981) proposed threshold of 0.5, indicating a sufficient convergence among the items and the construct onto which they are loading. Finally, Table 3 shows that the square root of the AVE scores exceeds the correlations between the respective constructs. Thus, discriminant validity is assured (Fornell & Larcker, 1981).

**Table 2. Results of factor analysis.**

Construct/ Indicators	Factor loading	Cronbach's alpha	Composite Reliability	Average Variance Extracted
<i>RISK_MGMT</i> (n=126)		0.839	0.898	0.597
<i>risk1</i>	0.805			
<i>risk2</i>	0.851			
<i>risk3</i>	0.821			
<i>risk4</i>	0.793			
<i>risk5</i>	0.722			
<i>risk6</i>	0.618			
<i>FCT_PLAN</i> (n=126)		0.700	0.815	0.526
<i>planning1</i>	0.775			
<i>planning2</i>	0.746			
<i>planning3</i>	0.650			
<i>Planning4</i>	0.725			
<i>SCENARIO</i> (n=126)		0.828	0.886	0.661
<i>scenario1</i>	0.821			
<i>scenario2</i>	0.845			
<i>scenario3</i>	0.770			
<i>scenario4</i>	0.816			
<i>RES_PLAN</i> (n=114)		0.708	0.808	0.513
<i>res_plan2</i>	0.602			
<i>res_plan3</i>	0.626			
<i>res_plan4</i>	0.796			
<i>res_plan5</i>	0.826			
<i>RES_ADAPT</i> (n=126)		0.838	0.886	0.527
<i>res_adapt1</i>	0.669			
<i>res_adapt2</i>	0.667			
<i>res_adapt3</i>	0.623			
<i>res_adapt4</i>	0.825			
<i>res_adapt5</i>	0.747			
<i>res_adapt6</i>	0.729			
<i>res_adapt7</i>	0.801			
<i>COMP_ADV_CRISIS</i> (n=125)		0.800	0.878	0.721
<i>comp_adv1</i>	0.878			
<i>comp_adv2</i>	0.828			
<i>comp_adv3</i>	0.840			

**Table 3. Correlation matrix and discriminant validity.**

	(1)	(2)	(3)	(4)	(5)	(6)
(1) <i>RISK_MGMT</i>	<b>0.772</b>					
(2) <i>FCT_PLAN</i>	0.419***	<b>0.726</b>				
(3) <i>SCENARIO</i>	0.176*	0.105	<b>0.812</b>			
(4) <i>RES_ADAPT</i>	0.235***	0.271***	0.219**	<b>0.726</b>		
(5) <i>RES_PLAN</i>	0.407***	0.281***	0.129	0.294***	<b>0.719</b>	
(6) <i>COMP_ADV</i>	0.190***	0.068	0.097	0.371***	0.135	<b>0.849</b>

Note: This table presents the Spearman correlation coefficients. The bold figures on the diagonal are the square root of the AVE values.

\*  $p \leq 0.1$ ; \*\*  $p \leq 0.05$ ; \*\*\*  $p \leq 0.01$ .

To determine the scores of our variables used in the analysis, we average the responses across the identified items of a construct (Posch, 2020). In the following, we describe the variables and items used in our analysis in more detail. All items are presented in the Appendix.

**Risk-management orientation.** To measure the risk-management orientation of the companies (*RISK\_MGMT*), we apply a pre-tested and validated scale from Ponomarov (2012) that has been used in the context of resilience. We slightly adapted the scale to fit the scope of our setting. The scale includes six items that assess the risk-management orientation of a company. More specifically, aspects such as the existence of risk-monitoring processes, the risk-management culture, continuance strategies in case of major risks, and the risk-management organization were queried. All items were included in the final variable.

**Importance of the planning function.** To measure the importance of the planning function (*FCT\_PLAN*), we use an existing scale from Bergmann et al. (2020). Anchored by 1 (extremely unimportant) and 5 (extremely important), we asked respondents how important the following micro-functions were: coordination, resource allocation, alignment with the company's objectives, and assignment of decision-making and spending authority.<sup>5</sup>

**Capabilities for scenario planning.** To assess a company's capabilities for scenario planning (*SCENARIO*), we asked participants whether the following prerequisites for conducting scenario analyses were fulfilled in their companies: sufficient data basis, sufficient infrastructure, sufficient employee capacities, and sufficient know-how for the conduction of scenario analyses. In addition, we asked whether the added value of scenario analyses is sufficiently well-known. However, the latter item was dropped due to a factor loading <0.6.

**Organizational resilience.** We measured organizational resilience using the pre-tested and validated scale of Whitman et al. (2013). Especially in light of the difficulty in measuring the concept of organizational resilience (Whitman et al., 2013), adopting a pre-tested scale ensures greater reliability and construct validity. The work of Whitman et al. (2013) is based on prior studies from McManus et al. (2008), who qualitatively assessed the resilience of organizations in New Zealand. Stephenson (2010) and A. V. Lee et al. (2013) quantitatively tested this scale and refined it as necessary, leading to two substantial factors: *planning* and *adaptive capacity*. Whitman et al. (2013) then shortened this scale and extensively validated it using three different samples. We used the scales for both factors but applied a six-point Likert scale. Thus, we followed the existing scale by using an even number of answer options but adjusted it from four to six options to achieve a greater granularity.

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<sup>5</sup> Bergmann et al. (2020) additionally consider codification as a micro-function of planning. Since our pre-tests indicated a low comprehensibility of this item, we did not include it in our survey.

The scale for the *planning* factor of resilience consists of five items (*RES\_PLAN*). The items are intended to measure how well the firms are prepared for crises in terms of a general understanding of the effects of a crisis and a correspondingly fast reaction, if they have established well-defined priorities, emergency plans, and meaningful relationships outside the company. Due to a low factor loading, the item *res\_plan1* was dropped from the final variable measurement. *Adaptive capacity*, the second factor that constitutes the organizational-resilience scale, consists of eight items (*RES\_ADAPT*). These items are intended to capture a culture of awareness and responsibility for problems that may arise, informed decision-making with the help of sufficient internal resources and comprehensively distributed knowledge throughout the company, a culture of teamwork, and an active management style. The item *res\_adapt8* was not included in the final variable due to a low factor loading.

**Competitive advantage in times of crisis.** Lastly, the competitive advantage of the firms in the crisis was measured with the variable *COMP\_ADV\_CRISIS* consisting of three items. To determine the competitive advantage, the respondents were asked to rate their companies' (1) liquidity situation, (2) earnings situation, and (3) debt ratio compared to their competitors' situation during the COVID-19 crisis. The query of relative assessments, such as comparisons with competitors, enables a broader comparison between companies of different sizes and from different industries and reflects the nature of competitive advantage (Wang et al., 2022).

**Control variables.** In addition to our main variables, we considered several control variables that could confound our model's results. First, we assumed that the size of the company could have an influence on both organizational resilience and competitive advantage. For example, studies show that larger companies could be more resilient than smaller ones (Huang et al., 2020). We operationalized company size in terms of annual revenue, following the approach of Knauer et al. (2020). We asked respondents to sort their companies' annual revenue into categories ranging from "<50 million euros" to "≥5,000 million euros" and included the ordinal variable *REVENUE* in our analysis.

Further, we used the company's age as a control variable because older companies may have built up more slack resources, which could affect both organizational resilience and the companies' competitive advantages. Hence, we asked respondents to indicate the number of years their company had existed at that time (*COMP\_AGE*). We winsorized the variable at the 1st and 99th percentile to account for extreme outliers. Another company-related aspect that could affect both organizational resilience and a company's competitive advantage is the

company's strategic position (*STRATEGY*). Therefore, respondents indicated their companies' primary strategy on a five-point Likert scale ranging from 1 (Cost leadership/efficiency) to 5 (Differentiation via products/services/quality) (Becker et al., 2016; Porter, 1980).

Finally, we controlled for a possible influence of the industry in which the companies operate (*INDUSTRY*). The specifics of the pandemic as a trigger of the crisis led to the fact that certain industries, e.g., the tourism industry or event industry, as well as industries with a highly fragile global supply chain, could be more affected by the pandemic than others (Acciarini et al., 2021; Cheema-Fox et al., 2021). Thus, we asked the participants to categorize their company into one of 14 industries (including "other").<sup>6</sup>

Besides these company-related control variables, we also considered two respondent-related variables that might affect their ability to assess organizational resilience. Hence, we examined the respondents' executive position (*EXEC*) as well their tenure in the company (*TENURE*) as control variables.

### 3.4. Empirical Results

#### 3.4.1. Descriptive Results

Descriptive statistics reported in Table 4 show that the mean for *COMP\_ADV\_CRISIS* (3.450) is significantly higher than the scale's midpoint of 3 ( $t=5.75, p<0.001$ , one-tailed), indicating that respondents generally consider their companies' situation to be better than their competitors' situation during the crisis. Furthermore, with regard to organizational resilience, which was measured on a six-point Likert scale, means for both *RES\_PLAN* (3.917) and *RES\_ADAPT* (4.240) are significantly above the scale's midpoint of 3.5 (*RES\_PLAN*:  $t=5.10, p<0.001$ , one-tailed; *RES\_ADAPT*:  $t=11.31, p<0.001$ , one-tailed). Thus, the organizational resilience in the sample is relatively high. Finally, with regard to the antecedents of organizational resilience, we find again that the mean values for all variables are significantly higher than the scale's midpoint of 3 (*RISK\_MGMT*: mean=3.469,  $t=6.43, p<0.001$ , one-tailed; *FCT\_PLAN*: mean=3.693,  $t=12.31, p<0.001$ , one-tailed; *SCENARIO*: mean=3.421,  $t=5.53, p<0.001$ , one-tailed).

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<sup>6</sup> Within our sample, five respondents assigned their company to the industry "financial services". Due to different regulatory issues concerning the risk management in that industry, the results of our study could be biased. Thus, we have repeated our analysis for a sample containing only non-financial companies. We did not find any substantially different results. We therefore decided to continue our analysis with the full sample.

**Table 4. Descriptive statistics.**

<b>Item</b>	<b>N</b>	<b>Mean</b>	<b>SD</b>	<b>Min</b>	<b>P50</b>	<b>Max</b>
<i>RISK_MGMT</i>	129	3.469	0.829	1.33	3.5	5
<i>FCT_PLAN</i>	129	3.693	0.639	2	3.75	5
<i>SCENARIO</i>	126	3.421	0.854	1	3.5	5
<i>RES_ADAPT</i>	129	4.240	0.743	2.143	4.29	5.857
<i>RES_PLAN</i>	129	3.917	0.929	1.75	4	6
<i>COMP_ADV_CRISIS</i>	126	3.450	0.879	1	3.33	5

### **3.4.2. Hypothesis Testing**

We use structural equation modeling to analyze the hypothesized relations between risk-management orientation, the importance of the planning function, capabilities for scenario planning, organizational resilience, and competitive advantage in times of crisis. The original model consists of all constructs and predicted paths, as presented in Figure 1. In line with Anderson and Gerbing (1988), all of the insignificant paths<sup>7</sup> of the original model were removed one by one (least significant first) until all remaining paths were statistically significant.<sup>8</sup> The criteria for the model fit indicate a good fit of the final model, with all values exceeding the common thresholds for structural equation model goodness-of-fit criteria (CMIN/DF=1.582; CFI=0.934; RMSEA=0.069; SRMR=0.059). The final model is presented in Table 5 and Figure 2.

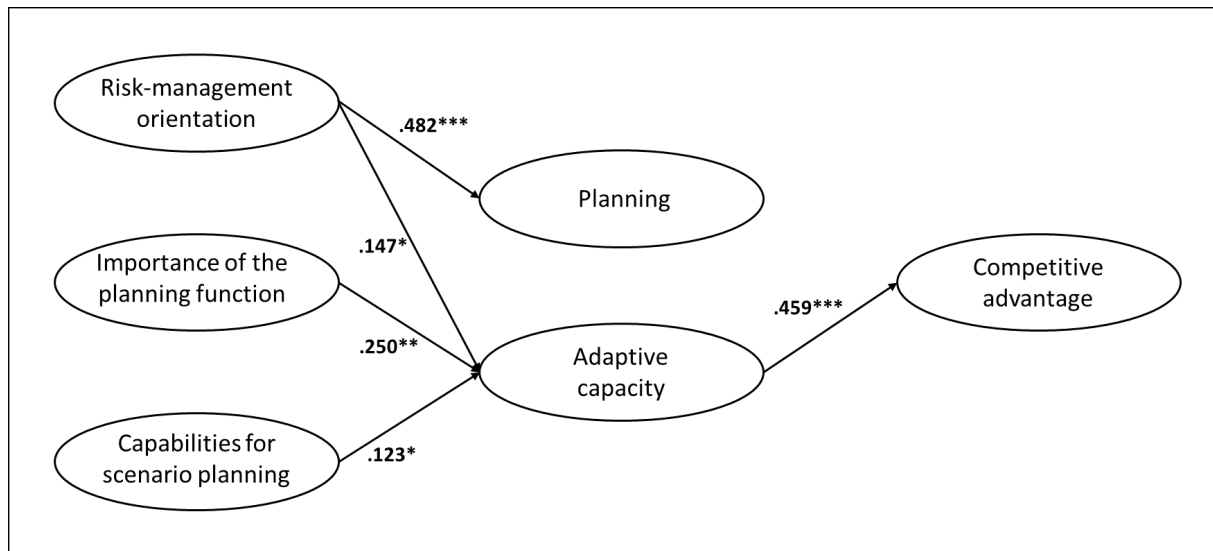
<sup>7</sup> We considered paths with  $p$ -value  $\geq 0.1$  to be insignificant.

<sup>8</sup> We also included the control variables in the original model. However, those are not reported in the final model as no variable was found to be significantly associated with organizational resilience and/or competitive advantage in times of crisis.

**Table 5. Results of the empirical analysis.**

Hypothesis (expected direction)	Independent Variable	Dependent Variable	Standardized coefficient	p-value
H1 (+)	<i>RISK_MGMT</i>	<i>RES_ADAPT</i>	0.147	0.086
	<i>RISK_MGMT</i>	<i>RES_PLAN</i>	0.482	0.000
H2 (+)	<i>FCT_PLAN</i>	<i>RES_ADAPT</i>	0.250	0.021
H3 (+)	<i>SCENARIO</i>	<i>RES_ADAPT</i>	0.123	0.097
H4 (+)	<i>RES_ADAPT</i>	<i>COMP_ADV_CRISIS</i>	0.459	0.000
Model fit statistics				
$\chi^2$	11.074			
df	7			
CMIN/DF	1.582			
CFI	0.934			
RMSEA	0.069			
SRMR	0.059			
Coefficient of determination	0.281			
<i>n</i>	123			

**Figure 2. Results of the empirical analysis.**



Note: \*  $p \leq 0.1$ ; \*\*  $p \leq 0.05$ ; \*\*\*  $p \leq 0.01$ .

H1a and H1b postulate a positive association between a risk-management orientation and both factors of organizational resilience. Here, we find full support for both our hypotheses because *RISK\_MGMT* is positively and significantly associated with both *RES\_ADAPT* ( $\beta=0.147$ ;  $p=0.086$ ) and *RES\_PLAN* ( $\beta=0.482$ ;  $p<0.001$ ).

H2a and H2b predict that the importance of the planning function of budgeting is positively associated with organizational resilience. In line with our prediction, the coefficient for *FCT\_PLAN* and dependent variable *RES\_ADAPT* is positive and significant ( $\beta=0.250$ ;  $p=0.021$ ). However, we find no significant association between *FCT\_PLAN* and *RES\_PLAN*.

Hence, we only find support for H2b when the adaptive-capacity factor of organizational resilience is considered. In contrast, the planning factor of resilience, which refers to the preparation for actual crises and emergencies, is not affected by the importance of the planning function of budgeting.

Concerning H3a and H3b, we expect that capabilities for scenario planning are positively associated with both factors of organizational resilience. Again, we find a positive and weakly significant influence of *SCENARIO* on *RES\_ADAPT* ( $\beta=0.123$ ;  $p=0.097$ ) but not for *RES\_PLAN*. Thus, we only find support for H3b with regard to adaptive capacity.

Based on these findings, we conclude (1) that our proposed management-accounting antecedents are associated with organizational resilience. However, these antecedents affect the factors of organizational resilience differently, namely adaptive capacity and planning. Both, budgeting and scenario planning are primarily concerned with the companies' operational business and core competencies. In contrast, risk-management orientation may also consider high-impact risks and emergencies that are not necessarily related to the core business model. The planning factor of the organizational-resilience scale (*RES\_PLAN*) has been developed in New Zealand in an environment with regular natural catastrophes such as earthquakes (Stephenson, 2010; Whitman et al., 2013). Thus, the factor measures planning also with regard to the preparedness for events such as natural catastrophes. Hence, in an environment where such events are less likely (such as Germany), business-related planning may focus less on preparedness for extreme events, while risk management may consider such events to at least some extent. This consideration could explain why we find an effect of risk-management orientation on the planning factor of organizational resilience but not of the importance of the planning function of budgeting and capabilities for scenario planning on the planning factor of organizational resilience.

Regarding the second analyzed aspect, we find evidence for H4a and H4b. Here we predict a positive association between both factors of organizational resilience and competitive advantage in times of crisis. In line with this expectation, we find that *RES\_ADAPT* is positively and significantly associated with *COMP\_ADV\_CRISIS* ( $\beta=0.460$ ,  $p<0.001$ ). However, results show no significant effect of *RES\_PLAN* on *COMP\_ADV\_CRISIS*. Thus, we only find support for H4b with regard to the adaptive-capacity factor of organizational resilience. This finding can, again, be explained by the specific perspective of the planning factor of organizational resilience. The planning factor considers preparedness for crises and



events that make fast responses necessary in order to re-establish a working organization. This aspect of organizational resilience may have been important in the early days of the COVID-19 pandemic when lockdowns forced companies to rearrange their working conditions. However, at the time of the survey, the pandemic had been ongoing for almost a year, and adaptive capacities have now become more important, especially concerning the companies' overall performance.

Finally, with regard to the control variables, we find no significant influence of any of the control variables.<sup>9</sup>

### **3.4.3. Additional Analysis**

In the hypothesis development for H4a and H4b, we argue that both organizational-resilience factors provide companies with a competitive advantage not only in a crisis situation but also in business-as-usual times. Hence, we make use of our questionnaire that asked for the respondents' assessment of the companies' comparative situation both *during* the crisis (i.e., starting from the first quarter of 2020) and *before* the crisis (i.e., until the fourth quarter of 2020). We examine the general effect of both organizational-resilience factors by applying our research model but using *COMP\_ADV\_BEF*<sup>10</sup> instead of *COMP\_ADV\_CRISIS* as a dependent variable. Thus, we analyze the effect of organizational resilience on a company's competitive advantage *before* a crisis. Again, we follow Anderson and Gerbing (1988) and determine a structural model that includes only significant paths. The final model presented in Table 6 exhibits similar features as our main model presented in Table 5. The respective goodness-of-fit measures (CMIN/DF=1.644; CFI=0.932; RMSEA=0.072; SRMR=0.057) indicate a good model fit.

In line with the expectation that the organizational-resilience factors positively affect a competitive advantage during business-as-usual times, we find a significant and positive standardized coefficient for *RES\_ADAPT* and the dependent variable *COMP\_ADV\_BEF*. Thus, we conclude that organizational resilience, in general, and adaptive capacities, in particular, are helpful both during business-as-usual times and times of crisis.

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<sup>9</sup> To include *REVENUE* and *INDUSTRY* in the structural model, we applied a generalized structural equation model (not tabulated).

<sup>10</sup> The variable *COMP\_ADV\_BEF* was determined in the same way as *COMP\_ADV\_CRISIS*. Hence, all items show a factor loading >0.6 and appropriate values for Cronbach's alpha, CR and AVE.

**Table 6. Results of the additional analysis.**

Hypothesis (expected direction)	Independent Variable	Dependent Variable	Standardized coefficient	p-value
H1 (+)	<i>RISK_MGMT</i>	<i>RES_ADAPT</i>	0.147	0.082
	<i>RISK_MGMT</i>	<i>RES_PLAN</i>	0.488	0.000
H2 (+)	<i>FCT_PLAN</i>	<i>RES_ADAPT</i>	0.250	0.021
H3 (+)	<i>SCENARIO</i>	<i>RES_ADAPT</i>	0.123	0.096
H4 (+)	<i>RES_ADAPT</i>	<i>COMP_ADV_BEF</i>	0.473	0.000
Model fit statistics				
$\chi^2$	11.51			
df	7			
CMIN/DF	1.644			
CFI	0.932			
RMSEA	0.072			
SRMR	0.057			
Coefficient of determination	0.288			
<i>n</i>	123			

### 3.5. Conclusion

This study examines common future-oriented management-accounting practices as potential antecedents of organizational resilience and their effect on competitive advantage in times of crisis. The setting of the COVID-19 pandemic constitutes a suitable background for the investigation of organizational resilience. It enables the investigation of antecedents of organizational resilience and how resilience unfolds in times of crisis.

Based on a survey of 129 German companies, we investigate the antecedents and effects of organizational resilience by applying structural equation modeling. Regarding potential determinants of organizational resilience, we find that a risk-management orientation is positively associated with both the adaptive-capacity factor and the planning factor of organizational resilience. With regard to the importance of the planning function of budgeting and capabilities for scenario planning, our findings show a positive association only with the adaptive-capacity factor of organizational resilience. Moreover, the adaptive-capacity factor positively affects a company's competitive advantage both times of crisis and before the crisis. Thus, our results show that organizational resilience in terms of adaptive capacity can be built up by relying on typical future-oriented management-accounting practices, such as risk management, budgeting, and scenario planning. Hence, we conclude that the analyzed management-accounting practices enable an organizational mindset that is associated with organizational resilience.

In addition, our findings indicate that the planning factor of organizational resilience (i.e., planning for crisis events or disasters) cannot be influenced by standard procedures of corporate planning (e.g., planning related to the core-business activities such as budgeting and scenario planning). Furthermore, planning for crisis events or disasters does not provide a competitive advantage in an ongoing crisis such as the pandemic. However, this does not mean that companies in areas rarely hit by natural disasters should ignore this component of organizational resilience. For example, considering the climate crisis, natural disasters such as flooding will become more common even in regions such as Europe (e.g., Dankers & Feyen, 2008). Thus, being prepared for emergencies and disasters is still important and can be supported by an integrated risk management.

Our study informs decision-makers about management-accounting instruments and systems that can be actively designed and that also positively affect organizational resilience. In particular, companies should cultivate a holistic risk-management orientation to achieve organizational resilience. Moreover, companies should value the planning function of budgeting and invest in capabilities for scenario planning such as a sufficient data basis, sufficient technical infrastructure, sufficient know-how, and sufficient employee capacities. Further, we demonstrate the advantages of investing in organizational resilience. Specifically, we show that organizational resilience positively affects companies' competitive advantages during business-as-usual and in times of crisis. We can also show that investing time and resources into several management-accounting practices, such as risk management and corporate planning, leads to a positive outcome for companies and assists managers who want to strengthen their organizational resilience.

The study contributes to the emerging literature on the determinants and consequences of organizational resilience. We establish a link between risk management, corporate planning, and organizational resilience. In this regard, we answer the calls of Barbera et al. (2017) and Barbera et al. (2020) and research management-accounting practices to strengthen organizational resilience. Moreover, we add to the literature by testing the applicability of the organizational-resilience scale of Whitman et al. (2013), which has been developed in a New Zealand setting, in another region, namely Germany. Our findings implicate that the adaptive-capacity factor of the scale may be especially relevant in a German and/or Western European setting. Finally, we add another component to the existing stream of management-accounting research examining the relationship between management-control systems and crisis (e.g.,

Becker et al., 2016; Colignon & Covaleski, 1988; Collins et al., 1997) by investigating an indirect effect via organizational resilience.

As we used a survey among German companies, our results are subject to a number of limitations. First, there is a threat of potential self-selection bias in our study because companies that are not affected (negatively) by the economic crisis stemming from the COVID-19 pandemic may not feel addressed by our survey. In contrast, companies affected very strongly and negatively by the crisis may not have the capacity to answer questionnaires. In line with that consideration, we found only moderate crisis impact in our sample. Hence, our findings may not be informative for companies that are facing insolvency due to the crisis. Second, due to the nature of the pandemic crisis, we covered only a short time frame and collected the data only at one point in time. So, it was not possible to consider long-term effects. Future research could assess the long-term effects of organizational resilience and a company's competitive advantage. Further, we applied a scale to measure risk-management orientation that has been used to investigate the relationship between risk management and resilience but does not explicitly reflect the research on ERM. Hence, future research could assess different aspects of ERM more explicitly (Braumann, 2018). Finally, we deploy a scale for organizational resilience that has been developed in the context of natural disasters. In this regard, our results indicate that the planning factor of organizational resilience is less relevant to our research setting. Hence, future research could further investigate the relevance of organizational resilience in the context of economic crises and consider alternative or refined scales of organizational resilience. Our study is also intended to contribute to this field of research by showing the validity of the adaptive-capacity factor of the organizational resilience scale in our research setting.

## Appendix

### Questionnaire.

<i>RISK_MGMT</i>	To what extent do you agree with the following statements? (1: do not agree at all – 5: fully agree, 6: not specified)
<i>risk1</i>	In our company, continuous risk monitoring processes exist for all relevant business processes.
<i>risk2</i>	In our corporate culture, actions for risk assessment are encouraged.
<i>risk3</i>	Actions to control/manage risk are supported in our corporate culture.
<i>risk4</i>	Our company attaches great importance to risk management.
<i>risk5</i>	Our company has concrete strategies to ensure the company's continued existence when significant risks occur.
<i>risk6</i>	Our company has a permanent employee or team who explicitly deals with the risk management system in the company.
<i>FCT_PLAN</i>	How important is planning in fulfilling the following functions? (1: do not agree at all – 5: fully agree)
<i>planning1</i>	Coordination
<i>planning2</i>	Resource allocation
<i>planning3</i>	Alignment with corporate goals
<i>planning4</i>	Equipment with decision-making authority/ spending authority
<i>SCENARIO</i>	In order to be able to successfully perform scenario analyses within the planning process, a number of conditions must be met. To what extent do you agree with the following statements? (1: do not agree at all – 5: fully agree)
<i>scenario1</i>	There is a sufficient data basis available for the use of scenario analyses.
<i>scenario2</i>	There is a sufficient technical infrastructure available for the use of scenario analyses.
<i>scenario3</i>	There are sufficient personnel capacities available for the use of scenario analyses.
<i>scenario4</i>	There is sufficient know-how available for the use of scenario analyses.
<i>scenario5*</i>	The added value of the use of scenario analyses is sufficiently known.
<i>RES_PLAN</i>	To what extent do you agree with the following statements? (1: do not agree at all – 6: fully agree; 7: not specified)
<i>res_plan1*</i>	We are mindful of how a crisis could affect us.
<i>res_plan2</i>	We believe emergency plans must be practiced and tested to be effective.
<i>res_plan3</i>	We are able to shift rapidly from business-as-usual to respond to crises.
<i>res_plan4</i>	We build relationships with organizations we might have to work within a crisis.
<i>res_plan5</i>	Our priorities for recovery would provide direction for staff in a crisis.
<i>RES_ADAPT</i>	To what extent do you agree with the following statements? (1: do not agree at all – 6: fully agree; 7: not specified)
<i>res_adapt1</i>	There is a sense of teamwork and camaraderie in our organization.
<i>res_adapt2</i>	People in our organization "own" a problem until it is resolved.
<i>res_adapt3</i>	Staff have the information and knowledge they need to respond to unexpected problems.
<i>res_adapt4</i>	Managers in our organization lead by example.
<i>res_adapt5</i>	Staff are rewarded for "thinking outside the box".
<i>res_adapt6</i>	Our organization can make tough decisions quickly.
<i>res_adapt7</i>	Managers actively listen for problems.
<i>res_adapt8*</i>	Our organization maintains sufficient resources to absorb some unexpected change.

## Questionnaire (continued).

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<i>COMP_ADV_CRISIS</i>	To what extent do you agree with the following statements? (1: do not agree at all – 5: fully agree)
<i>comp_adv1</i>	Our liquidity position is better than that of our competitors.
<i>comp_adv2</i>	Our earnings position is better than that of our competitors.
<i>comp_adv3</i>	Our debt ratio is lower than that of our competitors.

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<i>REVENUE</i>	What are the revenues of your company approximately per year (in million euros)? (1: <50 2: 50-149 3: 150-249 4: 250-999 5: 1,000-2,499 6: 2,500-4,999 7: ≥5,000)
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<i>COMP_AGE</i>	How long has your company existed (incl. legal predecessors)? (in years)
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<i>STRATEGY</i>	What is your company's primary strategy? (1: cost leadership/efficiency – 5: differentiation via products/services/quality)
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<i>EXEC</i>	What position do you hold in the company? 1: general manager/ CEO 2: CFO 3: Head of management accounting department 4: Employee management accounting 5: Other (If chosen other, please write down the name of the position.)
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<i>TENURE</i>	How long do you hold your current position? (in years)
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<i>INDUSTRY</i>	Which sector can your company be assigned to? (1: Automotive 2: Chemical/ Pharmaceutical 3: Energy supply/ Disposal 4: Financial Services 5: Wholesale/ Retail 6: IT/ Telecommunication 7: Industrial goods 8: Logistics/ Transportation 9: Mechanical and plant engineering 10: Manufacturing industry 11: Supply 12: Tourism 13: Events 14: Other (If chosen other, please write down the name of the industry.)
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\* Not included in the factor due to low factor loadings.

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# Budgetierung und Risikomanagement in Krisenzeiten

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## Abstract

Die vorliegenden Studienergebnisse zeigen, dass den Makrofunktionen in der Budgetierung eine unterschiedliche Bedeutung beigemessen wird, die krisenstabil ist. Der Ausbau des Risikomanagements (RM) scheint einen positiven Einfluss auf die Ausprägung dieser Funktionen zu haben. Auch zeichnen sich Unternehmen mit einem gut ausgebauten RM durch eine bessere Unternehmenslage in der COVID-19-Pandemie aus.

The present study results show that the budgeting macrofunctions are attached different importance that is stable in times of crisis. The expansion and diffusion of risk management (RM) in the firm appears to have a positive influence on the development of these functions. Also, companies with a well-developed RM are characterized by a better company situation in the COVID-19-pandemic.

**Keywords:** Budgetierung; COVID-19-Pandemie; Kontrollfunktion; Krisenmanagement; Risikomanagement.

**JEL Classification:** M41.

## Acknowledgements:

We gratefully acknowledge helpful comments from Thorsten Knauer, Anja Schwering, and the reviewers for *Controlling - Zeitschrift für erfolgsorientierte Unternehmenssteuerung*. The study is first published in *Controlling - Zeitschrift für erfolgsorientierte Unternehmenssteuerung* 35 (1), p. 45-52 [<https://doi.org/10.15358/0935-0381-2023-1-45>]. Any errors are our own.

#### **4.1. Budgetierung und Risikomanagement als Instrumente der Unternehmensplanung und -steuerung**

Die COVID-19-Krise hat bei vielen Unternehmen zu einem Anstieg der unternehmerischen Unsicherheit geführt (vgl. ifo Institut, 2021). Um dieser Unsicherheit zu begegnen, kommt Instrumenten zur Unternehmensplanung und -steuerung, wie beispielsweise der Budgetierung und dem Riskomanagementsystem (RMS), eine bedeutende Rolle zu. Gleichzeitig unterliegt der Einsatz dieser Instrumente durch den Krisendruck möglichen Veränderungen und führt so zu besonderen Herausforderungen für die Unternehmen. Die Budgetierung übernimmt dabei als operatives Planungsinstrument mit einem Zeithorizont von zumeist einem Jahr verschiedene Aufgaben (vgl. Schwering, 2016, S. 15 ff.). Diese lassen sich klassischerweise zu drei übergeordneten Makrofunktionen zusammenfassen: Während die Planungs- und Koordinationsfunktion ex ante auf Ressourcenallokation, Prognose und Koordination abstellt, sollen mithilfe der Kontrollfunktion ex post Abweichungen analysiert sowie mithilfe der Evaluations- und Motivationsfunktion Entscheidungskompetenzen begeben und Leistungsbeurteilungen vorgenommen werden (vgl. Sivabalan et al., 2009, S. 850). Unter dem RMS eines Unternehmens werden alle Maßnahmen im Unternehmen zusammengefasst, die zur Erkennung und Beherrschung der unternehmerischen Risiken dienen. Zur Vermeidung bzw. Reduzierung dieser Risiken wird das RMS oftmals als ein Prozess bestehend aus Risikoidentifikation, Risikobewertung, Risikosteuerung und Risikokontrolle im Unternehmen implementiert (vgl. Wöhe, 2020, S. 191). Je nachdem, wie stark das RMS in der Unternehmenskultur verankert ist, wirkt es inhärent auf alle Prozesse im Unternehmen, so auch auf die Budgetierung sowie die Unternehmensperformance. Vor diesem Hintergrund untersucht die vorliegende Studie anhand der Budgetierungsfunktionen, wie das Instrument der Budgetierung in den Unternehmen genutzt wird und ob sich durch die COVID-19-Krise Veränderungen in der Budgetierung ergeben haben. Des Weiteren wird der Stand des RMS sowie dessen Einfluss auf die Budgetierung und die Unternehmensperformance während der COVID-19-Krise beleuchtet. Da die Ergebnisse des Artikels auf empirisch erhobenen Umfragedaten von deutschen Unternehmen basieren und sich die deutsche Wirtschaft neben einigen großen Unternehmen vor allem auch durch eine Vielzahl an kleineren und mittleren Unternehmen (KMU) zusammensetzt (vgl. Institut für Mittelstandsforschung, 2016), wird dies in der Auswertung berücksichtigt. Vorherige Studien haben in Bezug auf den Einsatz von Instrumenten zur Unternehmensplanung und -steuerung wie der Budgetierung und dem RMS Unterschiede zwischen großen Unternehmen und KMU festgestellt (vgl. z. B. López/ Hiebl,

2015, S. 83; Feldbauer-Durstmüller/Hiebl, 2015, S. 1). Erkenntnisse weisen darauf hin, dass aufgrund von mangelnden Ressourcen und oftmals eher informellen Strukturen der Einsatz von Controlling-Instrumenten in KMU oft geringer ist als in größeren Unternehmen (vgl. López/Hiebl, 2015, S. 82 f.). Gleichzeitig sehen sich KMU aufgrund ebendieser geringeren Ressourcenausstattung oftmals höheren existenziellen Risiken ausgesetzt (vgl. Feldbauer-Durstmüller, 2012, S. 257). Um ein differenziertes Bild zu erhalten und vor diesem Hintergrund passgenauere Implikationen aus unseren Ergebnissen ableiten zu können, haben wir in unseren Auswertungen stets für Größeneffekte kontrolliert.

Im folgenden Abschnitt werden Details zum empirischen Untersuchungsdesign sowie Charakteristika der Stichprobe vorgestellt. Anschließend werden die Ergebnisse in Hinblick auf die Wichtigkeit der Budgetierungsfunktionen und deren Veränderung in der COVID-19-Krise diskutiert. Des Weiteren wird der Einfluss des RMS auf die übergeordneten Budgetierungsfunktionen sowie die generelle Unternehmenslage in der Krise untersucht. Das Fazit fasst die wesentlichen Ergebnisse zusammen.

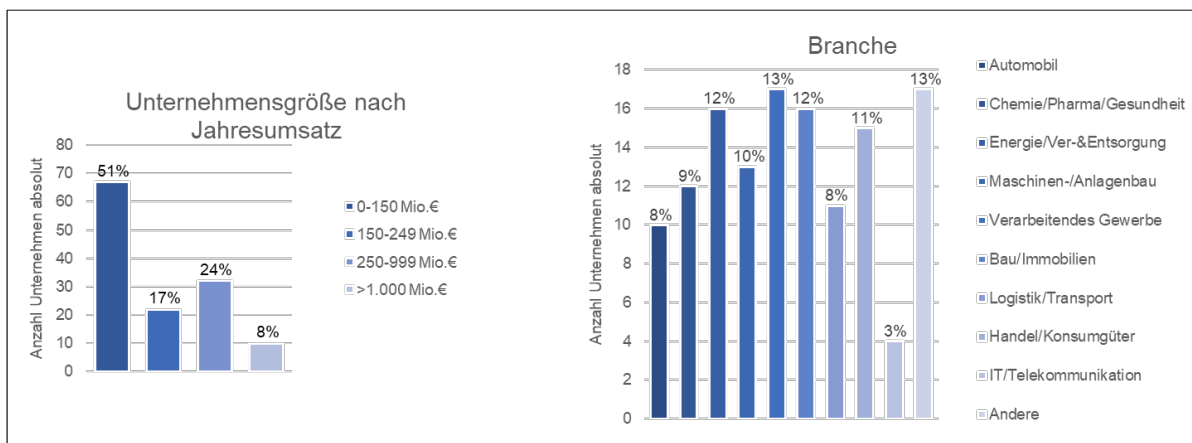
#### **4.2. Datenerhebung und Stichprobencharakteristika**

Zur Datenerhebung wurde ein standardisierter Fragebogen konzipiert, der die Unternehmen in fünf Abschnitten zu den Themenblöcken Unternehmensplanung, Risikomanagement, Unternehmenskultur, Unternehmenslage sowie zu allgemeinen Angaben befragte. Zur Sicherung der Antwortqualität wurden überwiegend Multiple-Choice-Fragen genutzt, die auf einer 5-stufigen *Likert*-Skala basieren (1= stimme gar nicht zu; 5= stimme voll zu). Um Entwicklungen und Veränderungen durch die COVID-19-Krise zu identifizieren, wurden die Teilnehmenden gebeten, (1) den letzten Planungsprozess **vor** der COVID-19-Pandemie (bis Q4/2019) und (2) den letzten Planungsprozess **in** der COVID-19-Pandemie (ab Q1/2020) zu vergleichen. Die Auswahl der Unternehmen erfolgte mithilfe der Datenbank *Dafne* des Verlags *Bureau van Dijk*. Auf Basis einer zufälligen Stichprobenziehung wurden 2.000 deutsche solvente Unternehmen mit einem Jahresumsatz von mindestens 50 Mio. Euro zum letzten verfügbaren Bilanzstichtag (nicht früher als 2017) ausgewählt. Die Versendung der Fragebögen erfolgte postalisch, es bestand über einen zur Verfügung gestellten Link auch die Möglichkeit, online an der Umfrage teilzunehmen. Die Umfrage wurde im Januar und Februar 2021 über einen Zeitraum von sechs Wochen durchgeführt.

Von den 2.000 angeschriebenen Unternehmen nahmen 135 (6,75 %) an der Umfrage teil, nach Ausschluss von unvollständigen Fragebögen wurden 129 Fragebögen (6,45 %) in die Auswertung einbezogen. Die Teilnehmer der Umfrage sind größtenteils Controlling-Leiter (44 %), Führungskräfte (26 %) sowie Mitarbeiter im Controlling (25 %). Im Durchschnitt haben sie eine aktuelle Betriebszugehörigkeit von 12,3 Jahren, sodass von einer adäquaten Unternehmenskenntnis ausgegangen werden kann.

Wichtige Unternehmenscharakteristika sind in Abb. 1 dargestellt. Hinsichtlich der Unternehmensgröße gemessen am Jahresumsatz weist gut die Hälfte der Unternehmen einen Umsatz bis 150 Mio. Euro auf<sup>1</sup>. In Bezug auf die Branchenzugehörigkeit ergibt sich ein breites Bild, die am häufigsten vertretenen Branchen sind das verarbeitende Gewerbe (13 %) sowie die Branchen Bau/Immobilien und Energie/Ver-/Entsorgung (jeweils 12 %).

**Abbildung 1: Charakteristika der Stichprobe.**



### 4.3. Ergebnisse der Umfrage

#### 4.3.1. Budgetierungsfunktionen vor und in der Krise

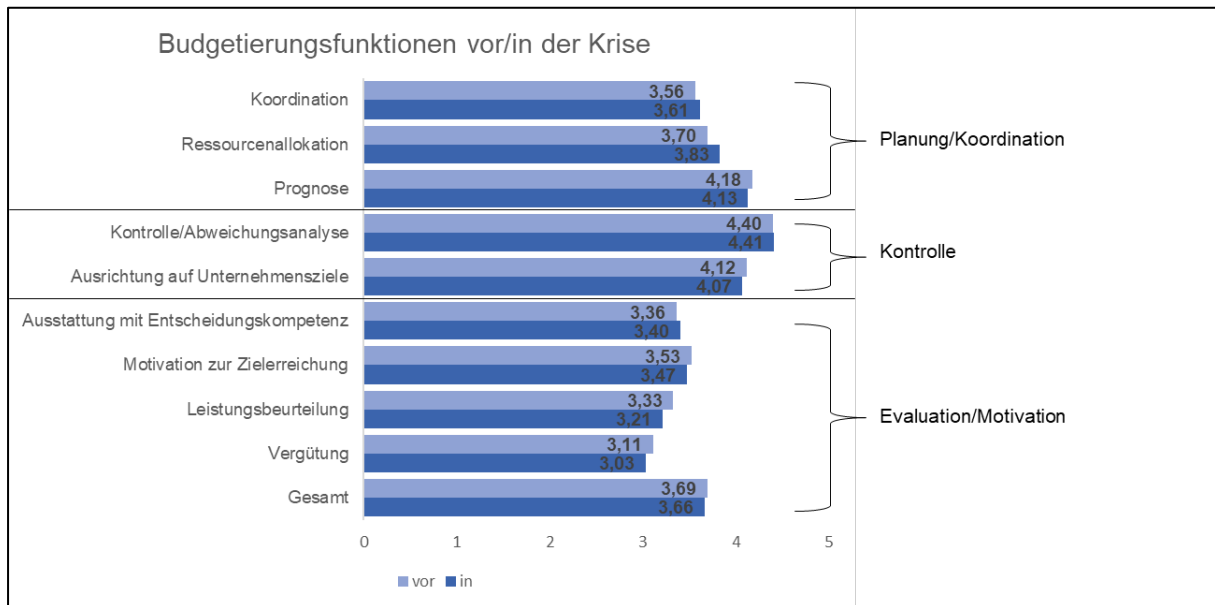
Die Ergebnisse der Umfrage zeigen, dass die Budgetierung sowohl vor als auch in der COVID-19-Krise vielseitig von den Unternehmen eingesetzt wird. So wurden die Unternehmen nach der Wichtigkeit zur Erfüllung verschiedener Budgetierungsfunktionen in der

<sup>1</sup> Die häufig verwendete Definition der EU zählt Einzelunternehmen mit einem Umsatz bis zu 50 Mio. Euro als KMU (vgl. Europäische Kommission, 2003). Aufgrund der im Fragebogen abgefragten Größenklassen und der Verteilung des Samples (< 50 Mio. €: n = 3), teilen wir das Sample in etwa zwei gleich große Gruppen (n<sub>klein</sub> = 67, n<sub>groß</sub> = 62) und splitten bei einem Umsatz von 150 Mio. Euro in kleine bzw. große Unternehmen. So erhalten wir zwei Kontrollgruppen mit einer hinreichenden Anzahl an Unternehmen und können gleichzeitig Tendenzaussagen bezüglich Größeneffekten ableiten.



Unternehmensplanung und -steuerung befragt. Unter Verwendung der vorgestellten 5-stufigen Skala wurden je Funktion separat sowie in der Gesamtbetrachtung aller Funktionen vor und in der Krise jeweils die Mittelwerte (MW) berechnet und in Abb. 2 dargestellt.

**Abbildung 2: Budgetierungsfunktionen vor/in der Krise.**



Über alle Funktionen hinweg lag der MW vor der COVID-19-Krise bei 3,69. Dies deutet darauf hin, dass die Budgetierung sich als Instrument für die übergeordneten Funktionen Planung/Koordination, Kontrolle und Evaluation/ Motivation eignet und auf sinnvolle Weise in die Unternehmenssteuerung eingebunden wird.

Dabei wird der Funktion der Kontrolle bzw. Abweichungsanalyse sowohl vor als auch in der Krise die größte Wichtigkeit beigemessen ( $MW_{\text{vor}} = 4,39$ ;  $MW_{\text{in}} = 4,37$ ). Die verabschiedeten Budgets stellen ein bedeutendes Instrument zur finanziellen Kontrolle dar und werden häufig zur Kostenkontrolle auf Seiten der Budgetverantwortlichen und zu Monitoring-Zwecken auf Seiten der führenden und überwachenden Unternehmensorgane eingesetzt (vgl. Sivabalan et al., 2009, S. 854). Weiterhin wird die Budgetierung sowohl vor als auch in der Krise besonders stark zur Ausrichtung auf die Unternehmensziele eingesetzt ( $MW_{\text{vor}} = 4,10$ ;  $MW_{\text{in}} = 4,03$ ). Durch die Vergabe der verschiedenen Budgets im Budgetierungsprozess werden durch die unterschiedlich starke Beschränkung der finanziellen Ressourcen Entscheidungen bewusst gelenkt und an der Unternehmensstrategie ausgerichtet. Die am geringsten ausgeprägte Funktion vor und in der Krise ist die an die Budgetierung gekoppelte Vergütung ( $MW_{\text{vor}} = 3,10$ ;  $MW_{\text{in}} = 3,02$ ). So gaben für die abgefragten Zeitpunkte vor und in der Krise ein knappes Drittel (31 %) bzw. ein gutes Drittel (34 %) der Unternehmen an, die

Vergütungsfunktion der Budgetierung habe gar keine bzw. eine geringe Wichtigkeit (nicht abgebildet). Weiterhin zeigt sich, dass nur ein Teil der Unternehmen vor bzw. in der Krise die Budgetierung zur Leistungsbeurteilung heranzieht ( $MW_{\text{vor}} = 3,33$ ;  $MW_{\text{in}} = 3,20$ ). Die geringe Wichtigkeit dieser beiden Funktionen deutet darauf hin, dass die Performance des Unternehmens bzw. der einzelnen Bereiche nur schwer eindeutig an die Leistung einzelner Mitarbeitenden bzw. Abteilungen mit Budgetverantwortung zu koppeln ist und sich nicht immer trennscharf als Ursache-Wirkungs-Beziehung abbilden lässt (vgl. Sivabalan et al., 2009, S. 852).

Hinsichtlich **Veränderungen** durch die Krise zeigt sich, dass die Bedeutung der einzelnen Budgetierungsfunktionen relativ stabil geblieben ist und der Budgetierung als Steuerungsinstrument noch immer eine hohe Bedeutung zukommt ( $MW_{\text{in}} = 3,66$ ). Bei Überprüfung der statistischen Signifikanz der Veränderungen traten signifikante Veränderungen bei lediglich drei Unterfunktionen der Budgetierung auf. Zum einen hat die Wichtigkeit der Ressourcenallokation im Vergleich zur Vorkrisen-Situation zugenommen ( $MW_{\text{vor}} = 3,70$ ;  $MW_{\text{in}} = 3,83$ ; signifikant auf 1 %-Niveau). Hierin manifestiert sich die Notwendigkeit, in der Krise verstärkt die vorhandenen Ressourcen genau dort einzusetzen, wo sie den größten Beitrag zur Ergebnissteigerung des Unternehmens leisten (vgl. Becker et al., 2016, S. 1494). Dagegen hat die Leistungsbeurteilung im Rahmen der Budgetierung, der schon vor der Krise nur von einem Teil der Unternehmen eine Bedeutung beigemessen wurde, im Vergleich zum Vorkrisen-Niveau weiter an Bedeutung verloren ( $MW_{\text{vor}} = 3,33$ ;  $MW_{\text{in}} = 3,21$ ; signifikant auf 5 %-Niveau). Dies deutet darauf hin, dass sich die Performance des Gesamtunternehmens bzw. einzelner Funktionsbereiche im Unternehmen in Krisenzeiten aufgrund der volatilen Unternehmensumwelt und der unregelmäßigen Unternehmenszusammenhänge noch schwieriger als klare Ursache-Wirkungs-Beziehung an die Leistung von Budgetverantwortlichen knüpfen lässt. Außerdem hat die Bedeutung von Budgets im Rahmen der Vergütung im Vergleich zum Vorkrisen-Niveau abgenommen ( $MW_{\text{vor}} = 3,11$ ;  $MW_{\text{in}} = 3,03$ ; signifikant auf 10 %-Niveau). Dies könnte, ähnlich wie bei der Leistungsbeurteilung, darauf zurückzuführen sein, dass die Orientierung an zuvor festgelegten und möglicherweise durch die volatile Situation veralteten Budgets zu Vergütungszwecken schwierig ist (vgl. Sivabalan et al., 2009, S. 852).

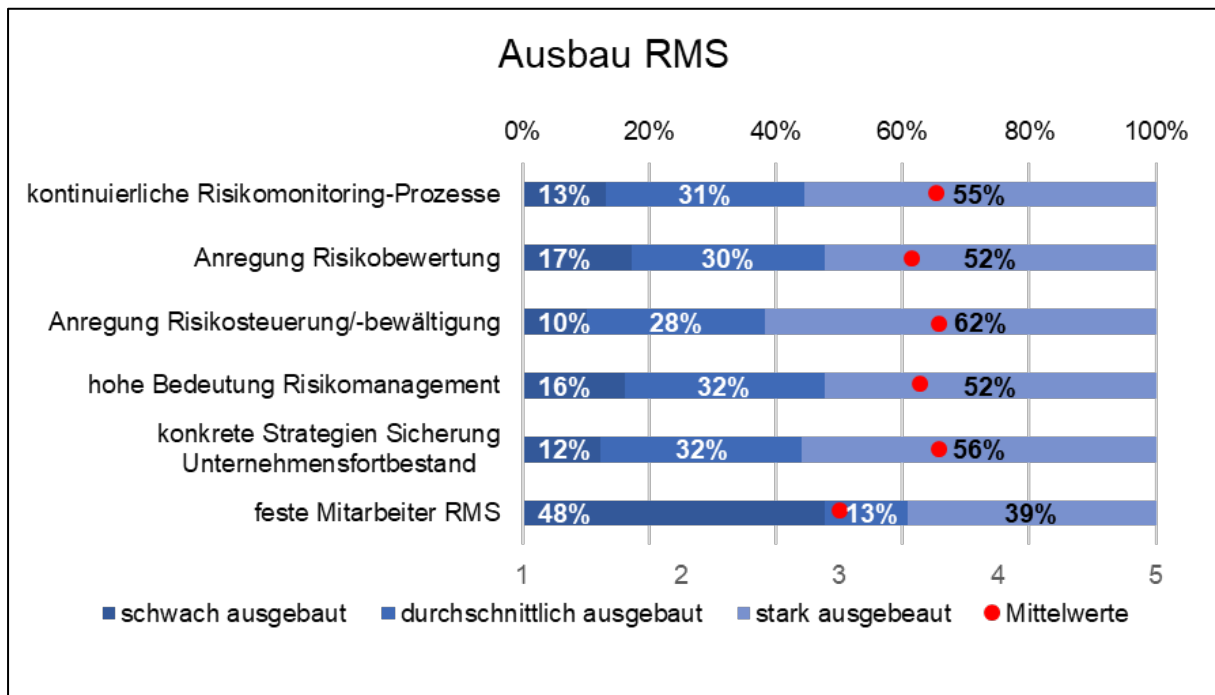
Die Auswirkungen hinsichtlich möglicher Größeneffekte haben wir mittels t-Tests und dem beschriebenen Split in kleine/mittlere und große Unternehmen überprüft. Es ergaben sich

lediglich bei zwei Unterfunktionen der Budgetierung schwache Signifikanzen (10 %-Niveau), die auf die Unternehmensgröße zurückzuführen sind. Zum einen nutzen große Unternehmen die Budgetierung sowohl vor als auch in der Krise häufiger zu Koordinationszwecken ( $MW_{\text{vor; klein}} = 3,44$ ;  $MW_{\text{vor; groß}} = 3,69$ / $MW_{\text{in; klein}} = 3,47$ ;  $MW_{\text{in; groß}} = 3,75$ ). Dies lässt sich durch eine höhere Komplexität, eine höhere Anzahl an Mitarbeitern und eine geringere Ausprägung an persönlichem und informellem Austausch in großen Unternehmen erklären (vgl. Falkner/Hiebl, 2015, S. 135 f.). Zum anderen zeigt sich, dass bei großen Unternehmen vor der Krise der Funktion der Kontrolle bzw. Abweichungsanalyse eine höhere Bedeutung zukommt ( $MW_{\text{vor; klein}} = 4,28$ ;  $MW_{\text{vor; groß}} = 4,53$ ). Hierzu dürften insbesondere die oft informelle Ausprägung und der Einsatz von Controlling-Instrumenten, insb. der Budgetierung, beitragen (vgl. Feldbauer-Durstmüller/Hiebl, 2015, S. 200). So wird die Budgetierung in KMU zwar ex ante ebenso zu Planungs- und Steuerungszwecken genutzt, jedoch sind ex post nicht in einem so hohen Umfang explizit vorab festgelegte Konsequenzen mit den tatsächlichen Ergebnissen verknüpft wie bei großen Unternehmen.

#### ***4.3.2. Einfluss des RMS auf übergeordnete Budgetierungsfunktionen***

Neben verschiedenen Aspekten der Budgetierung wurde auch der Stand des RMS erfasst. Dazu wurde die Ausprägung verschiedener charakteristischer Aspekte des RMS in den Unternehmen auf der beschriebenen 5-stufigen Skala erfasst und gruppiert (1–2 = schwach ausgebaut, 3 = durchschnittlich ausgebaut, 4–5 = stark ausgebaut) (siehe Abb. 3).

**Abbildung 3: Ausbau RMS.**



Insgesamt implizieren die Ergebnisse, dass das RMS durchschnittlich gut ausgebaut ist ( $MW_{ges} = 3,46$ ). Es zeigt sich, dass die Unternehmen in ihrer Unternehmenskultur insbesondere Risikosteuerung und -bewältigung unterstützen, sowie konkrete Strategien zur Unternehmenssicherung in Krisenfällen besitzen ( $MW_{Risikosteuerung/-bewältigung} = 3,62$  bzw.  $MW_{konkrete\ Strategien} = 3,61$ ). Hieraus ist ersichtlich, dass aus dem RMS zumindest in Krisensituationen klare strategische Implikationen erwachsen. Dies ist besonders vor dem Hintergrund interessant, als dass vorherige Literatur festgestellt hat, dass das RMS mit der generellen Unternehmensstrategie häufig bisher nur lose verknüpft ist (vgl. z. B. Arena et al., 2010, S. 659 f.). Besonders in KMU erfolgte der Ausbau des RMS in der Vergangenheit nur lückenhaft und basierte nur wenig auf formalisierten Prozessen (vgl. Falkner/Hiebl, 2015, S. 123). Daneben fällt deutlich auf, dass im Mittel über alle Unternehmen hinweg nur selten feste Mitarbeiter fürs Risikomanagement zur Verfügung stehen. So gibt fast die Hälfte der Unternehmen (48 %) an, dass die Zuteilung fester Mitarbeiter als Merkmal des RMS nur schwach ausgebaut ist. Dies kann zum einen darauf hindeuten, dass in den Unternehmen personelle Ressourcen zur Abstellung auf das RMS nur in begrenztem Umfang vorhanden sind (vgl. Gerstacker/Blättler, 2019, S. 66 f.). Zum anderen lässt dieses Ergebnis Rückschlüsse auf die funktionale Aufstellung von Unternehmen in Bezug auf das Risikomanagement zu. Die Umfrageergebnisse deuten darauf hin, dass das Risikomanagement nicht als separater Funktionsbereich im Unternehmen aufgestellt ist, sondern vielmehr als zusätzliche Aufgabe

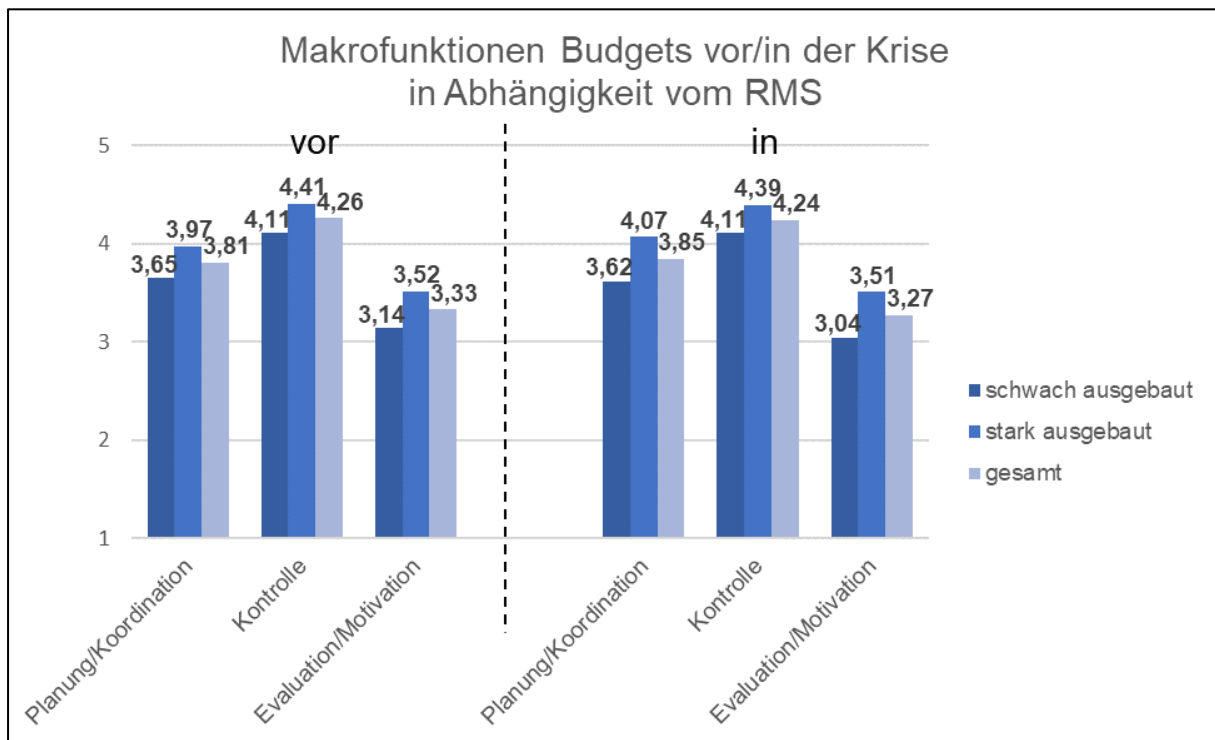
den Mitarbeitern des Rechnungswesens bzw. des Controllings und/oder der Geschäftsführung selbst zufällt. Dies deckt sich z. B. mit Untersuchungen von Henschel (2003), der für KMU in Deutschland feststellte, dass ein Großteil der befragten Unternehmen die Geschäftsleitung bzw. die Controlling-Abteilung für das Risikomanagement verantwortlich zeichnet.

In Hinblick auf mögliche Unterschiede im Ausbau des RMS, die mit der Unternehmensgröße zusammenhängen könnten, ergaben sich für die einzelnen Aspekte keine signifikanten Unterschiede. Dies könnte zum einen darauf zurückzuführen sein, dass diese Studie aufgrund der Zusammensetzung des vorliegenden Samples eine angepasste Umsatzgrenze von 150 Mio. Euro für KMU nutzt. Zum anderen könnte dies darauf hindeuten, dass die in der Vergangenheit durch empirische Untersuchungen und Beobachtungen festgestellten Unterschiede in der Ausgestaltung und Ausprägung des RMS zwischen KMU und großen Unternehmen (vgl. Falkner/Hiebl, 2015) in den letzten Jahren kleiner geworden sind, da KMU mehr und mehr zu formalisierten RMS übergehen.

Da das RMS, besonders auch durch den Gedanken eines holistischen Ansatzes im Umgang mit Risiko (vgl. Sifumba et al., 2017, S. 388), potenziell nahezu alle Prozesse im Unternehmen beeinflussen kann, wurde in einem weiteren Schritt der Einfluss des RMS auf die übergeordneten Budgetierungsfunktionen untersucht. Dazu wurde die Stichprobe durch einen Mediansplit (Median = 3,5) bezogen auf den Ausbau des RMS in zwei etwa gleich große Unternehmensgruppen geteilt ( $n_{\text{Gruppe „wenig ausgebaut“}} = 63$ ;  $n_{\text{Gruppe „stark ausgebaut“}} = 68$ ). Anschließend wurden, in Anlehnung an die Literatur (vgl. Sivabalan et al., 2009, S. 859), aus den zuvor diskutierten Budgetierungsfunktionen die drei Makrofunktionen der Budgetierung (1) Planung/Koordination, (2) Kontrolle und (3) Evaluation/Motivation gebildet.

Die Analyse der Makrofunktionen deckt zum einen die unterschiedliche Wichtigkeit dieser innerhalb der Budgetierung auf (vgl. Abb. 4).

**Abbildung 4: Makrofunktionen Budgetierung vor/in der Krise in Abhängigkeit vom RMS.**



Während der Kontrollfunktion sowohl vor als auch in der Krise eine hohe Bedeutung zukommt ( $MW_{\text{vor}} = 4,24$ ;  $MW_{\text{in}} = 4,20$ ), nimmt die Evaluations- und Motivationsfunktion im Rahmen der Budgetierung einen geringeren Stellenwert ein ( $MW_{\text{vor}} = 3,32$ ;  $MW_{\text{in}} = 3,27$ ). Hinsichtlich möglicher Veränderungen der Makrofunktionen durch die COVID-19-Krise haben die angewandten statistischen Tests gezeigt, dass die Bedeutung der Makrofunktionen in der Krise stabil gegeben ist. So traten keine signifikanten Verschiebungen in der Wichtigkeit der Funktionen durch die Krisensituation auf. Dies kann zum einen daran liegen, dass die Unternehmen auf eher informellem Wege und auf andere Weise als durch die Anpassung des grundlegenden Prozesses der Budgetierung reagiert haben. Zum anderen ist es möglich, dass durch die sich schnell ändernden Situationen und Maßnahmen im Zuge der COVID-19-Krise und starke regionale Unterschiede innerhalb Deutschlands im Verlauf der Pandemie und den entsprechenden Restriktionen Tendenzen innerhalb des Samples ausgeglichen wurden.

Weiterhin wird durch die vorgenommene Analyse der Einfluss des RMS auf die Funktionserfüllung der Budgetierung deutlich. Unternehmen mit einem stark ausgebauten RMS erreichen durch ihre Budgetierung eine deutlich höhere Funktionserfüllung als Unternehmen mit weniger ausgebautem RMS ( $MW_{\text{vor}}$ ; „wenig ausgebaut“ = 3,53;  $MW_{\text{vor}}$ ; „stark ausgebaut“ = 3,87). Diese Beobachtung wird durch die vorgenommenen statistischen Tests

bestätigt (1 %-Signifikanzniveau). Darüber hinaus wird der Einfluss des Ausbaus des RMS auf die Funktionserfüllung im Rahmen der Budgetierung auch durch die Ergebnisse der vorgenommenen Regression belegt (1 %-Signifikanzniveau). Dieses Ergebnis legt die Vermutung nahe, dass ein gut ausgebautes RMS Unternehmen bei der Erfüllung der aufgeführten Budgetierungsfunktionen unterstützen kann. Dazu könnte zum einen die generell hohe Formalisierung von Unternehmensprozessen beitragen, die sowohl einem gut ausgebautem RMS als auch einer stärker ausgebauten Budgetierung zu Grunde liegt. Vorherige Untersuchungen haben herausgefunden, dass, vor allen Dingen in KMU, eine höhere Formalisierung von Unternehmensprozessen hilft, einen klaren Fokus auf die Unternehmensziele zu haben, sich zu diesen zu verpflichten und motiviert an diesen festzuhalten (vgl. Hamdan et al., 2020, S. 253 f.). Zum anderen könnte ein gut ausgebautes RMS Strukturen und Prozesse in den Unternehmen ermöglichen, sodass die Unternehmen mit einer hinreichenden Sicherheit in ihrer Unternehmensplanung und -steuerung agieren können (vgl. Wermelt et al., 2017, S. 85 f.). Dies wiederum unterstützt die Nutzung einer gut ausgestalteten Budgetierung, durch die eine hohe Funktionserfüllung in Hinblick auf die assoziierten Makrofunktionen der Budgetierung sichergestellt werden kann. Dies ist eine wichtige Erkenntnis für die Praxis, da es den Wert eines gut ausgebauten RMS und dessen Integration in die Unternehmensplanung und -steuerung unterstreicht. In Bezug auf die Budgetierung trägt das RMS somit dazu bei, dass es den Unternehmen möglich ist, die Budgetierung zielgerichteter und integrierter zu gestalten und in umfangreichem Maße zur Unterstützung der Unternehmenssteuerung zu nutzen.

Hinsichtlich möglicher Größeneffekte deutet vorhandene Literatur darauf hin, dass durch spezifische Unternehmenscharakteristika von KMU Unterschiede im Einsatz und dem assoziierten Nutzen bei Budgetierung und RMS bestehen können (vgl. z. B. López/Hiebl, 2015; Falkner/Hiebl, 2015). Durch die geringere Formalisierung von Prozessen, mehr persönlichen Kontakt, eine geringere funktionale Trennung innerhalb des Unternehmens und eine geringere Komplexität im Unternehmensaufbau wird es in KMU oftmals als sinnvoll erachtet, Controlling-Instrumente nicht vollständig formal auszubauen (vgl. López/Hiebl, 2015, S. 200; Hamdan et al., 2020, S. 253). Hinzu kommt die oftmals geringere Ressourcenausstattung in KMU, die einen kostenintensiven Ausbau von Instrumenten im Rahmen der Unternehmensplanung und -steuerung erheblich erschwert bzw. unmöglich macht (vgl. Brustbauer, 2016, S. 70). Vor diesem Hintergrund haben wir für jede der Makrofunktionen jeweils vor und in der Krise und mit unterschiedlichem Ausbau des RMS auf Größeneffekte kontrolliert, da diese, wie zuvor dargelegt, neben dem RMS einen erklärenden Einfluss auf die

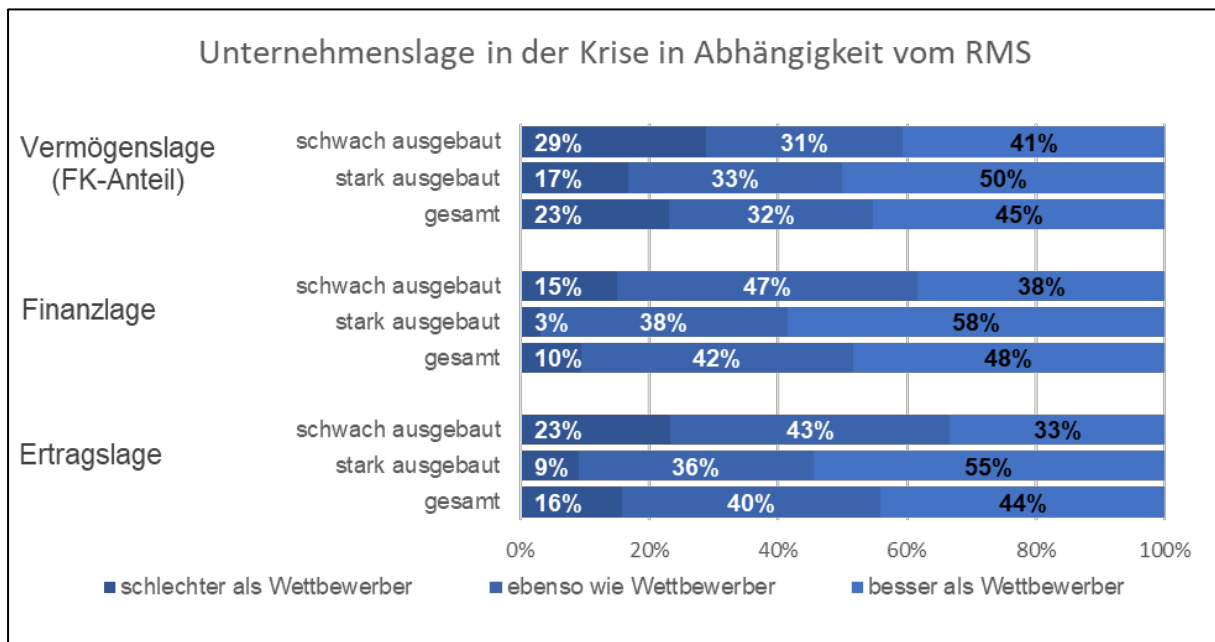
Bedeutung der einzelnen Makrofunktionen der Budgetierung haben könnten. Die durchgeführten statistischen Tests haben jedoch nur bei der Planungs- und Koordinationsfunktion vor der Krise einen schwach signifikanten Größeneffekt (10 %-Signifikanzniveau) belegt. Es zeigt sich, dass KMU bei schwach ausgebautem RMS der Planungs- und Koordinationsfunktion eine geringere Bedeutung beimessen als größere Unternehmen ( $MW_{\text{vor; „wenig ausgebaut“; klein}} = 3,53$ ;  $MW_{\text{vor; „wenig ausgebaut“; groß}} = 3,81$ ). Dies ist in Einklang mit den bisherigen Literatureergebnissen, insbesondere vor dem Hintergrund, dass in kleineren Unternehmen mit einer geringeren Anzahl an Mitarbeitern und funktionaler Trennung auch weniger Bedarf zur Koordination besteht. Weitere Größeneffekte wurden weder bei den statistischen Signifikanztests noch im Rahmen einer vorgenommenen Regression, die neben dem Einfluss des RMS auch den Einfluss der Unternehmensgröße auf den Ausbau der Budgetierungsfunktionen untersucht, festgestellt. Dies könnte erneut auch daran liegen, dass die vorliegende Studie durch die Zusammensetzung des Samples eine abweichende Umsatzgrenze für die Unterteilung in kleine und große Unternehmen verwendet und die Unterschiede so tendenziell abgeschwächt werden.

#### ***4.3.3. Einfluss des RMS auf die Unternehmenslage in der Krise***

Schließlich wurde der Einfluss des RMS auf die Unternehmenslage in der Krise, gemessen durch die Vermögens-, Finanz- und Ertragslage (VFE-Lage) der Unternehmen, untersucht. Dazu wurden die Antworten zur Einschätzung der VFE-Lage im Vergleich zu den Wettbewerbern auf der bekannten 5- stufigen Skala gruppiert (1–2 = schlechter als Wettbewerber, 3 = ebenso wie Wettbewerber, 4–5 = besser als Wettbewerber). Es zeigt sich, dass über alle finanziellen Indikatoren hinweg, Unternehmen mit gut ausgebautem RMS ihre Krisenperformance besser einschätzen als Unternehmen mit schlecht ausgebautem RMS (siehe Abb. 5).



**Abbildung 5: Unternehmenslage in der Krise in Abhängigkeit vom RMS.**



Am deutlichsten wirkt sich der Stand des RMS auf die Finanzlage aus. So gaben bei schlecht ausgebautem RMS 15 % der Unternehmen an, ihre Liquidität sei schlechter einzuschätzen als die der Wettbewerber und nur 38 %, dass ihre Liquidität besser im Vergleich zum Wettbewerb sei. Bei gut ausgebautem RMS gaben lediglich 3 % der Studienteilnehmer an, dass ihre Liquiditätssituation im Wettbewerbsvergleich schlechter sei, über die Hälfte der Unternehmen (58 %) schätzte die Lage besser als bei den Wettbewerbern ein. Dies ist besonders bedeutsam, da die Illiquidität von Firmen als häufigster Insolvenzgrund gilt (vgl. Briciu/Sas, 2009, S. 270). In Verbindung mit der vorherigen Auswertung zeigt sich außerdem, dass ein gut ausgebautes RMS sich nicht nur positiv auf die Funktionserfüllung der Budgetierung, sondern über die Budgetierung als ein Instrument der Unternehmenssteuerung auch auf die daraus resultierende Unternehmensperformance auswirkt. Dies macht deutlich, dass eine gut integrierte Budgetierung mit hoher Funktionserfüllung, die durch ein gutes RMS gefördert wird, ein wichtiger Baustein im Krisenmanagement ist. Die beschriebenen Tendenzen sind stabil in Hinblick auf die Unternehmensgröße.

#### 4.4. Fazit

Die vorliegende Studie zeigt, dass die Budgetierung sowohl vor als auch in der Krise breit in den Unternehmen eingesetzt wird. Dabei stehen Kontrolle und Abweichungsanalyse im Vordergrund. Ein geringerer Fokus liegt auf der Leistungsbeurteilung im Rahmen der Budgetierung. Das RMS trägt dazu bei, dass eine höhere Funktionserfüllung durch die

Budgetierung erreicht werden kann und besonders in der Krise auf hohem Niveau weiterverfolgt wird. Darüber hinaus ist die VFE-Lage von Unternehmen mit gut ausgebautem RMS in der Krise deutlich besser und legt so die Vermutung nahe, dass sich eine hohe Funktionserfüllung durch die Budgetierung als ein Faktor in der Unternehmenslage während der Krise widerspiegelt. Die Beobachtungen unterstreichen den Wert eines gut ausgebauten und in das Unternehmen integrierten RMS und ermutigen somit in Hinblick auf die wahrscheinliche Zunahme von Krisen in der Unternehmensumwelt Investitionen in strukturierte RMS. Die Beobachtungen sind, auf Basis des zur Verfügung stehenden Samples und der verwendeten Aufteilung in große und kleine Unternehmen, darüber hinaus zum überwiegenden Teil unabhängig von der Unternehmensgröße.

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# **Die virtuelle Hauptversammlung – Hatte das neue Format Auswirkungen auf das Auskunftsrecht der Aktionäre?**

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## **Abstract**

Als Reaktion auf die durch die COVID-19-Pandemie eingeführten Versammlungsbeschränkungen hat der Gesetzgeber die Möglichkeit zur Einberufung einer virtuellen Hauptversammlung geschaffen. Dabei hatte die virtuelle Umsetzung tiefgreifende Auswirkungen auf die (Auskunfts-)Rechte der Aktionäre und stellte auch die Unternehmen vor eine neue Herausforderung. Die genauen Auswirkungen des virtuellen Formats der Hauptversammlung auf die Aktionäre und insbesondere deren Auskunftsrecht werden mit Hilfe der nachfolgend vorgestellten, detaillierten Analyse der Einladungen und einer Befragung der DAX-, MDAX- und SDAX-Unternehmen untersucht. Darüber hinaus wird auf Basis der Befragungsergebnisse analysiert, wie die Unternehmen selbst die Möglichkeit der virtuellen Hauptversammlung einschätzen.

**Keywords:** Aktionärsrechte; Auskunftsrecht; COVID-19; GesRuaCOVBekG; virtuelle Hauptversammlung.

**JEL Classification:** M41; M48.

## 5.1. Hauptversammlung und Auskunftsrecht während der COVID-19-Pandemie

Mit dem Beginn der COVID-19-Pandemie im Jahr 2020 wurden aufgrund von Versammlungsbeschränkungen die gesetzlichen Vorgaben zur Ausgestaltung von Hauptversammlungen in Deutschland verändert.<sup>1</sup> Die neuen Vorgaben zum Format von Hauptversammlungen wurden in dem „Gesetz über Maßnahmen im Gesellschafts-, Genossenschafts-, Vereins-, Stiftungs- und Wohnungseigentumsrecht zur Bekämpfung der Auswirkungen der COVID-19-Pandemie“ (kurz GesRuaCOVBekG) verabschiedet.<sup>2</sup> Um die Handlungsfähigkeit der Unternehmen weiterhin aufrecht zu erhalten und erforderliche Beschlüsse fassen zu können, wurde erstmalig ein virtuelles Format eingeführt, in dem Hauptversammlungen vollständig präsenzlos abgehalten werden können. Dies ist allerdings lediglich unter den Voraussetzungen zulässig, dass die Hauptversammlung vollständig über eine Bild- und Tonübertragung abgehalten wird und dass an die Versammlung gebundene, zentrale Rechte der Aktionäre im Wege der elektronischen Kommunikation ausgeübt werden können.<sup>3</sup>

Vor dem Beginn der COVID-19-Pandemie und der Einführung der virtuellen Hauptversammlung war die Ausübung dieser Rechte nur bei physischer Teilnahme an der Hauptversammlung möglich.<sup>4</sup> Mit der Einführung der virtuellen Hauptversammlung wurde einerseits die Teilnahme an der Hauptversammlung erleichtert, andererseits gingen damit auch Auswirkungen auf die Rechte der Aktionäre einher.<sup>5</sup> Da die Interaktionsmöglichkeiten der Aktionäre im virtuellen Format aufgrund der fehlenden physischen Anwesenheit der Teilnehmer nicht wie in der Hauptversammlung in Präsenz umgesetzt werden können, ist insbesondere das Auskunftsrecht der Aktionäre davon betroffen.<sup>6</sup>

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<sup>1</sup> Vgl. Gesetzentwurf der Fraktionen der CDU/CSU und SPD - Entwurf eines Gesetzes zur Abmilderung der Folgen der COVID-19-Pandemie im Zivil-, Insolvenz- und Strafverfahrensrecht vom 24.03.2020, Drucksache 19/18110, S. 5.

<sup>2</sup> Vgl. GesRuaCOVBekG, 27.03.2020, BGBl. I, Nr. 14, S. 569 ff.

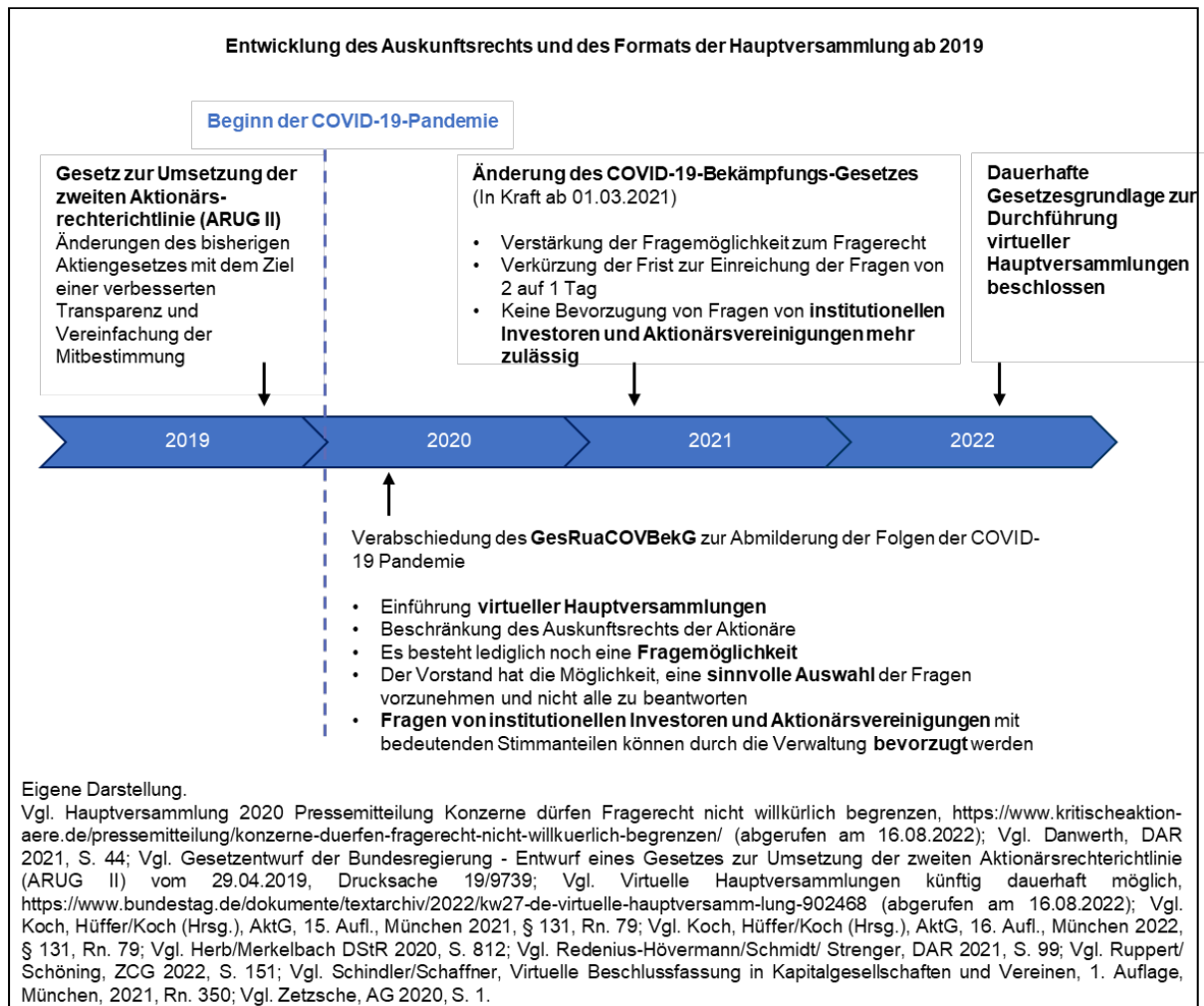
<sup>3</sup> Vgl. Seibt/Danwerth, NZG 2020, S. 1242.

<sup>4</sup> Vgl. Koch, Hüffer/Koch (Hrsg.), AktG, 16. Aufl., München 2022, § 131, Rn. 8.

<sup>5</sup> Vgl. Wicke, DStR 2020, S. 889.

<sup>6</sup> Vgl. Online-HV nur in begründeten Ausnahmefällen (<https://www.dsw-info.de/presse/archiv-pressemitteilungen/-pressemitteilungen-2020/online-hv-nur-in-begruendeten-ausnahmefaellen/>) (abgerufen am 16.08.2022); Vgl. Stellungnahme Corona-Folgen und Hauptversammlung, <http://www.vzfk.de/corona-folgen-und-hauptversammlung/> (abgerufen am 16.08.2022); Vgl. Hauptversammlung 2020 Pressemitteilung Konzerne dürfen Fragerecht nicht willkürlich begrenzen, <https://www.kritischeaktionaeere.de/pressemitteilung/konzerne-duerfen-fragerecht-nicht-willkuerlich-begrenzen/> (abgerufen am 16.08.2022); Vgl. SdK fordert keine Einschränkung von Aktionärsrechten bei virtuellen Hauptversammlungen, <https://sdk.org/veroeffentlichungen/pressemitteilungen/sdk-fordert-keine-einschraenkung-von-aktionaeersrechten-bei-virtuellen-hauptversammlungen> (abgerufen am: 16.08.2022).

Während der COVID-19-Pandemie wird die gesetzliche Grundlage zur Durchführung von Hauptversammlungen mehrfach geändert. Bei der Einführung der Gesetzgebung kommt es dabei zu einer Beschränkung des Frage- und Auskunftsrechtes der Aktionäre, sodass es sich nur noch um eine Fragemöglichkeit handelt. In der Folge wird die Fragemöglichkeit wieder zu einem Fragerecht verstärkt. Eine Übersicht über die Entwicklung des Auskunftsrechts und des Formats der Hauptversammlung ab 2019 wird in Übersicht 1 dargestellt.



Übersicht 1: Entwicklung des Auskunftsrechts und des Formats der Hauptversammlung ab 2019.

Wie genau die Unternehmen die neue Gesetzgebung in den Jahren 2020 und 2021 umgesetzt haben und wie sich das auf die Rechte der Aktionäre ausgewirkt hat, kann erst eine nachgelagerte Analyse der betreffenden Hauptversammlungen zeigen. Ziel der vorliegenden Studie ist es daher, die Auswirkungen der virtuellen Hauptversammlungen auf die Aktionärsrechte zu untersuchen. Hierzu werden sowohl öffentlich zugängliche Daten wie die Einladungen zu den Hauptversammlungen als auch Daten, die mittels eines neu entwickelten Fragebogens spezifisch erhoben werden, verwendet.

Die folgenden Abschnitte stellen zunächst die Datenerhebung und die Stichprobencharakteristika dar, bevor die Ergebnisse der Untersuchung dargelegt werden. Das Fazit fasst die Ergebnisse aus der Analyse der Einladungen und der Befragung zusammen.

## **5.2. Datenerhebung und Stichprobencharakteristika**

Es werden die Einladungen zu den Hauptversammlungen der Jahre 2019-2021 der 160 Unternehmen<sup>7</sup> betrachtet, die zum Stichtag, dem 31.08.2021, im DAX, MDAX und SDAX gelistet waren und damit in den Anwendungsbereich der betreffenden Gesetzgebung fallen.<sup>8;9</sup> Durch die Betrachtung dieser drei Indizes hat die Stichprobe eine angemessene Größe. Weiterhin eröffnet die Zusammensetzung der Stichprobe die Chance, Auswertungen auf Ebene der Indizes vorzunehmen. Der gewählte Zeitraum ermöglicht einen Vergleich der Ausgestaltung der Hauptversammlungen in Präsenz vor der COVID-19-Pandemie mit den virtuellen Hauptversammlungen in den Jahren der Pandemie unter dem Einfluss verschiedener geltender Gesetze. Zusätzlich erfolgt eine Befragung der Unternehmen mit Hilfe eines selbst entwickelten Fragebogens. Einen ersten Überblick über die Stichprobe liefert Übersicht 2. Deutlich wird der große Anteil der Unternehmen der Branche Industrials. Mit Blick auf die Größe der Unternehmen weist nahezu die Hälfte der Unternehmen eine Bilanzsumme unter einer Milliarde Euro aus.

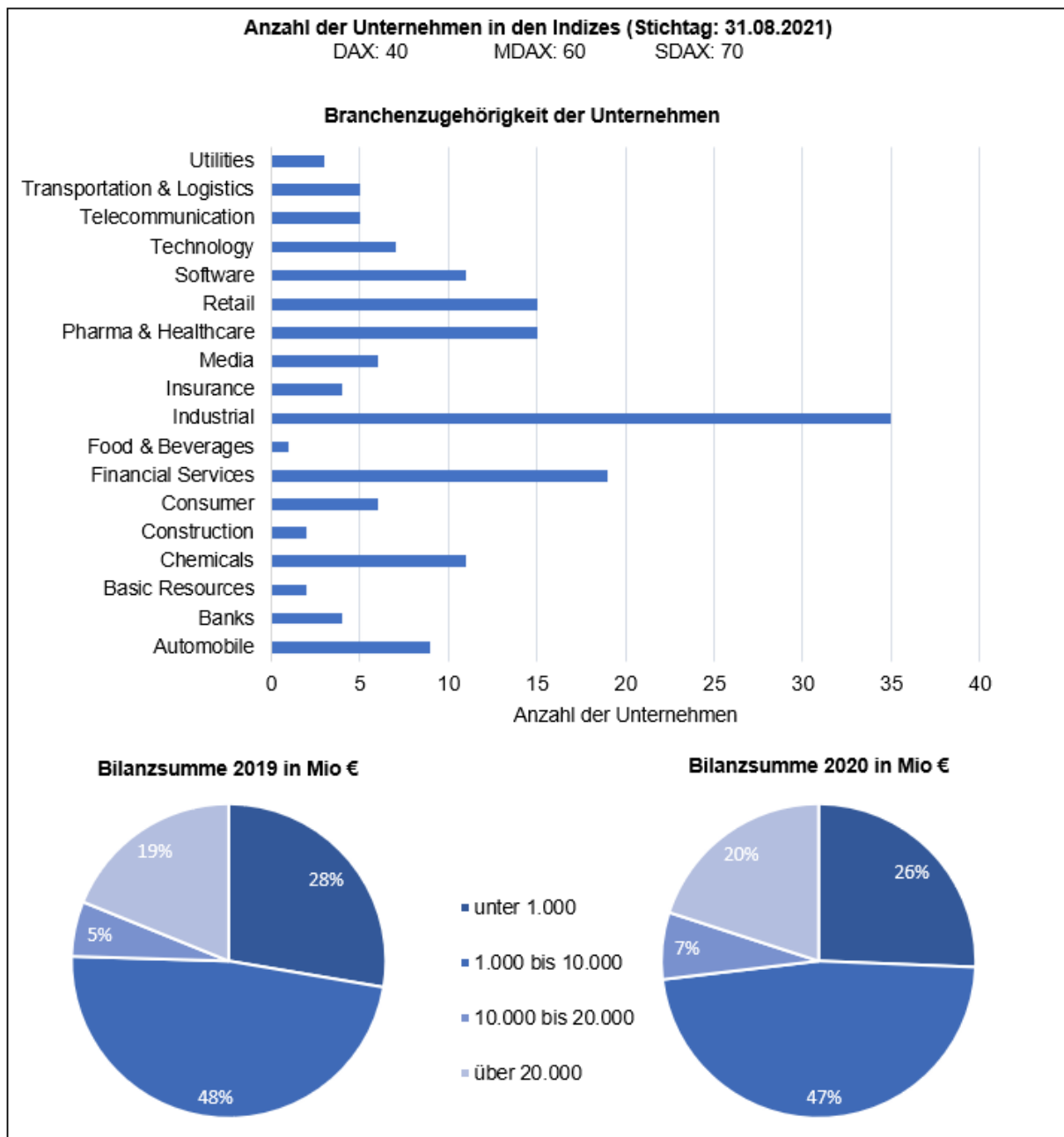
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<sup>7</sup> Von der Grundgesamtheit wurden insgesamt 19 Einladungen zu Hauptversammlungen von Unternehmen aus unterschiedlichen Gründen ausgeschlossen, bspw. weil es sich um Unternehmen mit ausländischen Rechtsformen handelt und damit das GesRuaCovBekG für sie nicht gilt oder weil Unternehmen in den betrachteten Jahren nicht dauerhaft in einem der betrachteten Indizes gelistet waren.

<sup>8</sup> Die Datenerhebung erfolgte durch die Ko-Autorin Neele Sassenroth im Rahmen ihrer Masterarbeit an der Universität Potsdam.

<sup>9</sup> Vgl. Index Composition Report DAX, <https://www.dax-indices.com/de/web/dax-indices/zusammensetzung> (abgerufen am 31.08.2021); Vgl. Index Composition Report MDAX, <https://www.dax-indices.com/de/web/dax-indices/zusammensetzung> (abgerufen am 31.08.2021); Vgl. Index Composition Report SDAX, <https://www.dax-indices.com/de/web/dax-indices/zusammensetzung> (abgerufen am 31.08.2021).





Übersicht 2: Charakteristika der ersten Stichprobe.

### 5.3. Ergebnisse der empirischen Untersuchungen

#### 5.3.1. Umsetzung der virtuellen Hauptversammlung und Folgen für das Auskunftsrecht der Aktionäre

Nachfolgend wird auf Basis der Daten aus den Einladungen analysiert, wie Fragerecht und Möglichkeit zur Frageneinreichung im Vorfeld der Hauptversammlung ausgestaltet sind. Weiterhin wird untersucht, ob es ein Auskunftsrecht bzw. eine (Nach-)Fragemöglichkeit während der Hauptversammlung gibt. Innerhalb der Analysen werden drei Zeitpunkte verglichen: Vor der Pandemie (Geschäftsjahr 2019), nach Einführung des GesRuaCOVBekG

(für das Geschäftsjahr 2020) und nach der Änderung des GesRuaCOVBekG im Dezember 2020 (für das Geschäftsjahr 2021).

### 5.3.1.1. Fragerecht und Möglichkeit zur Frageneinreichung im Vorfeld der Hauptversammlung

Zur Form der Frageneinreichung werden in den Einladungen zur Hauptversammlung von den Unternehmen im Jahr 2019 überwiegend keine Angaben gemacht. Mit der virtuellen Durchführung der Hauptversammlungen musste von Seiten der Unternehmen eine Möglichkeit geschaffen werden, die sonst verbal gestellten Fragen auf elektronischem Wege zu übermitteln. Dazu konnte im Jahr 2020 schon mehrheitlich ein Aktionärsportal benutzt werden. Dies und die nachfolgenden Aspekte werden in Übersicht 3 dargestellt. Die Nutzung einer solchen Plattform nimmt im Verlauf der Pandemie weiter zu. Hinsichtlich der Frist, innerhalb derer die Fragen vor der Hauptversammlung eingereicht werden müssen, konnte eine Veränderung vom Jahr 2020 zum Jahr 2021 festgestellt werden. Auch hier folgten die Unternehmen mehrheitlich den gesetzlichen Vorgaben.

<b>Erwähnung eines Fragerechts (ggf. über den Weg der elektronischen Kommunikation)</b>			
Jahr	Ja	Keine Angabe	
2019	97,9 % Auskunftsrecht (§ 131 Abs 1 AktG)	2,1 %	
2020	85,1 % Fragemöglichkeit im Wege elektron. Kommunikation (i.S.d. GesRuaCovBekG)	14,9 %	
2021	89,4 % Fragerecht; 7,1 % Fragemöglichkeit; 0,7 % Auskunftsrecht	3,6 %	
<b>Art der Möglichkeit, Fragen einzureichen</b>			
Jahr	Per Website/ Aktionärsportal	Per E-Mail	Per Wortmeldung
2019	2,8 % vorher Fragen übersenden, tlw. ohne Angabe auf welche Art Übersendung stattfinden soll		26,2 %
2020	85,1 %	6,4 %	3,6 %
2021	96,4 %	2,8 %	0,7 %
<b>Frist zur Einreichung der Fragen vor der Hauptversammlung</b>			
Jahr	Bis 1 Tag vorher	Bis 2 Tage vorher	Länger
2019*	-	-	Annahme: in Präsenz auf der Hauptversammlung
2020	41,8 %	48,9 %	0,7 %
2021	87,9 % (+5 % bis 0 Tage vorher)	5,0 %	0,7 %

Übersicht 3: Erwähnung des Fragerechts, Möglichkeit Fragen einzureichen und Fristen zur Frageneinreichung.

\* Für das Jahr 2019 wurden die Daten nicht erhoben.

### 5.3.1.2. (Nach-)Fragemöglichkeit während der Hauptversammlung

Die Veränderungen betreffen auch die Fragemöglichkeit während der Hauptversammlung. Hier ist auffällig, dass im Jahr 2020 in etwa einem Drittel der untersuchten Einladungen vermerkt wurde, dass keine Fragen während der Hauptversammlung gestellt werden dürfen. Im Jahr 2021 stieg die Anzahl der Unternehmen weiterhin leicht an, die eine solche Regelung durchgesetzt

haben. Alle Ergebnisse der Analysen hinsichtlich der (Nach-)Fragemöglichkeit finden sich in Übersicht 4.

<b>Möglichkeit zum Stellen von Fragen auf der Hauptversammlung</b>			
Jahr	Ja	Nein	
2019	Annahme: 100 %	-	
2020	-	30,5 %	
2021	-	38,3 %	
<b>Möglichkeit zum Stellen von Nachfragen auf der Hauptversammlung</b>			
Jahr	Ja	Nein	Keine Angabe
2019	Annahme: 100 %	-	-
2020	-	1,4 %	-
2021	7,2 %	7,2 %	85,6 %

Übersicht 4: Möglichkeit zum Stellen von (Nach-)Fragen auf der Hauptversammlung.

Weiterhin wurde von einigen Unternehmen auch die Möglichkeit nachzufragen eingeschränkt. Hier ergibt sich jedoch kein eindeutiges Bild.<sup>10</sup>

Im Jahr 2021 wurde jedoch in vereinzelt Einladungen darauf verwiesen, dass etwaige Redebeiträge und Berichte des Vorstands vor der Veranstaltung auf der Webseite veröffentlicht werden. Damit hatten die Aktionäre die Option, sich auch dazu im Vorhinein gezielt Fragen zu überlegen.<sup>11</sup> Dies war gerade vor dem Hintergrund, dass die meisten Unternehmen keine Nachfragemöglichkeit während der Hauptversammlung erlaubten, eine aktionärsfreundliche Ergänzung des virtuellen Formats.<sup>12</sup>

### 5.3.1.3. Auskunftsrecht

Das Auskunftsrecht der Aktionäre erfährt durch die Gesetzesänderung einige Einschränkungen, auf die die Unternehmen in ihren Einladungen mehrheitlich hinweisen, siehe Übersicht 5. So räumen in 2020 die Unternehmen ihren Aktionären mehrheitlich kein Auskunftsrecht mehr ein. 44 % der Unternehmen gestehen ihren Aktionären auch im Jahr 2021 kein Auskunftsrecht ein.

<b>Einräumen eines Auskunftsrechts/ Recht auf Antwort</b>			
Jahr	Ja	Nein	Keine Angabe
2019	97,9 %	-	2,1 %
2020	-	53,9 %	46,1 %
2021	0,7 %	44,0 %	55,3 %

Übersicht 5: Einräumen eines Auskunftsrechts/ Recht auf Antwort.

Mit dem § 1 GesRuaCOVBekG hat der Gesetzgeber den Unternehmen weiterhin die Möglichkeit gegeben, mögliche Fragen von Aktionärsvereinigungen und gegebenenfalls von

<sup>10</sup> Ruppert/Schöning stellen in ihrer 2022 erschienenen Studie fest, dass in 2020 kein Unternehmen seinen Aktionären die Möglichkeit einräumt, Nachfragen zu stellen. Ab 2021 lassen einige Unternehmen dann Nachfragen zu (S.156). Die Ergebnisse der vorliegenden Analyse sowie von Ruppert/ Schöning (2022) zeigen daher eine ähnliche Entwicklung auf. Vgl. Ruppert/ Schöning, ZCG 2022, S. 156.

<sup>11</sup> Vgl. Seibt/Danwerth, NZG 2020, S. 1247.

<sup>12</sup> Vgl. Ruppert/ Schöning, ZCG 2022, S. 156.

institutionellen Investoren mit bedeutenden Stimmanteilen zu bevorzugen. Auf diese Möglichkeit wies eine knappe Minderheit der Unternehmen im Jahr 2020 in ihren Einladungen hin, siehe Übersicht 6.

<b>Bevorzugung von Fragen von Aktionärsvereinigungen und institutionellen Investoren</b>		
Jahr	Ja	Keine Angabe
2019	-	-
2020	42,60 %	57,50 %
2021	3,60 %	96,50 %

Übersicht 6: Ggf. Bevorzugung von Fragen von Aktionärsvereinigungen (und institutionellen Investoren).

Im Jahr 2020 behalten sich viele Unternehmen vor, dass Fragen von institutionellen Investoren und Aktionärsvereinigungen mit bedeutenden Stimmanteilen durch die Verwaltung bevorzugt werden können.<sup>13</sup> Nach der Gesetzesänderung zu 2021 wird Unternehmen diese Möglichkeit nicht mehr eingeräumt. Damit wurden einerseits die Erfahrungen der virtuellen Hauptversammlungen im Vorjahr berücksichtigt und andererseits wurde auch auf die Kritik von Aktionärsverbänden reagiert.<sup>14</sup>

### **5.3.2. Umsetzung und Beurteilung der HV durch die Unternehmen**

Nach der Auswertung der Einladungen sollen nachfolgend die Ergebnisse der Befragung vorgestellt werden. Diese ergänzen die vorangegangenen Analysen zur Umsetzung der virtuellen Hauptversammlung und zu den Folgen für das Auskunftsrecht der Aktionäre. Dabei wird der Fokus auf die Beurteilung der Unternehmen hinsichtlich der Praktikabilität und Zukunftsfähigkeit des Formats der virtuellen Hauptversammlung gelegt.

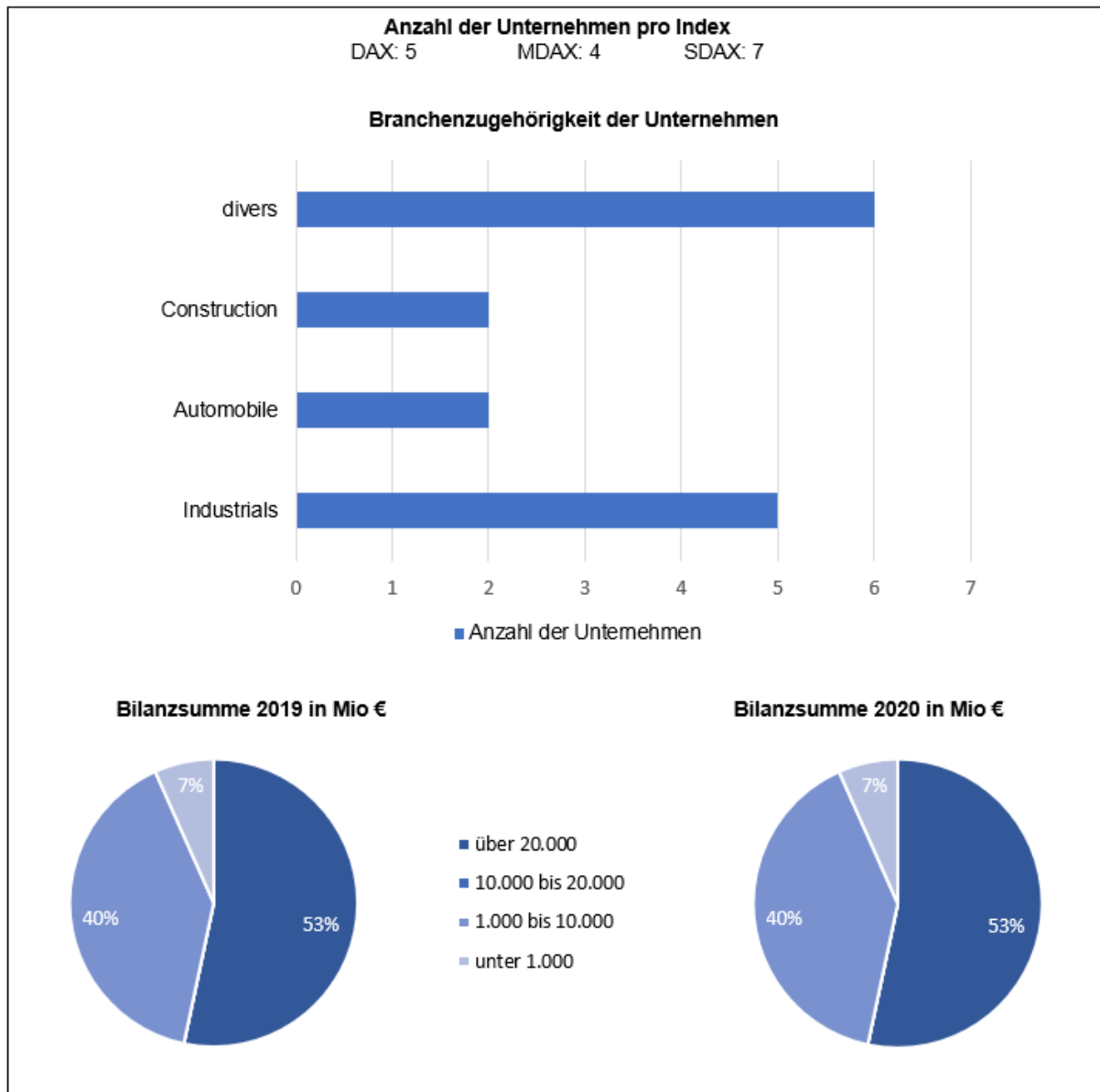
Der zugrundeliegende Fragebogen wurde an insgesamt 157 Unternehmen versendet und von 16 Unternehmen beantwortet (Antwortrate von 10,2 %).<sup>15</sup> Übersicht 7 liefert nähere Informationen zur zweiten Stichprobe. Hinsichtlich der Branchenzugehörigkeit der Unternehmen wird deutlich, dass die Unternehmen der Branche Industrials wiederum am stärksten vertreten sind. Darüber hinaus gibt es jeweils zwei Vertreter der Branchen Construction und Automotive, sowie sechs Branchen, die jeweils nur einmal vertreten sind (siehe Datenreihe „divers“). Insgesamt ist festzustellen, dass die Branchenzusammensetzung der beiden verwendeten Stichproben ähnlich ist (vergleiche die Übersichten 2 und 7). In Bezug

<sup>13</sup> Vgl. Herb/Merkelbach, DStR 2020, S. 812.

<sup>14</sup> Vgl. Stellungnahme Corona-Folgen und Hauptversammlung, <http://www.vzfk.de/corona-folgen-und-hauptversammlung/> (abgerufen am 16.08.2022); Vgl. SdK fordert keine Einschränkung von Aktionärsrechten bei virtuellen Hauptversammlungen, <https://sdk.org/veroeffentlichungen/pressemitteilungen/sdk-fordert-keine-einschraenkung-von-aktionaeersrechten-bei-virtuellen-hauptversammlungen> (abgerufen am 16.08.2022).

<sup>15</sup> Da drei der 160 Unternehmen aus der Stichprobe bereits auf ihrer Homepage darauf verweisen, dass keinerlei Umfragen beantwortet werden, wurde diesen der Fragebogen nicht zugeschickt.

auf die Höhe der Bilanzsummen der teilnehmenden Unternehmen gibt es eine große Spannweite: Im Vergleich zur ersten Stichprobe wird deutlich, dass viele Unternehmen mit höheren Bilanzsummen teilgenommen haben.



Übersicht 7: Charakteristika der zweiten Stichprobe.

Die Ergebnisse der Umfrage bieten die Möglichkeit, einen Einblick in die Umsetzung der virtuellen Hauptversammlungen durch die Unternehmen zu erlangen. Eine prozentuelle Darstellung der Nutzung des jeweiligen Formats findet sich in Übersicht 8.

<b>Format der Hauptversammlung</b>			
Jahr	Präsenz	Virtuell	Hybrid
2019	100 %	0 %	0 %
2020	13,3 %	86,7 %	0 %
2021	0 %	100 %	0 %

Übersicht 8: Format der Hauptversammlung.

Von der Möglichkeit, die Hauptversammlung virtuell umzusetzen, hat schon im Jahr 2020 eine Mehrheit der Unternehmen Gebrauch gemacht. Der Grund dafür könnte sein, dass die pandemische Lage im gesamten Jahr 2020 keine Präsenzveranstaltungen zuließ und demnach auch auf einen späteren Zeitpunkt verschobene Hauptversammlungen im virtuellen Format durchgeführt werden mussten. Im Folgejahr fanden die Hauptversammlungen wieder mehrheitlich zu ähnlichen Zeitpunkten wie im Vor-Pandemie-Jahr 2019 statt. Dies deutet darauf hin, dass die Unternehmen nach Durchführung der ersten virtuellen Hauptversammlung und in Anbetracht der weiter anhaltenden pandemischen Lage direkt eine virtuelle Hauptversammlung geplant haben.

Übersicht 9 gibt einen Überblick über die Anzahl an Einladungen, Teilnehmenden und Fragen auf den Hauptversammlungen der drei beobachteten Jahre bei den befragten Unternehmen. Die Ergebnisse liefern somit erste Informationen über die Akzeptanz der virtuellen Hauptversammlungen durch die Aktionäre im Vergleich zu denen in Präsenz.

<b>Anzahl der Einladungen, Teilnehmenden und Fragen auf den Hauptversammlungen</b>						
	Jahr	Mittelwert	Median	Standard-abweichung	Minimum	Maximum
Einladungen	2019	297.657	190.000	354.654	700	1.000.000
	2020	304.234	195.000	360.919	1.000	1.000.000
	2021	276.109	119.000	358.222	1.000	1.000.000
Teilnehmer	2019	1.774	520	2.447	120	8.000
	2020	3.501	500	4.661	100	12.000
	2021	3.609	500	4.890	84	12.000
Fragen	2019	85	60	61	15	212
	2020	93	75	69	5	250
	2021	134	93	113	10	367

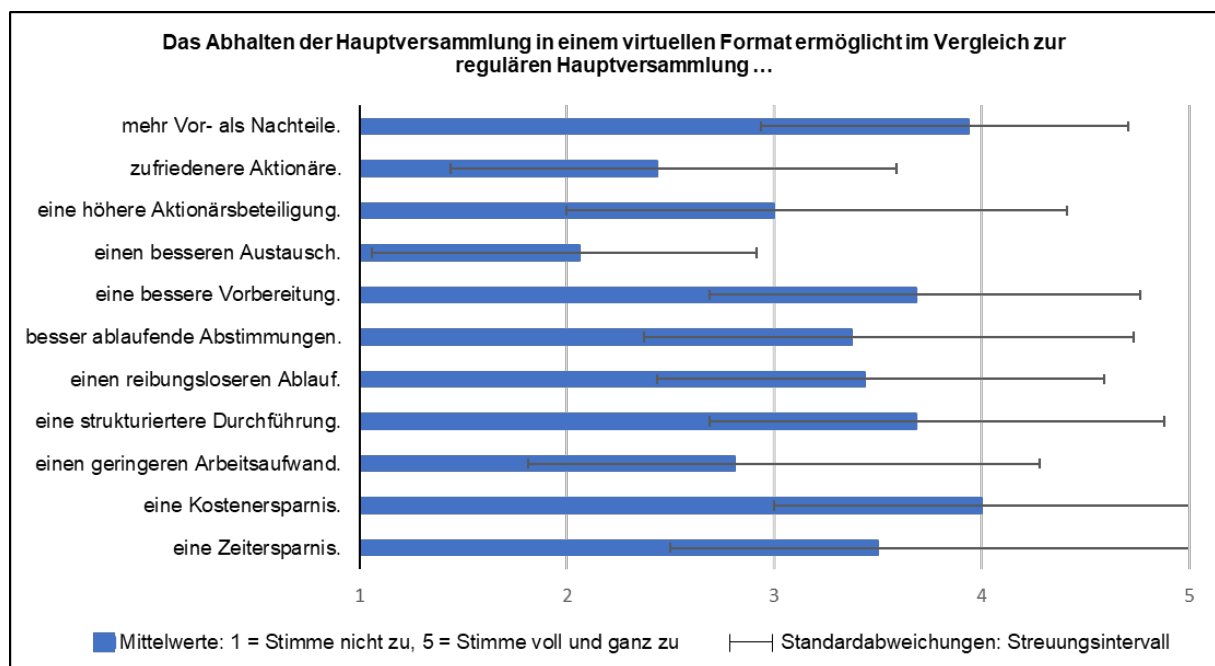
Übersicht 9: Anzahl der Einladungen, Teilnehmenden und Fragen auf den Hauptversammlungen.

Es ist zu erkennen, dass die Mittelwerte der untersuchten Variablen Einladungen, Teilnehmer und Fragen im Jahr 2020 im Vergleich zum Jahr 2019 ansteigen. Während für den Mittelwert der Einladungen der Aktionäre im Jahr 2021 ein Rückgang auf 276.109 Einladungen beobachtet werden kann, ist für die Teilnehmer ein leichter und für die Anzahl der eingereichten Fragen ein deutlicher Anstieg zu verzeichnen. Dies lässt vermuten, dass das virtuelle Format der

Hauptversammlungen möglicherweise für Teilnehmer leichter zugänglich ist sowie eine einfachere Möglichkeit bietet, Fragen zu stellen.<sup>16</sup>

### 5.3.3. Die beiden Formate im Vergleich

Ein weiterer Teil des Fragebogens zielte darauf ab, den Grad der Zustimmung der Unternehmen zu verschiedenen Aussagen hinsichtlich der virtuellen Hauptversammlung zu ermitteln. Daraus sollte sich ein allgemeines Stimmungsbild hinsichtlich der Hauptversammlung im virtuellen Format ergeben und zusätzlich sollten weitere Veränderungen aufgezeigt werden, die mit dem neuen Format einhergehen. Es werden zunächst die Ergebnisse der gesamten Stichprobe analysiert und anschließend weitere Analysen auf Ebene der Indizes vorgenommen.<sup>17</sup> Im ersten Schritt wurden die Teilnehmer daher gebeten, die virtuelle Hauptversammlung mit einer Hauptversammlung in Präsenz zu vergleichen, siehe Übersicht 10.



Übersicht 10: Vergleich der Zustimmungsmittelwerte hinsichtlich Aussagen zum Vergleich von virtuellen Hauptversammlungen mit Hauptversammlungen im regulären Format.

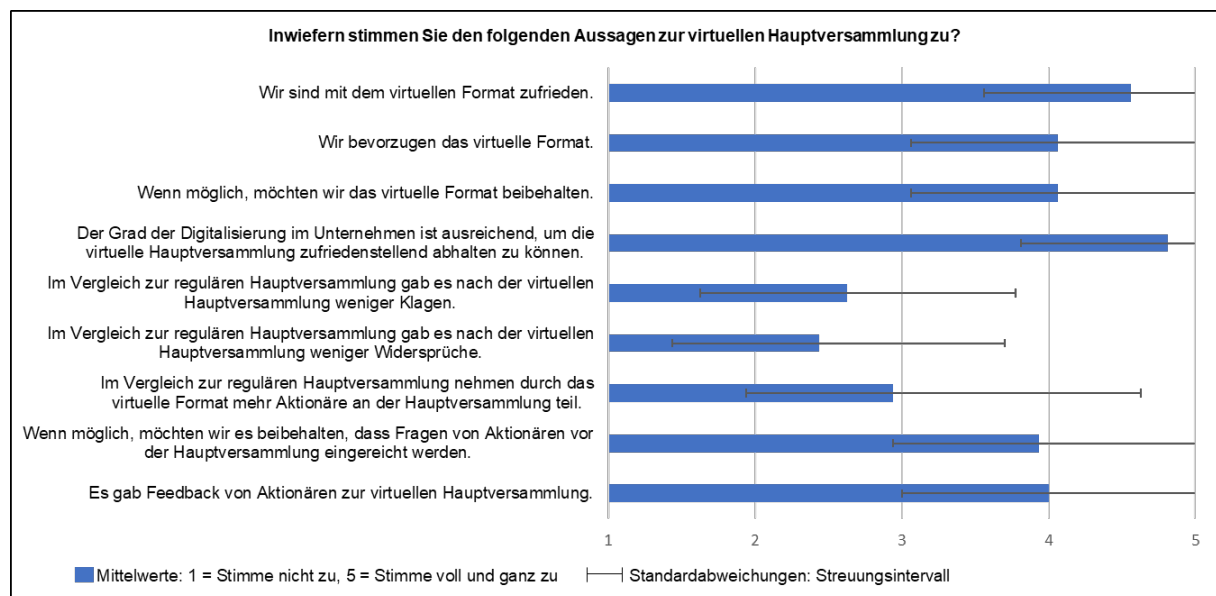
<sup>16</sup> Die Beobachtungen zu der Entwicklung der Teilnehmerzahl stimmen damit mit jenen aus der Studie von Ruppert/ Schöning (2022) überein. Vgl. Ruppert/ Schöning, ZCG 2022, S. 156.

<sup>17</sup> Die zugrundeliegende Stichprobe (n=16) setzt sich aus 5 DAX-, 4 MDAX- und 7 SDAX-Unternehmen zusammen. Um die Ergebnisse der Studie jeweils auf Ebene der Indizes auszuwerten, wurde zunächst mit Hilfe des Kruskal-Wallis Tests für nicht-parametrische Daten festgestellt, ob die Gruppen signifikant unterschiedlich antworten. Wenn dies der Fall war, wurden nachfolgend noch paarweise Wilcoxon-Mann-Whitney-Tests für nicht-parametrische Daten durchgeführt, um zu belegen, zwischen welchen der drei Gruppen signifikante Unterschiede in den Antworten bestehen. Informationen über signifikante Unterschiede werden nachfolgend an den entsprechenden Stellen ergänzt.

Mit Blick auf die Zustimmungswerte wird deutlich, dass die Unternehmen vor allem organisatorische Aspekte der virtuellen Hauptversammlung eher positiv sehen. Im Hinblick auf Aspekte, die mit den Aktionären zu tun haben, stimmen die Unternehmen eher weniger zu. Insgesamt stimmen die Unternehmen in der Stichprobe aber eher zu, dass die virtuelle Hauptversammlung mehr Vor- als Nachteile für die Unternehmen bietet.

Diese Ergebnisse zeigen, dass die Unternehmen im Mittel die Vorteile einer virtuellen Hauptversammlung gegenüber einer Hauptversammlung in Präsenz vor allem in den Bereichen sehen, die nicht unmittelbar den Aktionär betreffen. Dies geht mit den Ergebnissen der vorangegangenen Analyse der Einladungen einher, die ergab, dass vor allem die Aktionäre Beschränkungen in ihren Rechten hinnehmen müssen.

Im letzten Abschnitt der Befragung sollten die Unternehmen angeben, wie sie die virtuelle Hauptversammlung generell einschätzen und ob sie eine zukünftige Beibehaltung des virtuellen Formates der Hauptversammlung präferieren, siehe Übersicht 11.



Übersicht 11: Mittelwerte der Zustimmung zu verschiedenen Aussagen hinsichtlich der virtuellen Hauptversammlung.

In Bezug auf Aspekte, die mit den Aktionären zusammenhängen, äußern sich die Unternehmen neutral bzw. leicht negativ. So erkennen sie kaum eine Verminderung der Klagen und Widersprüche durch das virtuelle Format der Hauptversammlung. Die durchgeführten Kruskal-Wallis Tests kommen jedoch zu dem Ergebnis, dass es in Bezug auf diese beiden Kategorien signifikant unterschiedliche Antworten zwischen den Teilnehmenden aus DAX, MDAX und SDAX gibt. Die dazugehörigen paarweisen Wilcoxon-Mann-Whitney-Tests ergeben, dass die signifikanten Unterschiede zwischen den Antworten der DAX Unternehmen und der SDAX



Unternehmen bestehen. In Kombination mit den vorliegenden Mittelwerten über die Indizes wird hierbei deutlich, dass die Unternehmen des DAX eine stärker ablehnende Haltung gegenüber beiden Aussagen einnehmen ( $MW_{\text{Widersprüche}} 1,5$ ;  $MW_{\text{Klagen}} 1,75$ ), als die Gruppe der SDAX Unternehmen es diesbezüglich tun ( $MW_{\text{Widersprüche}} 3,429$ ;  $MW_{\text{Klagen}} 3,0$ ). Demzufolge scheint der Transfer der Hauptversammlungen in das virtuelle Format bei größeren (DAX) Unternehmen zu weniger Veränderung in der Anzahl der Widersprüche und Klagen zu führen, als dies bei kleineren Unternehmen (SDAX) der Fall ist. Hierbei ist anzumerken, dass diese Entwicklung aus Sicht der einzelnen Unternehmen wohl positiv zu bewerten ist, da diese nach der Hauptversammlung weniger Rechtsstreitigkeiten zu erwarten haben.

Die Unternehmen stimmen der Aussage eher zu, dass der Grad der Digitalisierung im Unternehmen ausreichend ist, um die virtuelle Hauptversammlung zufriedenstellend abhalten zu können. Weiterhin würden die Unternehmen das virtuelle Format einer regulären Hauptversammlung eher vorziehen, was zu der Tendenz passt, dass die Unternehmen mit dem virtuellen Format eher zufrieden sind.

#### **5.4. Die virtuelle Hauptversammlung – Ein Modell für die Zukunft?**

Die Ergebnisse der Untersuchung zeigen, dass das Auskunftsrecht der Aktionäre im virtuellen Format zunächst eine Einschränkung zu einer Fragemöglichkeit erfahren hat. Allerdings wurde es im nachfolgenden Jahr 2021 wieder zu einem Fragerecht verstärkt.<sup>18</sup> Nach zwei Jahren der virtuellen Hauptversammlung in der Praxis ziehen die Unternehmen in dieser Untersuchung eine insgesamt positive Bilanz. Doch wie geht es nach der Pandemie weiter?

Für die Saison 2022 sind nur wenige Unternehmen zur Durchführung einer Hauptversammlung in Präsenz zurückgekehrt.<sup>19</sup> Die hierfür geltende Rechtsgrundlage führte schon im Vorjahr 2021 zu keiner Einschränkung des Auskunfts- und Fragerechts mehr, sodass auch in 2022 keine Einschränkungen zu erwarten waren. Mitte 2022 hat der Gesetzgeber dann beschlossen, dass Hauptversammlungen auch in Zukunft virtuell durchgeführt werden können. Bei der gewählten Ausgestaltung des Gesetzestextes sind hierbei keine Einschränkungen in

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<sup>18</sup> Vgl. Schindler/Schaffner, Virtuelle Beschlussfassung in Kapitalgesellschaften und Vereinen, 1. Auflage, München, 2021, Rn. 350; Vgl. Ruppert/ Schöning, ZCG 2022, S. 151.

<sup>19</sup> Zur Beurteilung wurde eine manuelle Auswertung der in 2022 in den betrachteten Indizes notierten Unternehmen vorgenommen. Die Zusammensetzung dieser Stichprobe weicht daher geringfügig von der in der Hauptanalyse verwendeten Stichprobe ab. Die Quote der virtuell durchgeführten Hauptversammlungen lag in 2022 für den DAX und MDAX bei 90% und den SDAX bei 86%. Vgl. Hauptversammlungstermine, <https://www.hauptversammlung.de/hv-termine.html> (abgerufen am 02.02.2023).

Bezug auf das Auskunftsrecht der Aktionäre mehr zu erwarten. In Bezug auf die Ausgestaltung des Fragerechtes fällt jedoch auf, dass der Gesetzgeber keine Verlagerung des Fragerechts ins Vorfeld der Hauptversammlung festgelegt hat, wie es während der Pandemie praktiziert wurde. Vielmehr können Unternehmen anbieten, dass Fragen vorab elektronisch eingereicht werden können. Diese müssen sie dann auch vor der Hauptversammlung beantworten und die Antworten online zur Verfügung stellen. Die elektronisch zugeschalteten Aktionäre haben dann ein Nachfragerecht auf der Hauptversammlung.<sup>20</sup> Weiterhin können Sie weitere Fragen stellen, sofern sich diese auf Sachverhalte beziehen, die sich erst nach Ablauf der Frist ergeben haben.<sup>21;22</sup> Es bleibt daher abzuwarten, ob die Unternehmen zukünftig weiterhin die Möglichkeit einräumen werden, Fragen vor der Hauptversammlung zu stellen, oder ob nicht doch wieder nur während der Hauptversammlung gefragt werden kann.

Die vorliegende Untersuchung weist durch die manuelle Datenerhebung der Einladungen zu den Hauptversammlungen und die begrenzte Rückläuferquote des Fragebogens Limitationen auf, sodass mögliche Ausreißer in der Stichprobe zu einer Verzerrung der Ergebnisse führen können. Somit können von der Stichprobe keine Rückschlüsse auf alle Unternehmen des DAX, MDAX und SDAX gezogen werden. Aus den Ergebnissen kann jedoch eine Tendenz hinsichtlich der Beurteilung der virtuellen Hauptversammlung abgeleitet werden.

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<sup>20</sup> Vgl. Otte-Gräbner/Wettich, WPg 2022, S. 1366 ff.

<sup>21</sup> Vgl. AktG, 1965/Aktiengesetz vom 6. September 1965 (BGBl. I S. 1089), das zuletzt durch Artikel 3 Absatz 3 des Gesetzes vom 4. Januar 2023 (BGBl. 2023 I Nr. 10) geändert worden ist.

<sup>22</sup> Vgl. Pospiech/Schiller, NJW-Spezial 2022, S. 527, 528.

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# Who Does the Dirty Work? The Effect of Management- Accountant's Traits and Attitudes

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## **Abstract**

Management accountants perform a wide range of tasks in the company and can take different roles. In an ongoing discussion, these tasks and roles have been described as having varying degrees of topicality and future orientation. Nevertheless, even less attractive, less popular and less prestigious tasks have to be performed, as they are important for companies as well. This study examines which type of management accountant usually performs more of these so-called dirty-work tasks and to what extent the personality of the individual and personal career ambitions have an influence on the frequency. We test our hypotheses using survey data which we collected from two surveys among German management accountants and we find evidence that consists with our predictions. Thus, we can show that the personality, the level of career ambition, and whether the management accountants like dirty-work tasks, influence the frequency in which they perform the so-called dirty work. In doing so, we contribute to the existing literature and moreover build up a new perspective from which the ongoing discussion about role models can be looked at. This is also relevant for business practice, as it provides insights into why management accountants behave the way they do in their work environment.

**Keywords:** Career Ambitions; Change; Digitalization; Dirty Work; Management Accounting; Personality.

**JEL:** M41.

## **Acknowledgements:**

We gratefully acknowledge helpful comments from Thorsten Knauer, Caroline Lambert, Samuel Sponem and Sandra Winkelmann, as well as the participants and reviewers of the 2021 Berens Doctoral Colloquium, 2021 ERMAC Conference, 2022 ACMAR Doctoral Colloquium, and AAA MAS 2023. Any errors are our own.

## 6.1. Introduction

The question if there is a particular role model that management accountants should represent has been the subject of a large theoretical discussion for about 30 years (Emsley, 2005; Granlund & Lukka, 1998; Janin, 2017) and mostly revolves around the role models of bean counter, watchdog, scorekeeper, and business partner (Goretzki et al., 2013; Goretzki & Messner, 2018; Heinzlmann, 2018; Wolf et al., 2020), with the business partner and the bean counter being the most significant ones.<sup>1</sup> The motivation for this discussion seems to be the preservation of the profession's reputation and relevance (Granlund & Lukka, 1998). Usually, the discussion also includes an assessment of the roles: The role of the business partner is often described as desirable and future-oriented, while the role of the bean counter is considered rather old-fashioned and no longer relevant (Endenich & Trapp, 2021; Fourné et al., 2018; Heinzlmann, 2018; Janin, 2017). However, studies show that in corporate practice, management-accountants' roles are not divided so strictly (De Loo et al., 2011; Horton & Wanderley, 2018; Morales, 2019; Oesterreich et al., 2019). Instead, many management accountants take on various tasks, irrespective of the role model they represent. In fact, the classical tasks of a bean counter are especially important for the company and, thus, they are performed very frequently (De Loo et al., 2011; Wolf et al., 2020). The latter raises the question of whether it makes sense for every management accountant to strive for the role of a business partner (Lambert & Sponem, 2012), while at the same time belittling the not future-oriented, not worthwhile activities taken on by fellow management accountants (Endenich & Trapp, 2021; Heinzlmann, 2018). In this context, the tasks performed by so-called bean counters may even be described as dirty-work tasks. The concept of dirty work refers to a division of labor that is not based on the abilities of individuals but rather has a moral background (Hughes, 1951, 1956) and it addresses the question of whether people want to perform certain tasks or not (Morales & Lambert, 2013). Hence, if tasks are considered as degrading, disgusting, or not desirable, they represent dirty work (Ashforth & Kreiner, 1999).

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<sup>1</sup> In literature, various terms are used to describe the more traditional management-accountant role such as bookkeeper, scorekeeper, watchdog, bean counter (see for example: Emsley (2005); Goretzki et al. (2013); Granlund & Lukka (1998); Heinzlmann (2018); Janin (2017)). There is no clear distinction between the terms. Instead, all of these terms describe a similar role, which is described as being rather outdated. Moreover, the traditional role is uniformly differentiated from "the business-oriented role" (Morales & Lambert (2013), p. 229), namely the business partner. To ensure consistency of language, in the following, we refer to the role of the bean counter, which encompasses all possible facets of the more traditional management-accountant role.

Considering the above comments, it seems appropriate to focus less on the theoretical differentiation between role models but more on possible factors that influence the willingness of management accountants to perform specific tasks, even if they are described as undesirable, old-fashioned dirty-work tasks. Beyond that, it is interesting to learn whether management accountants in corporate practice share this view on the attractiveness and likeability of tasks or if some individuals discover a meaning in the performance of these tasks overriding the stereotypes of the profession. These findings are helpful for members of the management-accounting profession, their supervisors, and also researchers, as they provide insights into whether or not all management accountants want to avoid dirty-work tasks in general and, thus, aim for more prestigious roles such as the business partner.

Moreover, in a second step, we investigate whether management accountants with certain personality traits and specific attitudes take on more dirty-work tasks. First, we take the intrinsic motivation of employees into account and predict that the more management accountants like dirty-work tasks, the more frequently they are doing dirty work. Therefore, we focus on the inherent characteristics of the tasks as a source of intrinsic motivation. Second, we focus more on the employee's characteristics and, thus, look at two different types of personalities, namely independent personalities and interdependent personalities. The independent personality type is a self-contained unit, an independent individual with unique strengths and weaknesses. Individuals of the interdependent personality type define themselves through relationships with people in their environment and assume that their strengths only fully unfold in interaction with others (Markus & Kitayama, 1991). Since this basic attitude of people also impacts their behavior in the workplace, we predict that the personality type affects how often management accountants perform dirty work. Finally, we examine the effect of management-accountants' career ambitions on the performance of dirty work to consider another facet of the management-accountant's personality. Here we focus on career ambitions because doing the dirty work might give management accountants a strategic advantage regarding career decisions. After a sufficient theoretical discussion, we assume counterintuitively that the stronger management-accountant's career ambitions are, the more they perform dirty work.

To test our hypotheses, we conducted two cross-sectional surveys: The first to determine a common understanding of dirty-work tasks, which was needed as a suitable basis for the main study. Building on these results of the pre-study, we collected the necessary data for the main

analysis in a second survey. The goal of the first online-based survey was to find out whether management accountants in corporate practice share the assessments of the theorists about dirty-work tasks and, thus, to check whether we can use parts of an existing scale by Fourné et al. (2018) on tasks in management accounting to analyze dirty work. The results of the pre-study support our assumption that tasks mainly related to the role of the bean counter are assessed as less attractive, popular, and prestigious and, consequently, can be used as a scale for dirty work. Within the second, more extensive survey, we collected data relating to dirty-work tasks as well as to other relevant concepts such as personality type, career ambitions, and demography.

Using a linear regression model to analyze the data from the second survey, we find evidence that the investigated factors influence the performance of dirty work: The personality type of management accountants, their career ambitions, and if they like a task. Thus, we find support for our hypotheses. Moreover, in an additional analysis, we investigate whether career ambitions moderate the relationship between personality types and the performance of dirty-work tasks. Here, we find that interdependent personalities with high career ambitions perform more dirty-work tasks.

Our study is the first to follow a quantitative approach to investigate dirty work in management accounting. We developed an approach that can be used to conduct future quantitative research in this area. With this work, we contribute to closing this research gap and linking the work of different researchers (Endenich & Trapp, 2021; Heinzelmann, 2018; Morales & Lambert, 2013). By quantitatively demonstrating what Heinzelmann (2018) names and Endenich and Trapp (2021) take up, namely that some of the core tasks of management accounting are also perceived as dirty work, we can show that the dirty-work phenomenon that Morales and Lambert (2013) initially identify in management-accounting's collaboration with other departments also exists in the core-task field of the profession. Accordingly, the extension of the sociological dirty-work concept to management accounting can be justified. However, considering our findings on the importance of the tasks and the frequent performance of the tasks, we recommend a deeper discussion on the relatively negative evaluation of the tasks considered dirty work. Furthermore, we add a new facet to the existing theoretical discussion about management-accounting role models and tasks by examining the motivation for performing supposedly unattractive tasks. In doing so, we find that some management accountants' subjective assessment of tasks can deviate from the collective opinion, which is



also prevalent in academia. Thus, the supposed dirty work can be quite valuable and meaningful for the individual employee. These findings counteract the existing, sometimes derogatory, role-model stereotypes. In addition, our study provides insights into what influence the personality of management-accounting employees may have, enabling a more thoughtful team composition and giving possible reasons behind work- and team-related behaviors.

The remainder of the paper is organized as follows: Section 2 presents the theory and hypotheses development. Afterward, section 3 shows the method, the descriptive results of the two survey studies, and the scale development. Section 4 summarizes the results of the main study and the additional analysis. Section 5 concludes.

## **6.2. Theory and Hypothesis Development**

### ***6.2.1. Dirty-Work Tasks***

According to the concept developed by Hughes (1951), tasks represent dirty work if they are considered as “disgusting or degrading” (Ashforth & Kreiner, 1999, p. 413) because the tasks do not fit in the profession’s role understanding of the job. Thus, dirty work arises, when self-perception and external perception of a profession are not congruent. Consequently, employees prefer the most prestigious tasks and try to delegate other tasks to increase the reputation of their profession (Hughes, 1951; Morales & Lambert, 2013). Morales and Lambert (2013) have applied the concept of dirty work to the context of management accounting. Hence, the term dirty work describes all tasks that most management accountants perceive as unattractive, unpopular, or not prestigious. This assessment of tasks is comparable to the prevailing description of the tasks and the overall image of the bean counter (Endenich & Trapp, 2021; Fourné et al., 2018; Heinzelmann, 2018; Janin, 2017). Therefore, we assume that bean-counter tasks can be understood as dirty-work tasks.

Fourné et al. (2018) examine the common role models of management accountants and develop scales for these roles. The scales are based on the respective tasks of the role models. Specifically, the authors assign the following activities to the role of the bean counter: Reviewing system interfaces, correcting incorrect entries in the organization’s financial system, collecting and preparing data to create reports, updating the organization’s cost-center schedules, working with other departments to find input errors in the financial system, training others in making correct entries in the financial system. Although these tasks are considered less attractive and unpopular, the tasks are likely very important for the company because they

typically represent the basis for other, more important tasks. Managers are thus faced with the challenge of ensuring that these unpopular activities are performed by management accountants. Moreover, we argue that the tasks are not only performed out of a sense of duty, but that their performance can have a broader meaning for the individual management accountant.

Against this background, we investigate different determinants of management-accountants' performance of dirty work. First, we examine whether certain personality types are more likely to perform dirty-work tasks. In this connection, we refer to the concept of independent and interdependent personalities according to Markus and Kitayama (1991). Further, we assume that the fact whether or not management accountants like their tasks has an influence on the frequency in which they perform them. Thus, we expect that there are still management accountants who are performing these tasks and even enjoy doing them. Finally, we consider career ambitions an important determinant of the performance of dirty work since ambitious management accountants might perform these tasks out of strategic considerations.

### ***6.2.2. Liking Dirty-Work Tasks***

Our first hypothesis examines whether management accountants who like dirty-work tasks do them more often. To do this, we first focus on the characteristics of the tasks themselves. In a professional context, employees do many tasks because they have to, as these tasks are part of their job description. In this regard, they depend on the job to make a living. Despite this external source of motivation, employees are also often driven by a personal interest in doing specific work. These employees are intrinsically motivated, enjoy their work and perceive it as satisfying (Amabile et al., 1994; Amabile, 1997). Following Hackman and Oldham (1976) and their widely used model on job characteristics of work motivation (Humphrey et al., 2007; Morgeson & Humphrey, 2006; Yitzhak & Ferris, 1987), work motivation increases when the work or the individual tasks have several core characteristics. These core characteristics include the range of competencies that employees have to use to solve the task, the awareness of the task's purpose, and the importance and meaningfulness of the task. The degree of autonomy in performing a task also plays an important role for employees. The higher the degree of autonomy is, the more responsible employees feel for the outcome of the task. Furthermore, a feedback culture ensures that employees are informed about the results of their work. All of these factors influence the mental state of the employees performing the tasks and determine the degree of motivation, the quality of work that is delivered, and the degree of job satisfaction

in general (Hackman & Oldham, 1976). As a result, this task-focused concept illustrates that characteristics of the tasks themselves can have a motivational effect on employees.

Applying this concept to dirty-work tasks, it becomes clear that dirty-work tasks exhibit some of these core characteristics which may increase the work motivation of at least some management accountants (Hackman & Oldham, 1976; Morgeson & Humphrey, 2006). First, the tasks that are typically referred to as dirty-work tasks have existed for a long time and are part of the daily work of many management accountants; they are therefore familiar with the tasks and able to process them professionally. In addition, the tasks differ greatly from each other, so different competencies are required (Morgeson & Humphrey, 2006). At the same time, dirty-work tasks have a limited scope and their importance in the company is undisputed. Hence, employees performing these dirty-work tasks are likely to feel they have done something meaningful for the company, even if not in the role of a business partner. According to Barrick et al. (2013), this means that one of the key drivers for intrinsic motivation – meaningfulness – is present. Moreover, and especially in contrast to the consulting role, which often goes hand in hand with collaboration in a team and where decisions are made jointly, many of the dirty-work tasks provide employees with a high degree of autonomy such that the people performing the tasks feel responsible for the results of their work. Although in some cases this might be perceived as a burden, it makes the work – in fact – more attractive in most cases (Barrick et al., 2013; Breugh, 1985; Humphrey et al., 2007). Finally, due to the nature of the dirty-work tasks, employees typically receive a fast and positive feedback to their work. That way they know that their work is appreciated (Morgeson & Humphrey, 2006).

Accordingly, the inherent design of dirty-work tasks lets these tasks appear attractive to some management accountants and are thus gladly taken over due to a high intrinsic motivation. As a result, it is that reasonable that at least some management accountants like to perform dirty-work tasks. Further, we assume that the management accountants who like dirty-work tasks also do them more often. We therefore derive the following hypothesis:

*H1: The more management accountants like dirty-work tasks, the more they perform dirty-work tasks.*

### **6.2.3. Personalities of Management Accountants**

Besides the inherent characteristics of tasks, there are several other reasons, as e.g., social or environmental aspects, affecting the motivation of employees to do several tasks (Humphrey

et al., 2007). In addition, also the personality of the employees determines their attitudes towards their work (Staw & Ross, 1983). Thus, the second hypothesis takes on a more employee-focused perspective and investigates the effect of independent vs. interdependent personalities on the performance of dirty-work tasks. This concept categorizes individuals into those individuals who define themselves by their own characteristics and attributes (independent personalities) and those individuals who define themselves primarily by their relationships with others (interdependent personalities) (Markus & Kitayama, 1991). And although, in principle, all individuals may fit into both categories, one type of personality – either independent or interdependent – always dominates (Singelis, 1994; Triandis et al., 1988). Since types of personality differ greatly, the exact form and expression of personality – among other things – also depend on socialization (Guan et al., 2011; Singelis, 1994).

Personality is predisposed (Taggar & Parkinson, 2007) and influences all actions and the behavior of a person (Cross & Madson, 1997; Heine et al., 1999; Ziller, 1974). Thus, employees' personalities also affect their behavior in their working environment. In management accounting it is not so much the origin of the personality of the employees per se that is important, but how their personality affects their behavior and actions (Taggar & Parkinson, 2007).

As Triandis (1989) shows, there is a lot of evidence for the link between personality and behavior and, furthermore, also for the influence of self-definition on behavior (Cross & Madson, 1997; see also Gollwitzer et al., 1982). For example, Triandis et al. (1988) examine the extent to which personality influences social behavior. For this purpose, they rely on the culture concept of individualism and collectivism (Hofstede, 1980). Here, personality influences the cooperation in groups in such a way that collectivists behave more cooperatively, whereas independent personalities try to separate themselves from the group (Singelis, 1994; Wagner III, 1995). Due to the similarity between the concept of individualism and collectivism on the cultural level, on the one hand, and the concept of self-construal (independent and interdependent personalities) on the individual level, on the other hand (Cross et al., 2011; Heinz et al., 2013; Watkins et al., 2003), we assume that similar effects can also be found for independent and interdependent personalities. Hence, we discuss possible effects of the personality types on the performance of dirty work in the following.

Independent personalities define themselves by setting themselves apart from others (Markus & Kitayama, 1991). They derive their self-esteem mainly from their uniqueness and

trust in themselves and their own abilities (Cross & Madson, 1997; Singelis, 1994). It can therefore be assumed that they also do so in the work environment and, thus, try to stand out from their colleagues (Cross et al., 2011) and align their activities with their own interests (Hui & Triandis, 1986). In this regard, more independent personalities tend to pursue their own goals (Cross & Madson, 1997; Wu et al., 2018). Moreover, independent individuals are considered more skilled at setting and pursuing goals and, in general, they make greater progress in achieving them (Downie et al., 2006). Achieving personal goals is, thus, very important for independent people and is understood as an expression of uniqueness and differentiation. In contrast, relationships with others such as their work colleagues have less priority for independent employees. Accordingly, they are likely to take the initiative and do things on their own (Claes & Ruiz-Quintanilla, 1998; Wu et al., 2015). Instead, independent personalities only collaborate with their colleagues if they cannot achieve their own personal goals without help (Cross & Madson, 1997; Wagner III, 1995).

Based on these considerations, it is possible that independent personalities, on the one hand, are likely to reject dirty-work tasks because they are not considered particularly suitable to shine with (Endenich & Trapp, 2021). On the other hand, it is also possible that independent personalities aim at distinguishing themselves by doing all the work on their own. Thus, they may perform dirty work if this is part of another, more important activity and serves their goal of mastering this activity. By doing everything on their own, even the dirty work, they do not have to rely on the help of others. As a result, they maintain their independent operating mode. Accordingly, independent personalities could do dirty-work tasks out of a necessity and not, because they like it.

In contrast, interdependent individuals define themselves primarily by the relationships they maintain with others (Markus & Kitayama, 1991). Accordingly, for interdependent individuals, e.g., harmony within the groups in which they move is very important (Guan et al., 2011). Interdependent personalities' behavior is decisively shaped by these principles: Their actions are guided by the needs and goals of their group (Cross & Madson, 1997; Triandis et al., 1988). Thus, interdependent personalities tend to subordinate their personal goals to their team's goals and focus on the group rather than on personal goals (Diener et al., 2009). Moreover, they try to integrate themselves optimally into the group structure and contribute to the group's success from which they personally benefit (Cross & Madson, 1997). Other than

independent personalities, interdependent personalities derive their self-enhancement from close relationships and the well-being of others.

Against this background, interdependent personalities may be more likely to do dirty work because it belongs to the management-accounting-team's tasks and they carry out the unloved dirty work, as they consider it a work relief for their colleagues and a contribution to group harmony and group success. In contrast, independent personalities may focus on more prestigious and attractive tasks because they want to enhance the image of their profession and their work team which would lead to a lower performance of dirty-work tasks.

Taken together, there are arguments for both personality types in favor of more dirty-work-task performance but also arguments against it. We therefore assume that personality has an influence; but the question which arguments predominate remains open. Therefore, we conclude derive the following, undirected hypothesis:

*H2: The personality types of management accountants influence their performance of dirty-work tasks.*

#### **6.2.4. Management-Accountant's Career Ambitions**

Finally, the third hypothesis examines if the performance of dirty work may also depend on the career ambitions of employees, as a career is considered a way of expressing one's personality (Grey, 1994; Judge & Kammeyer-Mueller, 2012; Wu et al., 2018). Career ambition unites two aspects: The personal desire to make a career and an achievement orientation (Otto et al., 2017). The desire to make a career is very personal including the wish to highlight one's own performance and set oneself apart from others. To achieve this goal, people are usually prepared to show a high level of commitment.

The majority of people understand the term "making a career" in such a way that they move vertically in the hierarchy (Arthur et al., 2005; Metz, 2004; Ng et al., 2005). Accordingly, the wish to make a career means that employees want to optimize their position within or outside of the company. Literature describes various ways in which employees can make a career. For example, employees may compete for promotions among each other, and, thus, have to convince with a good performance. In addition, there is a theory in which the career progress depends on the advocacy of a higher-ranked person (Ng et al., 2005). Accordingly, the fulfilment of career ambitions depends on various factors. As a result, those who have

career ambitions must work for themselves (Crant, 2000) and must adapt to specific situations in their company to realize their career ambitions. Usually, there is no third party that pushes forward career plans of the individual (Kumra & Vinnicombe, 2008; Sylva et al., 2019). Nevertheless, active involvement alone is not enough to realize career aspirations; the decisions of third parties are also important. As a result, others, especially superiors and those who decide on promotions in the company, take a central position when it comes to realizing career ambitions (Grey, 1994). Regardless of the specific situation, Kumra and Vinnicombe (2008) find that it is important to promote oneself in the process to ensure that the decision makers are aware of it.

Hence, to enhance personal career prospects, career-ambitious employees are likely to act strategically and try to signal decision-makers that they are the right person for a targeted position (Sylva et al., 2019). In doing so, they often show a high level of commitment to demonstrate what performance they are capable of. Hereby, commitment and effort serve as a signal of the individual's abilities (Dewatripont et al., 1999; Miklós-Thal & Ullrich, 2016).

As a result, there are different attitudes of career-ambitious management accountants thinkable: On the one hand, intuitively, it is imaginable that career-ambitious employees tend to avoid tasks considered as dirty work and try to do more of the shiny, not-dirty-work tasks to emphasize their ambitions and show their commitment. As those tasks are the more future-oriented ones, they are more in line with the position sought. On the other hand, it is conceivable that career-ambitious management accountants perform dirty-work tasks out of strategic considerations but do not necessarily enjoy them. As mentioned before, dirty-work tasks are often the basis for not-dirty-work tasks. Thus, it is plausible that employees tend to do them by themselves to ensure that the tasks have been adequately addressed and provide a reliable basis for subsequent tasks. Besides, it can be assumed that the employees in question also perform these activities to demonstrate their capability and efficiency and to offer arguments for career advancement. Taken together, we expect counterintuitively that career-ambitious management accountants are more likely to acknowledge the relevance of dirty-work tasks for their career development and hence perform those tasks instead of only focusing on not-dirty-work tasks. Hence, we expect that stronger career ambitions lead to a higher level of effort and, thus, to a higher performance in dirty-work tasks. We therefore state the following hypothesis:

*H3: The stronger management-accountant's career ambitions, the more they perform dirty-work tasks.*

### **6.3. Research Method**

To investigate the hypotheses, we adopted a two-stage research design. To this end, two survey studies were conducted from September to October 2021 (pre-study) and from December 2021 to January 2022 (main study). We use the pre-study to develop and validate a scale for dirty-work tasks. The main study collects data for the investigation of our hypotheses.

#### **6.3.1. Pre-Study**

Since, so far, dirty work in the field of management accounting has only been researched using qualitative methods (Endenich & Trapp, 2021; Morales & Lambert, 2013), there is no scale for dirty-work tasks available. Thus, we decided to use an existing scale that was designed to measure role models of management accountants (Fourné et al., 2018), and to reinterpret the items. In order to validate our reinterpretation of the scale, we conducted a survey among management accountants. The aim of this first study was to find out whether management accountants share the assumption that bean-counter tasks are dirty-work tasks and thus the idea underlying our reinterpretation. In doing so, we followed the regular process of scale development.

As a first step of scale development, it is necessary to define the focused construct (Lillis & Mundy, 2005). Accordingly, we first conducted an extensive literature analysis in which we considered the construct of dirty work on the one hand and a transfer to the tasks of management accounting on the other hand. To do this, we first had to define which tasks are generally regarded as management-accounting tasks. We decided to use the tasks that Fourné et al. (2018) identified in their study, as these have been thoroughly developed and tested and are therefore of high quality. At the same time, the authors also assigned the tasks to existing role models, namely scorekeeper (which we call bean counter), business partner and watchdog. This, again, is helpful for our purpose, as other authors have used these role models to divide management-accounting tasks into dirty-work tasks and not-dirty-work tasks (Endenich & Trapp, 2021; Heinzlmann, 2018). Based on this, we then decided to use the 17 tasks, each with an item described, as a basis for our dirty-work scale.<sup>2</sup>

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<sup>2</sup> A full list of all items can be found in Appendix A1.



In a second step, the applicability of the dirty-work understanding of the 17 tasks according to Morales and Lambert (2013) and Heinzemann (2018), as well as Endenich and Trapp (2021) was tested in a survey. Here, a random order was chosen to present the items on the questionnaire to make it difficult to draw conclusions about linked role models. Within this first survey, respondents were asked to assess the typical management-accounting tasks in terms of four attributes (attractiveness, popularity, prestige, importance). The assessments were made on a five-point Likert scale (e.g., 1 – “not attractive” to 5 – “very attractive”). The goal of this first study was to find out if there is a consensus among management accountants about which tasks are considered dirty work. We assume that dirty-work tasks are assessed as relatively unattractive, unpopular, and unprestigious in comparison to not-dirty-work tasks. As far as task importance is concerned, we assume that dirty-work tasks are as important as not-dirty-work tasks.

Target group for the first survey were management accountants from corporate practice who are well acquainted with management-accounting tasks. The call for participation was made via posts in social networks in a professional context (e.g., *LinkedIn*, *XING*), an anonymous participation was nevertheless ensured. Additionally, the survey was referred to in newsletters for management-accounting professionals. Participation was only possible online via a link to the *Unipark* platform. The participants were offered a donation of €5 to a non-profit organization as a compensation for their participation.<sup>3</sup> Since the effectiveness of donations as an incentive has been sufficiently studied, we have chosen this solution for our survey (Fourné et al., 2018).

In a six-week period from September to October 2021 a total of 47 subjects participated. Two responses were excluded from the sample for further analysis because of too many missing values. An analysis of the participants shows that they are mostly male (64%) and on average 38 years old. In addition, 67% have a university degree with a master’s degree or a diploma, and about nearly half of the participants occupy a management-accountant leadership position (47%). On average, the participants have been working for more than eight years for their current employer (8.33 years). Thus, it can be assumed that they are well acquainted with

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<sup>3</sup> We did not make an automatic donation for each completed questionnaire, because each donation requires us to collect the name of the donator, i.e. participant, in order to process the donation in a legally correct manner. Donating and thus providing the name was therefore voluntary. A total of 40 respondents took up the offer.

the job of management accountants and thus fit into the target group. Table 1 gives a detailed overview about our sample.

**Table 1. Characteristics pre-study sample.**

<b>Description</b>	<b>Frequency</b>	<b>Percentage of sample</b>
<i>Sex</i>		
Female	16	36
Male	29	64
<i>Age (in years)</i>		
20-30	10	22
31-40	13	29
41-50	17	38
51-60	4	9
>61	1	2
<i>Highest level of education</i>		
University entrance qualification	2	4
Technical/business economist/comparable	6	13
University studies with bachelor's degree	4	9
University studies with master's degree or diploma	30	67
Doctorate	3	7
<i>Company affiliation (in years)</i>		
0-5	23	51
6-10	6	13
11-20	10	22
21-30	5	11
31-40	1	2
<i>Respondents' function</i>		
Managing Director/CEO	1	2
Director of Management Accounting	12	27
Management Accounting Team Lead	8	18
Management Accountant	23	51
Other	1	2

*Note:* The percentages may not add up to 100% due to rounding. (n=45).

The results of a descriptive analysis indicate that the participants basically share our assumptions regarding the division into dirty-work and not-dirty-work tasks. An evaluation of the mean values, presented in Table 2, indicates that the respondents rate tasks that are related to the bean-counter role lower in terms of attractiveness, popularity, and prestige than the other tasks on the list; but not in terms of importance. These results show that the so-called bean-counter tasks will likely be part of the job in the foreseeable future. Moreover, the results are a first indication that we can use the existing scale on management-accounting tasks and role models to test our hypotheses on dirty work. To further assess the validity of our dirty-work definition, the sample was checked for its suitability using an exploratory factor analysis (EFA). The evaluation of the correlation matrix and the application of the Bartlett Test ( $p=0.000$ ) and Kaiser-Meyer-Olkin (KMO) criterion ( $>0.5$ ) showed that the data are suitable for EFA (Hair et al., 2019; Kaiser, 1960). Hence, we carried out a principal component factor analysis (PCF), which resulted in several factors with an Eigenvalue above the common

threshold (>1). Consequently, a rotation was necessary to ease the interpretation of the results. After an orthogonal rotation (VARIMAX), factors were extracted. For this purpose, different criteria were applied (Latent Root Criteria, Percentage of Variance Criterion, Scree Test and Parallel Analysis) (Hair et al., 2019).

**Table 2. Pre-study - mean values management accounting tasks.**

Item	N	Mean	SD	Var	Min	Max
task1						
<i>attractiveness</i>	45	3.76	0.88	0.78	1	5
<i>prestige</i>	45	3.07	1.23	1.52	1	5
<i>popularity</i>	45	3.18	1.09	1.19	1	5
<i>importance</i>	45	4.31	0.73	0.54	2	5
task2*						
<i>attractiveness</i>	45	2.89	1.25	1.56	1	5
<i>prestige</i>	45	2.38	1.01	1.01	1	5
<i>popularity</i>	45	2.73	1.05	1.11	1	5
<i>importance</i>	45	4.42	0.78	0.61	2	5
task3						
<i>attractiveness</i>	45	3.53	0.92	0.85	2	5
<i>prestige</i>	45	3.38	1.05	1.10	1	5
<i>popularity</i>	45	3.31	1.04	1.08	1	5
<i>importance</i>	45	4.27	0.62	0.38	3	5
task4*						
<i>attractiveness</i>	45	2.47	1.20	1.44	1	5
<i>prestige</i>	45	2.24	1.17	1.37	0	5
<i>popularity</i>	45	2.84	1.15	1.32	1	5
<i>importance</i>	45	4.18	0.89	0.79	2	5
task5*						
<i>attractiveness</i>	45	3.24	0.88	0.78	1	5
<i>prestige</i>	45	3.20	0.87	0.75	1	5
<i>popularity</i>	45	3.36	0.93	0.87	1	5
<i>importance</i>	45	4.02	0.72	0.52	2	5
task6						
<i>attractiveness</i>	45	3.98	0.87	0.75	2	5
<i>prestige</i>	45	3.53	1.06	1.12	1	5
<i>popularity</i>	45	3.89	0.91	0.83	2	5
<i>importance</i>	45	4.24	0.65	0.42	3	5
task7						
<i>attractiveness</i>	45	3.73	0.99	0.97	1	5
<i>prestige</i>	45	3.40	1.01	1.02	1	5
<i>popularity</i>	45	3.67	1.02	1.05	1	5
<i>importance</i>	45	4.27	0.62	0.38	3	5
task8*						
<i>attractiveness</i>	45	2.44	0.92	0.84	1	4
<i>prestige</i>	45	2.38	0.89	0.79	1	4
<i>popularity</i>	45	2.51	0.89	0.80	1	4
<i>importance</i>	45	3.62	0.94	0.88	2	5
task9						
<i>attractiveness</i>	45	3.20	0.79	0.62	2	5
<i>prestige</i>	45	3.22	0.88	0.77	2	5
<i>popularity</i>	45	3.42	0.87	0.75	2	5
<i>importance</i>	45	4.00	0.74	0.55	2	5

**Table 2. Pre-study - mean values management accounting tasks (continued).**

Item	N	Mean	SD	Var	Min	Max
task10						
<i>attractiveness</i>	45	4.20	0.94	0.89	2	5
<i>prestige</i>	45	3.96	1.04	1.09	2	5
<i>popularity</i>	45	4.02	0.94	0.89	2	5
<i>importance</i>	45	4.02	0.94	0.89	2	5
task11						
<i>attractiveness</i>	45	3.40	1.01	1.02	1	5
<i>prestige</i>	45	3.29	0.97	0.94	1	5
<i>popularity</i>	45	3.40	0.89	0.79	2	5
<i>importance</i>	45	3.49	0.92	0.85	1	5
task12*						
<i>attractiveness</i>	45	2.29	1.10	1.21	1	5
<i>prestige</i>	45	2.22	1.13	1.27	1	5
<i>popularity</i>	45	2.51	1.12	1.26	1	5
<i>importance</i>	45	3.89	0.88	0.78	1	5
task13						
<i>attractiveness</i>	45	3.76	0.98	0.96	2	5
<i>prestige</i>	45	3.67	0.85	0.73	2	5
<i>popularity</i>	45	3.47	1.12	1.25	1	5
<i>importance</i>	45	3.91	0.82	0.67	2	5
task14						
<i>attractiveness</i>	45	4.04	0.77	0.59	3	5
<i>prestige</i>	45	3.84	0.82	0.68	2	5
<i>popularity</i>	45	3.91	0.87	0.76	2	5
<i>importance</i>	45	4.11	0.86	0.74	2	5
task15						
<i>attractiveness</i>	45	4.11	1.03	1.06	2	5
<i>prestige</i>	45	3.82	1.11	1.24	1	5
<i>popularity</i>	45	4.00	1.09	1.18	1	5
<i>importance</i>	45	4.27	0.81	0.65	2	5
task16*						
<i>attractiveness</i>	45	2.04	1.04	1.09	1	4
<i>prestige</i>	45	1.93	0.96	0.93	1	4
<i>popularity</i>	45	2.31	1.10	1.22	1	5
<i>importance</i>	45	3.82	1.03	1.06	1	5
task17						
<i>attractiveness</i>	45	3.07	0.78	0.61	1	5
<i>prestige</i>	45	3.04	0.77	0.59	1	5
<i>popularity</i>	45	3.18	0.72	0.51	2	5
<i>importance</i>	45	3.84	0.67	0.45	3	5

Note: Tasks marked with an asterisk are tasks belonging to the bean-counter role model and are labelled as dirty-work tasks.

In general, several factors were created per category (attractiveness, popularity, prestige, importance). In each category, the first two factors stood out in particular, characterized by high Eigenvalues. A comparison across all four categories showed that one of these factors always contained four to five not-dirty-work tasks while a second contained between three to five dirty-work tasks. In each category, the item *task5* is not associated with a dirty-work factor although this item describes a task that is related to the bean-counter role in the study of Fourné et al. (2018). Specifically, *task5* refers to the collection of data on operational processes that

shall be included within periodic reports. Hence, this task may not necessarily be considered dirty work even if it belongs to the role of the bean counter.

In order to be able to use the results further, the quality of the investigation was thoroughly checked: Regarding the Eigenvalue and Cronbach's Alpha, a sufficient construct validity is given. To further ensure statistical significance, only items with a factor loading >0.6 were included (MacCallum et al., 2001), meaning a sufficient reliability. Thus, the results show that the goal of the first survey has been achieved. The results of the suitability check and the factor analysis are presented in Table 3.

**Table 3. Results of factor analysis pre-study.**

<b>1. Check: Preconditions for exploratory factor analysis</b>								
	<b>Attractiveness</b>		<b>Popularity</b>		<b>Prestige</b>		<b>Importance</b>	
Correlation determinant		0.000		0.000		0.001		0.001
Kaiser-Meyer-Olkin criteria		0.566		0.617		0.577		0.522
Bartlett's test of sphericity		0.000		0.000		0.000		0.000
<b>2. Exploratory factor analysis</b>								
<b>Factor 1</b>								
Eigenvalue		2.94		2.66		2.87		2.27
Cronbachs A.		0.8228		0.7732		0.8118		0.7429
Items/ Factor loadings	task15	0.8753	task15	0.8915	task15	0.8769	task15	0.7593
	task10	0.8006	task10	0.8090	task10	0.8693	task10	0.8451
	task13	0.7458	task14	0.6889	task13	0.7348	task11	0.6631
	task11	0.7311	task6	0.5721	task14	0.6557	task14	0.7365
	task14	0.6626	task11	0.6394	task11	0.6168		
<b>Factor 2</b>								
Eigenvalue		2.15		2.70		2.57		1.97
Cronbachs A.		0.7012		0.8393		0.7598		0.7274
Items/ Factor loadings	task16*	0.8536	task4*	0.8529	task4*	0.7186	task4*	0.7652
	task12*	0.7942	task12*	0.8883	task12*	0.7996	task12*	0.9146
	task8*	0.7809	task2*	0.8148	task16*	0.7089	task16*	0.7443
	task6	-0.4235	task16*	0.7230	task2*	0.6219		
					task8*	0.7268		
<b>Factor 3</b>								
Eigenvalue		1.94		1.53		1.49		1.59
Cronbachs A.		0.7264		0.6909		0.6569		0.5085
Items/ Factor loadings	task9	0.7851	task17	0.8752	task1	0.8631	task17	0.8003
	task5*	0.8305	task5*	0.8752	task3	0.8631	task8*	0.7594
	task17	0.7967					task13	-0.6105
<b>Factor 4</b>								
Eigenvalue		2.177		1.286		1.884		1.52
Cronbachs A.		0.7153		0.4178		0.5831		0.5176
Items/ Factor loadings	task3	0.7599	task13	-0.8019	task9	0.5645	task6	0.5658
	task2*	0.7610	task1	0.8019	task5*	0.8215	task7	0.5746
	task4*	0.7698			task17	0.7204		
	task7	0.6546			task7	0.5727		

**Table 3. Results of factor analysis pre-study (continued).**

<b>3. Determination of number of factors (recommended number of factors)</b>				
Latent Root Criterion	4	4	4	4
Percentage of Variance	4	4	4	4
Criteria				
Scree Test	3	3	3	3
Parallel Analysis	3	3	3	3

*Note:* Tasks marked with an asterisk are tasks belonging to the bean-counter role model and are labelled as dirty-work tasks. For better comparability of the factors, the order of factors 1 and 2 in the category popularity was swapped.

Altogether, the result shows a clear separation of dirty-work tasks from the other, not-dirty-work tasks. Thus, we find that also in the perception of management accountants in corporate practice some tasks are perceived as less attractive, less popular and less prestigious than not-dirty-work tasks. The results of the first survey thus support our assumption that the existing management-accounting tasks can be divided into dirty work and not-dirty-work tasks. Nevertheless, we also find that dirty-work tasks are as important as not-dirty-work tasks. To further investigate the importance of the tasks, we calculate the mean scores of the respective items of the first two factors we derive for the category “importance”. Comparing the mean scores, we find no significant difference between the mean of dirty-work tasks and the mean of not-dirty-work tasks ( $t = 0.08$ ,  $p = 0.94$ , two-tailed, not tabulated).

### **6.3.2. Main Study**

#### *6.3.2.1. Sample and Procedure*

In order to examine the effect of management-accountants’ traits and attitudes on their performance of dirty work, we conducted our second survey among 2000 large German companies over an eight-week period from December 2021 to January 2022. For sampling, we used the data provided by the *Dafne* database by Bureau van Dijk. Our three selection criteria of (1) firm solvency, (2) an annual revenue of at least €50 million, and (3) the latest account date between 2017 and 2020 yielded a total of 11,319 companies. We randomly selected 2,000 companies and sent out paper-based questionnaires by letter post. The target group for the survey were the “Controllers”/management accountants at all hierarchical levels of the

companies.<sup>4</sup> Respondents were invited to participate in the survey online via *Unipark* platform, or to return the paper questionnaire by letter post, fax or e-mail. In order to maximize the number of participants, a reminder was e-mailed to the companies after four weeks (Posch, 2020; Sivabalan et al., 2009). As an incentive for the participation, we offered a report on the results of the study and the possibility to donate €10 per finished questionnaire to a German charity organization.<sup>5</sup> A total of 182 management accountants returned the questionnaires, yielding a response rate of 9.1%. One data set had to be excluded due to too much missing information. This implies a promising overall data quality with only minor losses due to poor questionnaires.

Of the 181 participants in the second survey, 69% are male, 94% have a university degree and 57% currently work as managers with personnel responsibility in management accounting. It can therefore be assumed that they are well acquainted with the tasks involved in management accounting. Only 3% of the respondents work alone; the vast majority (97%), however, is familiar with working in a team, which in the case of 75% of the respondents includes between 2 and 10 employees. 95% of the respondents have been employed in this team for more than one year, 22% between 5-10 years, and 19% even longer than 10 years. On average, the employees have been working for their company for 11 years. Since the survey is strongly oriented towards the individual participants and less towards the employers, i.e. the companies behind them, only a few key figures on the company were queried. In order to classify the size of the company, the total number of employees was queried; this produced a mixed picture with a range from 2 employees to 118,000 employees, whereas 44% of the respondents work in a company with up to 500 employees.<sup>6</sup> Table 4 gives a detailed overview of descriptive information of our sample.

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<sup>4</sup> In German-speaking countries, the profession of the management accountant is often referred to as “Controller”. Since many studies show the interchangeability of the terms, we use controllers as the target group for our research (Ahrens & Chapman (2000); Wolf et al. (2020)).

<sup>5</sup> As in the pre-study, donations were not made automatically, but the respondents had to voluntarily provide their names as donors. In total, 151 participants decided to provide the information for a donation.

<sup>6</sup> Due to the large discrepancies in the number of employees, we also performed the following analyses excluding the outliers. The results remain substantially the same.

**Table 4. Characteristics main study sample.**

<b>Description</b>	<b>Frequency</b>	<b>Percent of sample</b>
<i>Sex</i>		
Female	56	31
Male	123	69
Diverse	0	0
<i>Age (in years)</i>		
20-30	24	13
31-40	60	34
41-50	52	29
51-60	40	22
>61	3	2
<i>Highest level of education</i>		
No school-leaving qualification	0	0
Elementary school diploma/secondary school diploma	0	0
Secondary school diploma/medium maturity	1	1
university entrance qualification	4	2
Completed apprenticeship/vocational training	5	3
Technical/business economist/comparable	22	12
University studies with bachelor's degree	144	80
Doctorate	3	2
<i>Number of employees</i>		
0-500	78	44
500-1000	33	19
1000-5000	35	20
5000-10000	12	7
10000-50000	20	11
>50000	0	0
>100000	0	0
<i>Legal form</i>		
German Sole Proprietorship	2	1
German Private Partnership (GbR)	0	0
German Commercial Partnership (OHG)	1	1
German Limited Partnership (KG)	4	2
German Public Limited Company (AG)	19	11
German Limited Liability Company	111	62
German Small Limited Company	2	1
Corporation/Limited Partnership	34	19
Partnership Limited by Shares	3	2
Registered Cooperative	3	2
<i>Company affiliation (in years)</i>		
<1	4	2
<5	51	29
<10	42	24
<15	36	20
<20	18	10
<30	14	8
<40	12	7
>40	1	1
<i>Type of employment</i>		
Temporary	4	2
Permanent	175	98



**Table 4. Characteristics main study sample (continued).**

<b>Description</b>	<b>Frequency</b>	<b>Percent of sample</b>
<i>Position</i>		
Upper management level (management/board of directors, ...)	7	4
Middle management level (division management, department management, ...)	73	41
Lower management level (team management, project management, etc.)	27	15
Employee in department/team	68	38
Intern/working student	1	1
Other	3	2
<i>Position affiliation (in years)</i>		
<1	8	4
<3	55	31
<5	37	21
<10	39	22
<20	28	16
<30	11	6
>31	0	0
<i>Duration until termination (in years)</i>		
<1	14	8
1-5	51	29
5-10	38	21
>10	74	42
<i>Duration of team membership (in years)</i>		
<1	7	4
1-5	96	57
5-10	39	23
>10	21	12
>20	5	3
>30	1	1
<i>Team size (Number of employees)</i>		
1	5	3
<5	61	34
<10	72	41
<15	21	12
<20	7	4
<40	10	6
>40	1	1
<i>Authority to issue instructions</i>		
Yes	102	57
No	77	43
<i>Authority to issue instructions (Number of employees)</i>		
1	14	8
<5	117	65
<10	25	14
<15	8	4
<20	6	3
<40	8	4
>40	1	1
<i>Role model</i>		
Bean Counter	16	9
Business Partner	89	51
Analyst	63	36
Data Scientist	6	3

Note: The percentages may not add up to 100% due to rounding. (n=181)

Due to the rather small sample size, there is a risk of non-response bias. We therefore performed several two-sided *t*-tests to exclude this risk (Abdel-Kader & Luther, 2006; Baines & Langfield-Smith, 2003). We conducted *t*-tests on one item of an independent variable (*career4*), a dependent variable (*doing11*), and a control variable (*sex*). These tests also excluded the possibility of differences in the data of early respondents and late respondents (Armstrong & Overton, 1977), as we divided our sample for the *t*-tests into the earliest and latest one-third of respondents based on the return date of the questionnaire. Testing all three variables for significant differences on a 10% level, we find no significant differences among the other variables and constructs. Therefore, we infer that a potential non-response bias is unlikely to affect our data.

#### 6.3.2.2. Variable Measurement

To collect the necessary data, we developed a second standardized questionnaire that covers all relevant subject areas. During the design of the questionnaire, we followed Dillman (2011) to develop a response-friendly survey. E.g., we have paid particular attention to a clean layout as well as a uniform appearance in the online and paper version. Furthermore, we translated all the required items into German, since the target group of the survey were German-speaking management accountants. To provide a sufficient quality of translation, we relied on existing translations or we used a back-translation procedure (Daniel & Reitsberger, 1991).

To ensure the reliability and validity of the variables, we used, wherever possible, established and validated scales. The final questionnaire consists of six parts – each covering one topic – which were not clearly communicated to the participants to avoid the potential problem of social-desirability bias (Speklé & Widener, 2018). For this reason, the term dirty work was also not mentioned. In the following, we describe the structure of our questionnaire and illustrate the variable measurement.

#### **Dependent variable (DOING).**

In our second survey, the findings of our first survey were used as a starting point. Specifically, by relying on our interpretation of the items from Fourné et al. (2018) that divides typical management-accounting tasks into dirty-work tasks and not-dirty-work tasks we wanted to assess the performance of dirty work by finding out how often management accountants do dirty-work tasks. Hence, we used the same 17 tasks as in the first study and asked the respondents to indicate how frequently they typically perform each of the activities

in their current position on a scale from 1 – “never” to 7 – “several times a day” (Fourné et al., 2018). For our further analysis, only the six items that were identified as dirty-work items (*task2, task4, task5, task8, task12, task16*) were merged into a variable (DOING) using factor analysis.

### **Independent and control variables.**

**Liking dirty-work tasks (LIKE).** In addition to deriving the dependent variable, we also derived an independent variable from our findings in the pre-study, which refers to the liking of dirty-work tasks. Specifically, we use the scale of management-accounting tasks developed by Fourné et al. (2018) but add another perspective to the existing scale by asking how much the respondent enjoys performing each of the activities. The provided scale ranged from 1 – “I don’t like it at all” – to 7 – “I like it very much” for this second set of questions concerning the management-accounting tasks. Again, we consider only those six items/tasks that are understood as dirty work (*task2, task4, task5, task8, task12, task16*) in a factor analysis to form the variable LIKE.

**Personality type (INDE / INTER).** To determine the personality type, we followed Wu et al. (2018) and used the existing scale from Lu and Gilmour (2007) measuring the independent and interdependent personality type. We have chosen this scale because it gives an insight into what people expect from themselves, but also into their behavior towards people in their environment, including potential colleagues at work. Based on the total of 42 items, Lu and Gilmour (2007) derive two variables, one relating to the independent tendencies and one to the interdependent tendencies. We adopt their approach and form our variables according to their procedure and, thus, create one factor per tendency. To do this, we use a factor analysis. The variable representing the independent tendencies is called INDE, the variable related to the interdependent aspects INTER.<sup>7</sup>

**Career ambitions (CAREER).** To measure the career ambitions of the respondents, we used several items from existing scales from Greenhaus (1971) and Jain and Jain (2013) in section three of the questionnaire. Our scale consists of nine items (*career1-career9*).

**Control variables.** The performance of certain tasks depends not only on the personality and career ambitions of employees. In fact, management accountants might also do dirty work

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<sup>7</sup> A full list of all items of the questionnaire can be found in Appendix A2.

because their job or the manager requires them to do so. We, therefore, included some control variables in our analysis to control for other influencing factors. The controls provide further demographic information on the respondents themselves (Baines & Langfield-Smith, 2003; Wu et al., 2018), their job in the company, and general company characteristics.

First, we include the respondents' age in years (AGE). We expect that age influences how people view their current professional situation and future and, thus, also their career ambitions (Sylva et al., 2019). It can therefore be assumed that young employees who still have their working lives ahead of them behave differently than employees of more advanced age (Amabile et al., 1994).

Second, we consider the sex of the participants (SEX). There are essential reasons for including this control variable. For example, Morley et al. (2002) show that the sexes differ in terms of job satisfaction in accounting and that women have different ideas about the requirements for promotion. Moreover, Eby and Dobbins (1997) point out that an unequal distribution of female and male participants, as is the case in our sample, could influence the regression results.

Third, we consider how long the respondents have held their position in the company in years (TENURE\_POS) because this might affect how they see their duties. For example, employees with a short tenure might feel more pressure to perform dirty work. Fourth, we include the dummy variable SUPERIOR, which takes the value one if the respondents can independently delegate tasks to others, and zero otherwise. The authority to give instructions could have an impact, as management accountants without subordinates have to do all tasks by themselves, whereas others can delegate them as they wish. This is especially relevant concerning the unpopular dirty-work tasks. Finally, we consider the total number of employees in the respondents' companies and use it as a proxy for the size of the companies (SIZE). Company size might be relevant as the division of labor and attitude towards colleagues as well as the division of tasks and career differs between employees in small and large companies (Grabner et al., 2018).

#### *6.3.2.3. Measurement Model*

Except for the scale regarding dirty work in part one of the questionnaire, we only used existing scales. This has the advantage that the scales have already been extensively tested and, if necessary, only had to be adapted a little (Bedford & Speklé, 2018). We therefore only

subjected these scales to a confirmatory analysis to check the suitability of the scales for our purposes and to confirm the results of previous studies. In each case, we tested construct validity, convergent, and discriminant validity.

To check the validity of our variables, we used specific measures, including the confirmatory factor loadings, correlations, Cronbach's alpha, composite reliability (CR), average variance explained (AVE), heterotrait-monotrait ratio (HTMT), and the Fornell-Larcker criterion. The results of the validity checks are presented in Tables 5-7. The factor analysis for the scales DOING, LIKE, INDE, and CAREER showed that only one factor emerges in each case that withstands the threshold Eigenvalue  $>1$ . A rotation is, therefore, not necessary (Hair et al., 2019). Only in the case of the factor INTER two factors with an Eigenvalue  $>1$  (factor 1 = 4.74; factor 2 = 1.28) emerge. We continue to use only one factor here since the items associated with factor 2 also have factor loadings above the required threshold for factor 1. Moreover, to check and secure the convergent validity of the scales, we dropped all items which did not exceed the threshold ( $>0.4$ ) for factor loadings in an analysis with a sample size similar to ours (Hair et al., 2019). Thus, we excluded some items in some scales. First, the item *doing5/like5* in the DOING and LIKE scales. The exclusion of this item in the DOING and LIKE variables is in line with the pre-study results. Thus, the item does not fit with the other dirty-work items. The results of the descriptive analysis of the question of which dirty-work tasks people like to do and how they like to do them also support this distinction. Moreover, we excluded a few items from the INDE scale (*inde18, inde19, inde20, inde21*) and the INTER scale (*inter1, inter2, inter9, inter10, inter20, inter21*). In the CAREER scale, only the item *career8* was excluded.

In terms of the reliability of the scales, we estimated Cronbach's alpha and CR (Cronbach, 1951; Raykov, 1997). Here, in both criteria, all used scales comply with the specified threshold of  $>0.7$  (Hair et al., 2019). Next, to evaluate the convergent validity of the constructs, we calculated the AVE for all variables (Fornell & Larcker, 1981). Due to the weak AVE values, we continued to look at the correlations between the variables, the Fornell-Larcker criterion, and the HTMT ratio of the individual variables presented in Table 6. Comparing the square-roots from the AVE per construct in relation to the correlations among all constructs, all constructs meet the Fornell-Larcker criterion, as the square-roots from the AVEs exceed the correlations (Hair et al., 2019), see Table 7. In addition, we also checked the cross-loadings of

the items and constructs (Hartmann & Slapničar, 2012). The successful completion of all tests shows sufficient discriminant validity between the constructs (Hair et al., 2019).

**Table 5. Validity-checks constructs main study.**

<b>Construct/ Indicators</b>	<b>Factor Loading</b>	<b>Cronbach's Alpha</b>	<b>Composite Reliability</b>	<b>Average Variance Extracted</b>
<i>DOING</i> (n=181)		0.7677	0.757	0.392
<i>doing2</i>	0.5427			
<i>doing4</i>	0.6972			
<i>doing8</i>	0.4253			
<i>doing12</i>	0.7272			
<i>doing16</i>	0.6871			
<i>LIKE</i> (n=181)		0.8004	0.800	0.443
<i>like2</i>	0.5657			
<i>like4</i>	0.7697			
<i>like8</i>	0.5126			
<i>like12</i>	0.7320			
<i>like16</i>	0.7090			
<i>INDE</i> (n=181)		0.8539	0.889	0.270
<i>inde1</i>	0.4226			
<i>inde2</i>	0.5180			
<i>inde3</i>	0.5343			
<i>inde4</i>	0.4952			
<i>inde5</i>	0.4562			
<i>inde6</i>	0.4998			
<i>inde7</i>	0.4887			
<i>inde8</i>	0.5844			
<i>inde9</i>	0.4151			
<i>inde10</i>	0.5512			
<i>inde11</i>	0.5891			
<i>inde12</i>	0.4988			
<i>inde13</i>	0.4921			
<i>inde14</i>	0.5324			
<i>inde15</i>	0.5829			
<i>inde16</i>	0.5185			
<i>inde17</i>	0.5912			
<i>INTER</i> (n=181)		0.8334	0.879	0.269
<i>inter3</i>	0.6044			
<i>inter4</i>	0.5131			
<i>inter5</i>	0.5240			
<i>inter6</i>	0.5452			
<i>inter7</i>	0.5203			
<i>inter8</i>	0.4030			
<i>inter11</i>	0.5083			
<i>inter12</i>	0.5672			
<i>inter13</i>	0.5674			
<i>inter14</i>	0.4210			
<i>inter15</i>	0.5390			
<i>inter16</i>	0.4858			
<i>inter17</i>	0.5145			
<i>inter18</i>	0.5148			
<i>inter19</i>	0.5149			

**Table 5. Validity-checks constructs main study (continued).**

Construct/ Indicators	Factor Loading	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
<i>CAREER</i> (n=181)		0.8299	0.865	0.412
<i>career1</i>	0.5338			
<i>career2</i>	0.7067			
<i>career3</i>	0.5582			
<i>career4</i>	0.7635			
<i>career5</i>	0.6837			
<i>career6</i>	0.7904			
<i>career7</i>	0.5463			
<i>career9</i>	0.4665			

**Table 6. HTMT ratios.**

	<i>CAREER</i>	<i>DOING</i>	<i>INDE</i>	<i>INTER</i>	<i>LIKE</i>
<i>CAREER</i>					
<i>DOING</i>	0.211				
<i>INDE</i>	0.442	0.287			
<i>INTER</i>	0.366	0.166	0.494		
<i>LIKE</i>	0.121	0.744	0.187	0.163	

**Table 7. Correlation matrix and discriminant validity.**

	<i>CAREER</i>	<i>DOING</i>	<i>INDE</i>	<i>INTER</i>	<i>LIKE</i>
<i>CAREER</i>	<b>0.6419</b>				
<i>DOING</i>	0.1895 **	<b>0.6261</b>			
<i>INDE</i>	0.3068 ***	0.2101 ***	<b>0.5196</b>		
<i>INTER</i>	0.2911 ***	0.0085	0.3107 **	<b>0.5187</b>	
<i>LIKE</i>	-0.0473	0.5217 ***	0.0540	-0.1287 *	<b>0.6655</b>

Note: Bold values in the diagonal show the square root of the average variance extracted for latent variables.

\*  $p \leq 0.1$ ; \*\*  $p \leq 0.05$ ; \*\*\*  $p \leq 0.01$ .

## 6.4. Empirical Results

### 6.4.1. Hypotheses Tests

To test our hypotheses, we used regression analysis. For the correct analysis application, several conditions relating to the data basis must be met (Hair et al., 2019). Therefore, we first performed some tests to check the suitability of the data set. We conducted a Shapiro–Wilk test to check whether the data are normally distributed. The result of the test shows that this condition is met (Ruppert, 2004). Furthermore, we checked the data basis for heteroskedasticity. Using a Breusch–Pagan/Cook–Weisberg test for heteroskedasticity, we found support that error terms are normally distributed. Moreover, we conducted a Ramsey RESET test which tests for specification errors in linear regression models. The result shows that we have not omitted any variables from the model. Furthermore, the test indicates that there are no non-linear relationships in our model. A linear regression is therefore a suitable method for our project (Ramsey, 1969). Finally, we checked the variance inflation factors (VIF) to exclude too high collinearities between the items used (Hair et al., 2019). Here, no

value exceeded the threshold of 3.0 (Fallan & Opstad, 2014). The prerequisites for a linear regression were therefore fulfilled.

We applied two models for our analysis. A first, containing all relevant variables to test our hypotheses, and a second, in which we added several control variables (AGE, SEX, SUPERIOR, TENURE\_POS, SIZE) to the model. We used this second model as a robustness check to verify the reliability of our first model (Grabner et al., 2022). Including our control variables, our regression equation is as follows:

$$DOING = \beta_0 + \beta_1 LIKE + \beta_2 INDE + \beta_3 INTER + \beta_4 CAREER + \beta_5 AGE + \beta_6 SEX + \beta_7 SUPERIOR + \beta_8 TENURE_{POS} + \beta_9 SIZE + \varepsilon$$

The regression results are presented in Table 8. Regarding the coefficient of determination ( $R^2$ ), both models show an appropriate value of 34.45% (respectively, including control variables, 34.38%). Our independent variables can, thus, explain a decent proportion of the variance of the dependent variable. Since both models show the same appropriate results, we discuss the full model below.



**Table 8. Results of linear regression analysis.**

Hypothesis (predicted sign)	Independent variable	Model 1: Main effects	Model 2: Control variables included
		Coefficient (p-value)	Coefficient (p-value)
<i>DOING</i>			
	Intercept	<b>0.007</b> <b>(0.899)</b>	<b>0.159</b> <b>(0.699)</b>
H1 (+)	<i>LIKE</i>	<b>0.519***</b> <b>(0.000)</b>	<b>0.525***</b> <b>(0.000)</b>
H2a	<i>INDE</i>	<b>0.143**</b> <b>(0.028)</b>	<b>0.127*</b> <b>(0.057)</b>
H2b	<i>INTER</i>	-0.018 (0.772)	-0.013 (0.845)
H3 (+)	<i>CAREER</i>	<b>0.118**</b> <b>(0.068)</b>	<b>0.118*</b> <b>(0.065)</b>
	<i>AGE</i>	–	-0.004 (0.581)
	<i>SEX</i>	–	0.034 (0.781)
	<i>SUPERIOR</i>	–	-0.093 (0.443)
	<i>TENURE_POS</i>	–	0.012 (0.272)
	<i>SIZE</i>	–	-2.04 (0.784)
	<i>n</i>	180	178
	<i>R<sup>2</sup></i>	0.3445	0.3438
	<i>Adj. R<sup>2</sup></i>	0.3295	0.3087
	<i>Model's chi<sup>2</sup></i>	22.99***	9.78***

Note: This table presents the results of the regressions with the dependent variable *DOING*. Bolded coefficients and *p*-values indicate *p*-values < 0.1.

\*  $p \leq 0.1$ ; \*\*  $p \leq 0.05$ ; \*\*\*  $p \leq 0.01$ .

Regarding hypothesis H1, we expect that management accountants who like dirty-work tasks do them more often. Specifically, the regression coefficient for *LIKE* is positive and significant ( $\beta = 0.525$ ,  $p < 0.01$ , two-tailed). The fact that employees like certain tasks, in this case the so-called dirty-work tasks, strongly influences whether they perform these tasks. Following the Hackman and Oldham (1976) model, this is not surprising since even dirty-work tasks in management accounting can fulfill the necessary criteria to generate intrinsic motivation and to perform the tasks.

Hypothesis H2 predicts that management-accountants' personality types are associated with the performance of dirty-work tasks. In line with our expectation, we find that the independent personality type is connected to the performance of dirty-work tasks. More precisely, we find a significantly positive relation between *INDE* and *DOING* ( $\beta = 0.127$ ,  $p = 0.057$ , two-tailed). Thus, employees with an independent personality are more likely to perform dirty-work tasks. However, we do not find a significant association between the interdependent

personality and the performance of dirty work. This finding indicates that the two personality types have different attitudes toward doing dirty work.

Finally, our hypothesis H3 predicts a positive association between career ambitions and the performance of dirty-work tasks. The empirical results support our counterintuitive prediction as the regression coefficient for CAREER is positive and significant ( $\beta = 0.118, p = 0.065$ , two-tailed). Those tasks that are considered unattractive, unprestigious, and unpopular are therefore performed more often when employees are pursuing a supposedly attractive and prestigious goal, i.e., making a career.

Concerning the included control variables, we did not find any significant effects. Thus, in our analysis, the demographic factors queried do not influence the management-accountant's performance of dirty work.

#### **6.4.2. Additional Analysis**

An often-voiced criticism of research dealing with the relationship between personality and work life is that the underlying variables for personalities only play a minor role in explaining variance since personality never acts alone, and there is always a situational context (Crant, 2000; Seibert et al., 1999; Taggar & Parkinson, 2007). To counteract this criticism, one way to show (further) significant relationships between personality and the dependent variable under study is often through interactions (Adler, 1996). Consequently, existing research shows that the queried personalities often require moderators to exert a significant influence (Wu et al., 2018). Accordingly, we also look at interactions that examine the influence of personality types on the performance of dirty-work tasks. Specifically, we interact both personality types with career ambition. That way, we can assess whether there may be heterogeneous effects of the moderator career ambitions between the personality types, as career ambitions are the personal goals of individual employees.

To facilitate the subsequent interpretation of the regression results, we first standardized the variables used in the interactions, conducting a centering method. These variables are marked by a "z" as suffix in the model (Grabner et al., 2022; Guan et al., 2011). We have reproduced our existing model with the standardized variables and incorporated the interactions. As in the main analysis, we have calculated the model once without and once including control variables. The regression results are presented in Table 9.

**Table 9. Results of linear regression analysis incl. interactions.**

Independent variable	Model 1: Main effects	Model 2: Control variables included
	Coefficient (p-value)	Coefficient (p-value)
<i>DOING</i>		
<i>Intercept</i>	<b>0.071</b> <b>(0.899)</b>	<b>0.184</b> <b>(0.654)</b>
<i>LIKE</i>	<b>0.532***</b> <b>(0.000)</b>	<b>0.536***</b> <b>(0.000)</b>
<i>INDEz</i>	<b>0.126**</b> <b>(0.040)</b>	<b>0.110*</b> <b>(0.079)</b>
<i>INTERz</i>	-0.007 (0.903)	0.001 (0.988)
<i>CAREERz</i>	<b>0.107*</b> <b>(0.061)</b>	<b>0.114*</b> <b>(0.055)</b>
<i>INDEz#CAREERz</i>	-0.084 (0.131)	-0.083 (0.15)
<i>INTERz#CAREERz</i>	<b>0.109*</b> <b>(0.090)</b>	<b>0.122*</b> <b>(0.069)</b>
<i>AGE</i>	–	-0.004 (0.538)
<i>SEX</i>	–	0.021 (0.865)
<i>SUPERIOR</i>	–	-0.090 (0.454)
<i>TENURE_POS</i>	–	0.013 (0.232)
<i>SIZE</i>	–	-1.36 (0.854)
<i>n</i>	180	178
<i>R<sup>2</sup></i>	0.3578	0.3587
<i>Adj. R<sup>2</sup></i>	0.3355	0.3162
<i>Model's chi<sup>2</sup></i>	16.06***	8.44***

Note: This table presents the results of the regressions with the dependent variable *DOING*. Bolded coefficients and *p*-values indicate *p*-values < 0.1.

\* *p* ≤ 0.1; \*\* *p* ≤ 0.05; \*\*\* *p* ≤ 0.01.

The results are similar in both cases. Therefore, we also refer to the model including control variables below. Results show that the independent personality type is, again, positively and significantly associated with the performance of dirty work ( $\beta = 0.110$ ,  $p = 0.079$ , two-tailed), while there is still no association between *INTER* and *DOING*. In contrast, we find a significant association between the interaction of *INTER* and *CAREER* and the performance of dirty-work tasks ( $\beta = 0.122$ ,  $p = 0.069$ , two-tailed) but no effect of the interaction of *INDE* and *CAREER*. Hence, the effect of an interdependent personality depends on career ambitions such that more interdependent personalities perform more dirty work when their career ambitions increase. This finding, in turn, reinforces the assumption that the performance of dirty work is intended to demonstrate willingness and commitment to the employer and that those performing it hope for a promotion.

Simultaneously, the results provide an impetus to critically question the categorization of dirty-work and not-dirty-work tasks again or at least the designations as (not-)dirty-work tasks. The findings of the first survey illustrated that there is a distinction between tasks in the two categories, but also that dirty-work tasks are mentioned as least as important as the not-dirty-work tasks for the company. Concerning the shown importance of the dirty-work tasks and the tendency of career-ambitious management accountants to do them more often, it seems as if the denomination of the tasks as dirty work is somehow too harsh and does not meet their characteristics as well as their importance for the company. In particular, the tendency that more career-ambitious management accountants do more of the dirty-work tasks supports this critique. In the original concept, management accountants would try to avoid these tasks and try to delegate them (Hughes, 1951). This behavior cannot be inferred from the results.

## **6.5. Conclusion**

The purpose of this study was to identify whether there are dirty-work tasks in the area of core management-accounting tasks and whether management accountants with certain traits and attitudes are performing these more often. To this end, we built on qualitative studies that introduce the concept of dirty work to management accounting (Morales & Lambert, 2013) and relate dirty work to typical management-accounting tasks and the role model of the bean counter (Endenich & Trapp, 2021; Heinzelmann, 2018). First, we wanted to show that the tasks associated with the bean counter can indeed be considered dirty-work tasks. The results of a survey-based pre-study show that management accountants assess bean-counter tasks as relatively unattractive, unpopular, and not prestigious but, nevertheless, important.

Based on these findings, we wanted to investigate under which circumstances management accountants perform dirty-work tasks. We argued that the management-accountants' liking of the tasks, their personalities, and their career ambitions likely motivate them to do dirty work. The results of a second survey show, in line with our expectation, that management accountants who like performing dirty-work tasks also perform these more often. With regard to personality types, we differentiate between independent and interdependent personalities (Markus & Kitayama, 1991) and find that the more independent the personality is, the more a management accountant performs dirty work. Finally, the results show that higher career ambitions lead to more performance of dirty-work tasks. An additional analysis further reveals that career concerns moderate the relation between an interdependent personality and

the performance of dirty work such that more interdependent personalities do dirty-work tasks more often when their career ambitions increase.

Our study contributes to both, theory and practice. From a theory perspective, we contribute to the research on dirty work in management accounting by linking different qualitative studies and addressing the topic quantitatively. To the best of our knowledge, we are the first to develop and validate a scale for dirty-work tasks for quantitative survey research. Moreover, we show that the (dirty-work) tasks associated with the bean-counter role model are still highly relevant. Thereby, we add to the research on role models and management-accountants' identity that often highlights the importance of the business-partner role model (Goretzki & Messner, 2018; Wolf et al., 2020). From a practical point of view, our results inform practitioners about management-accountants' traits and attitudes that motivate them to perform highly important tasks. In this regard, we also help to break down stereotypes that are widespread in practice by showing that so-called dirty-work or bean-counter tasks are very important to both the firm and (career-ambitious) employees, and for some even enjoyable. Here, our findings scrutinize the previously made equation of the bean-counter-role tasks with dirty-work tasks. Thus, by highlighting the multifaceted assessments of dirty-work tasks, our findings may even contribute to a more pleasant working environment. Finally, by showing how important the dirty-work tasks are for companies, we also demonstrate that not all management accountants have to aim for the role of a business partner. Therefore, we advocate, that it is appropriate to question the previously set denomination as "dirty-work" tasks. This, again, would also help to break down stereotypes.

As our study is based on surveys among German management accountants, it is subject to a number of limitations. First, cross-sectional survey data offer the possibilities to show relationships, but do not offer a chance to make a statement about cause and effect (Grabner et al., 2022). Besides, our low response rate in the main study is an indicator for limitation (Baines & Langfield-Smith, 2003). Moreover, we only surveyed German companies and only one employee per company. This can cause a common-method bias. Concerning the demographic structure of our samples, we find that the mean of the participants is in a leading position and works in their company for years. Thus, our sample may lack management accountants in a more junior position. It can be expected that dirty-work tasks are performed more frequently by junior management accountants. Nevertheless, we find a relevant level of dirty-work performance in our sample indicating that dirty work is not only associated with job-entry

positions. Also, our findings may only apply to the German understanding of management-accounting tasks. However, as the underlying scale developed by Fourné et al. (2018) uses universally known tasks and describes these on a rather general level, we do not consider this a major threat to the generalizability of our findings. Nevertheless, future research could examine dirty work in management accounting in other countries. Finally, we focus on dirty work in the context of traditional management-accounting tasks. When introducing the concept of dirty work to the field of management accounting, Morales and Lambert (2013) also discuss dirty work that results from the collaboration of management accounting with other departments in the firm. Thus, our research on dirty work in management accounting has a specific scope. Future research could quantitatively investigate additional types of dirty work in the management-accounting profession and thus analyze the overall fit of the dirty-work concept in the area of management accounting.

## Appendix

### A1. Questionnaire pre-study.

*How do you assess the following management-accounting tasks in terms of attractiveness, popularity, prestigious, importance?*

*Please make the assessment regardless of whether it is actually performed by yourself or by other people in your company. [Assessment individually per task and category (attractiveness, popularity, prestigious, importance) each on a 5-level Likert-scale, e.g. 1 – “not attractive” – 5 – “very attractive”.]*

---

<i>task1</i>	I analyze in what organizational units performance targets were not achieved.
<i>task2*</i>	I check whether interfaces between data systems work correctly.
<i>task3</i>	I highlight negative budget variances within official reports to ensure higher level managers notice them.
<i>task4*</i>	I correct data entry errors within the financial systems of the organization.
<i>task5*</i>	I collect data on operational processes that shall be included within periodic reports.
<i>task6</i>	I pro-actively explain to management how changes in non-financial performance measures affect profitability.
<i>task7</i>	I inform accountable managers and their superiors together about variances from budgeted targets.
<i>task8*</i>	I update cost center plans within the financial systems of the organization.
<i>task9</i>	I analyze variances between actual and planned performance of organizational units for control purposes.
<i>task10</i>	I discuss future business perspectives with management.
<i>task11</i>	I conduct sensitivity analyses on key drivers of business performance.
<i>task12*</i>	I cooperate with colleagues from the financial accounting department to clarify data entry errors in financial systems.
<i>task13</i>	I join steering committees to present financial implications of strategic options.
<i>task14</i>	I work on scenario analyses to support strategic planning purposes.
<i>task15</i>	I discuss strategic issues with senior management.
<i>task16*</i>	I instruct others how to enter data correctly within the internal financial systems.
<i>task17</i>	I revise budget targets to ensure they serve as an up-to-date basis for control purposes.

*Note:* Tasks marked with an asterisk are tasks belonging to the bean counter role model and are considered dirty-work tasks. However, this was not mentioned to the participants of the survey.

## A2. Questionnaire main study.

<i>DOING</i>	<i>Please indicate how frequently you typically perform each of the following activities in your current position. [e.g. 1 – “never” – 7 – “several times a day”]:</i>
<i>doing1</i>	I analyze in what organizational units performance targets were not achieved.
<i>doing2*</i>	I check whether interfaces between data systems work correctly.
<i>doing3</i>	I highlight negative budget variances within official reports to ensure higher level managers notice them.
<i>doing4*</i>	I correct data entry errors within the financial systems of the organization.
<i>doing5**</i>	I collect data on operational processes that shall be included within periodic reports.
<i>doing6</i>	I pro-actively explain to management how changes in non-financial performance measures affect profitability.
<i>doing7</i>	I inform accountable managers and their superiors together about variances from budgeted targets.
<i>doing8*</i>	I update cost center plans within the financial systems of the organization.
<i>doing9</i>	I analyze variances between actual and planned performance of organizational units for control purposes.
<i>doing10</i>	I discuss future business perspectives with management.
<i>doing11</i>	I conduct sensitivity analyses on key drivers of business performance.
<i>doing12*</i>	I cooperate with colleagues from the financial accounting department to clarify data entry errors in financial systems.
<i>doing13</i>	I join steering committees to present financial implications of strategic options.
<i>doing14</i>	I work on scenario analyses to support strategic planning purposes.
<i>doing15</i>	I discuss strategic issues with senior management.
<i>doing16*</i>	I instruct others how to enter data correctly within the internal financial systems.
<i>doing17</i>	I revise budget targets to ensure they serve as an up-to-date basis for control purposes.
<i>LIKE</i>	<i>Please indicate how much you like to do each of the following activities. [e.g. 1 – “not like at all” – 7 – “like very much”]:</i>
<i>like1</i>	I analyze in what organizational units performance targets were not achieved.
<i>like2*</i>	I check whether interfaces between data systems work correctly.
<i>like3</i>	I highlight negative budget variances within official reports to ensure higher level managers notice them.
<i>like4*</i>	I correct data entry errors within the financial systems of the organization.
<i>like5**</i>	I collect data on operational processes that shall be included within periodic reports.
<i>like6</i>	I pro-actively explain to management how changes in non-financial performance measures affect profitability.
<i>like7</i>	I inform accountable managers and their superiors together about variances from budgeted targets.
<i>like8*</i>	I update cost center plans within the financial systems of the organization.
<i>like9</i>	I analyze variances between actual and planned performance of organizational units for control purposes.
<i>like10</i>	I discuss future business perspectives with management.
<i>like11</i>	I conduct sensitivity analyses on key drivers of business performance.
<i>like12*</i>	I cooperate with colleagues from the financial accounting department to clarify data entry errors in financial systems.
<i>like13</i>	I join steering committees to present financial implications of strategic options.
<i>like14</i>	I work on scenario analyses to support strategic planning purposes.
<i>like15</i>	I discuss strategic issues with senior management.
<i>like16*</i>	I instruct others how to enter data correctly within the internal financial systems.
<i>like17</i>	I revise budget targets to ensure they serve as an up-to-date basis for control purposes.



## A2. Questionnaire main study (continued).

<i>INDE</i>	<i>To what extent do you agree with the following statements? [e.g. 1 – “not agree at all” – 7 – “fully agree”]:</i>
<i>inde1</i>	I believe that people should try hard to satisfy their interests.
<i>inde2</i>	I believe that people should fully realize their potential.
<i>inde3</i>	I believe that people should have their own ideals and try hard to achieve them.
<i>inde4</i>	I believe that people should fully live up to their capabilities in any circumstances.
<i>inde5</i>	I believe that people should face up to challenges in the environment.
<i>inde6</i>	I believe that once a goal is set, one should do one’s best to achieve it.
<i>inde7</i>	I believe that a happy life is the result of one’s own efforts.
<i>inde8</i>	I believe that people should pursue their own welfare.
<i>inde9</i>	I believe that people should express their feelings in interpersonal interactions.
<i>inde10</i>	I believe that people should maintain their independence in a group.
<i>inde11</i>	I believe that people should be self-resilient and self-reliant.
<i>inde12</i>	I believe that interpersonal communication should be direct.
<i>inde13</i>	I believe that people should express their opinions in public.
<i>inde14</i>	I believe that people should be unique and different from others.
<i>inde15</i>	I believe that people should retain independence even from their family members.
<i>inde16</i>	For myself, I believe that others should not influence my self-identity.
<i>inde17</i>	I believe that people should be direct with others.
<i>inde18#</i>	I believe that family and friends should not influence my important life decisions.
<i>inde19#</i>	I believe that people should try to achieve their goals at any costs.
<i>inde20#</i>	I believe that people should stick to their opinions in any circumstances.
<i>inde21#</i>	I believe that people should be the same at home and in public.
<i>INTER</i>	<i>To what extent do you agree with the following statements? [e.g. 1 – “not agree at all” – 7 – “fully agree”]:</i>
<i>inter1#</i>	I believe that family is the source of our self.
<i>inter2#</i>	I believe that success of the group is more important than success of the individual.
<i>inter3</i>	We should be concerned about other people’s dignity in interpersonal interactions.
<i>inter4</i>	Once you become a member of the group, you should try hard to adjust to the group’s demands.
<i>inter5</i>	I believe that people should find their place within a group.
<i>inter6</i>	I believe that the group should come first when it is in conflict with the individual.
<i>inter7</i>	I believe that it is important to maintain group harmony.
<i>inter8</i>	We should sacrifice our personal interests for the benefit of the group.
<i>inter9#</i>	I believe that the family should be a life unit.
<i>inter10#</i>	I believe that the success and failure of my family is ultimately related to my self-identity.
<i>inter11</i>	I believe that people should perform their social roles well.
<i>inter12</i>	I believe that people should behave appropriately according to different circumstances.
<i>inter13</i>	I believe that people close to me are important parts of myself.
<i>inter14</i>	I believe that people should behave appropriately according to their different social status and roles.
<i>inter15</i>	Belonging to a group is important to my self-identity, or sense of myself.
<i>inter16</i>	Acting appropriately is an important principle for me.
<i>inter17</i>	I believe that intimate relationships could reflect one’s self-identity.

## A2. Questionnaire main study (continued).

<i>inter18</i>	In the interest of maintaining interpersonal harmony, communication should be indirect.
<i>inter19</i>	I believe that people should consider the opinions and reactions of the others before making decisions.
<i>inter20#</i>	I have a strong identification with people close to me.
<i>inter21#</i>	My self-identity is the result of my social status.
<i>CAREER</i>	<i>To what extent do you agree with the following statements? [e.g. 1 – “not agree at all” – 7 – “fully agree”]:</i>
<hr/> <i>career1</i>	<hr/> I am highly ambitious.
<i>career2</i>	I try to convince those holding power over my job (e.g., supervisors) of my abilities.
<i>career3</i>	I would like to improve myself in the long term.
<i>career4</i>	To me, my career is an important part of my life.
<i>career5</i>	My good performance today will yield professional or financial benefits in the future.
<i>career6</i>	I like to demonstrate my capabilities in the workplace.
<i>career7</i>	I try to put in more effort than my colleagues.
<i>career8#</i>	To me, work is rather a necessary evil.(R)
<i>career9</i>	I intend to pursue the job of my choice even if it cuts deeply into the time I have for my family.
 <i>CONTROL</i>	
<i>VARIABLES</i>	
<hr/> <i>Age (in years)</i>	<hr/> 20-30
	31-40
	41-50
	51-60
	>61
<i>Sex</i>	Female
	Male
	Diverse
<i>Size (number of employees)</i>	0-500
	500-1000
	1000-5000
	5000-10000
	10000-50000
	>50000
	>100000
<i>Tenure position (in years)</i>	<1
	<3
	<5
	<10
	<20
	<30
	>31
<i>Superior</i>	Yes
	No

Note: \*= Dirty-work tasks included in constructs DOING/LIKE; \*\*= Dirty-work tasks not included in constructs DOING/LIKE; #= Item not included in respective construct; R = Reverse-coded item.

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