

Kunz, Jennifer; Brix, Laura; Carlo, Roberta Di; Brunner, Jens O.

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Management accountants' roles and management controls in hospitals at times of strain — Experiences during the Corona pandemic

Jennifer Kunz¹ · Laura Brix¹ · Roberta Di Carlo¹ · Jens O. Brunner^{2,3,4}

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Abstract

To gain insights into resilient action-taking in management accounting departments in the healthcare sector during times of crisis, this article investigates the reaction of these departments in German hospitals during the Corona pandemic. The analysis is based on qualitative data collected via semi-structured interviews with 21 senior management accountants in large German hospitals in 2020 and 2022. Findings are discussed against the background of a theory-driven resilience framework. The results indicate that hospitals' management accounting departments could quickly adjust their activities despite the absence of crisis plans for management accounting. They mainly contextualized the applied management controls in an enabling, complexity-absorbing way, and they acted as information providers and partly as business partners, but rarely as corporate policemen. These activities were embedded in four overarching topics that framed all their activities, i.e., the development of a mindset of adaptation, the will to keep the business going, and the reasonable shaping of internal and external interactions. These observations add insights to the empirical research on the effect of crises on management controls and management accountants' roles, and the developed resilience framework provides a structure to organize them beyond the present study to advance theory building.

Keywords Corona pandemic · Health care system · Hospitals · Management controls · Management accounting

JEL Code I18 · M10 · M41

1 Introduction

As hospitals are essential for society, their resilience in times of crisis is of pronounced relevance, as demonstrated by the Corona pandemic. This resilience is not costless: To keep funding in a reasonable range, the German healthcare system is under constant pressure to improve efficiency (Gerlinger, 2014; Unschuld, 2017; Wilkesmann & Falkenberg, 2019). Simultaneously, it faces an aging population leading to an increasing demand for medical treatment (Osterloh, 2015; Gopal et al., 2019; Krämer & Schreyögg, 2019), and it is confronted with a shortage of employees resulting from poor working conditions (Blum, 2019; Mache & Kordsmeyer, 2019; Winter et al., 2020). Consequently, hospitals struggle to build resilience to a sufficient degree. To achieve resilience, the interplay of medical and effective business crisis management is required. While the former is in the hands of the medical staff, the latter requires the application of appropriate management control systems (Cardinaels & Soderstrom, 2013; de Harlez & Malagueño 2016; Szczesny & Ernst, 2016). The management accountants who implement, maintain, and supplement these systems should play an important role, especially during a crisis. However, the literature on the importance of management controls and management accountants in crisis is still rare (Becker & Mahlendorf, 2018; Hayne, 2022; Pavlatos & Kostakis, 2023). The existing studies already point to the overarching relevance (Weber & Zubler, 2010; Eendenich, 2014; Janke et al., 2014; Becker et al., 2016; Huber et al., 2021; Hayne, 2022; Pavlatos & Kostakis, 2023). Yet, most studies focus only on the technical aspects of management controls, such as indicators and budgeting. The relationship between the observed recalibration of management accountants' activities and management control systems during a crisis and organizational resilience is not discussed, and in particular, a dedicated hospital focus is missing.

The present study addresses both research gaps. We empirically analyze the development of management accounting in German hospitals during the Corona pandemic and put the empirical observations into a theoretical perspective. The analysis is based on data collected during and after the pandemic's acute phases in a qualitative, interview-based study among senior management accountants, mainly in leading positions. This research strategy allows for examining the immediate response to the acute crisis and the long-term effects. We applied a multi-step approach connecting empirical data with structured analyses, resulting in theory-building reflection. In the first step, we used the approach by Mayring (2016) and then in a second step subjected the material to the methodology by Gioia et al. (2013). The resulting data structure indicates four aggregate dimensions related to the development of a (1) *Mindset of Adaptation*, the will to (2) *Keep Business Going*, the reasonable shaping of (3) *Internal Interactions*, and (4) *Gatekeeping*. Additionally, a theory-based framework was developed to put the empirical results into a theoretical perspective. This theoretical framework (*resilience framework*) combines three theoretical lenses: (1) Adaptability and robustness as the two main components of organizational resilience (Buliga et al., 2016), (2) coercive and enabling management controls (Adler & Borys, 1996; Ahrens & Chapman, 2004; Hartmann & Maas, 2011), and (3) the management accountants' roles of decision supporter and corporate policeman (Hartmann & Maas, 2011). The empirical data then was interpreted against the background

of this theoretical framework. The combination between the data-driven outcome (data structure of the transformation process) and the theoretical approach (resilience framework) fosters the understanding of the recalibration processes in hospitals' management accounting departments during a crisis and advances theory building in this context. Our analysis indicates that the investigated hospitals all stucked to similar transformation trajectories which favored certain combinations between management accountants' roles and management control components over others. Based on these results and by applying our framework future research can investigate whether these trajectories constitute the optimal ones to cope with a crisis or are just selected for other reasons that have to be overcome to improve the transformation processes.

The remaining paper proceeds as follows. The second section is dedicated to a brief literature review. The method is discussed in the third section. The fourth section provides the results, followed by a discussion and concluding remarks in Sect. 5.

2 Theoretical background

2.1 Management accountants and management control systems in crisis

As discussed in the broad stream of research on management control systems (e.g., Anthony, 1965; Berry et al., 1995; Chenhall, 2003; Gooneratne & Hoque, 2013), these systems “can be defined as a collection of practices that are intended to align staff's decision-making and action taking with overall organizational goals” (Kunz & Heitz, 2021, p. 443). Thus, they play a major role in keeping up high organizational performance and ensuring sustainable organizational success. As outlined by Becker and Mahlendorf (2018), these systems, as well as management accountants as their gatekeepers, are significant in the management of a crisis. However, although management controls and accountants are seen as essential research objects during crises, scholars repeatedly stress that their role so far is poorly understood (e.g., Hayne, 2022; Pavlatos & Kostakis, 2023).

Several authors take a broad perspective to understand this role better. Hydman and McKillop (2019) discuss, in general, the relevance of accounting for the public sector during crises. Hayne (2022) analyzes the management accounting change in six companies undergoing a major organizational crisis. Findings indicate that crises related to a discontinuous and unpredictable environmental change enforce management accounting, while crises due to a continuous and predictable environmental change result in the questioning of the truth and value of its practices.

Other scholars focus on how (management) accounting practices are applied in a particular crisis. Rahaman et al. (2010) provide evidence of how accounting practices were used to manage the fight against HIV/AIDS in Ghana. Sargiacomo (2015) investigates how accounting classification schemes supported the emergency responses after an earthquake in the region of Abruzzo in central Italy in 2009. Pavlatos and Kostakis (2015) analyze the impact of the Greek economic crisis on management accounting practices in Greek companies.

Further studies concentrate on the last financial market crisis. Weber and Zubler (2010) conducted an empirical investigation regarding its impact on management

control activities. They find that from the beginning of the crisis, management accountants started with projects related to cost-cutting and cost-saving. Moreover, companies mainly affected by the crisis increasingly incorporated risk assessment and scenario analyses in their planning processes. In these companies, management accountants also functioned even more as information providers and critical counterparts than in regular times. The crisis also led to an increased focus on management accounting and controls in sectors unaffected by the crisis. These observations indicate that the crisis has strengthened management accountants' position in companies. Findings in relation to the same crisis by Endenich (2014) support this observation. In an interview-based study with senior management accounting executives, the author compares changes in management accounting in nine German and nine Spanish companies. The author concludes that this crisis led to a "more powerful position of management accountants within corporate decision-making processes and an improved image of management accountants" (Endenich, 2014, p. 123). Based on survey and archival data as well as interviews and data gathered in a focus group, Becker et al. (2016) investigate the impact of this crisis on the role of budgeting. The authors find that in companies more strongly affected by this crisis, the role of budgeting changed. Whereas its application in the context of performance assessment decreased, an increased application in planning and resource allocation could be observed. Janke et al. (2014) put these results into a broader perspective. They use a cross-lagged panel design with data from two (time-lagged) surveys to investigate the relation between the perception of adverse external crisis effects and the interactive use of management control systems. Their findings indicate a reciprocal relationship: The way management control systems are used and the users' perception of crisis effects influence each other. Thus, these results confirm the previously discussed insights, i.e., crises impact management accounting and management control systems. However, the way of their application also affects, in turn, the perception of the crisis and thus shapes the decision-makers' manner of how to cope with it. Based on interviews in six banks with a particular focus on the financial crisis Rikhardsson et al. (2021) observe changes in organic and mechanistic management controls to cope with crises.

As indicated by the previous discussion, several scholars took the last financial crisis as an opportunity to look at the significance of management accounting and management control systems in times of crisis. The resulting findings show that management accountants and management control systems have undergone significant changes and have become more critical overall, at least during the crisis under review. In these analyses, however, the focus was on classic commercial enterprises. Institutions of general interest, such as hospitals, were not considered.

The Corona pandemic evoked another wave of studies. Delfino and van der Kolk (2021) investigate the impact of the pandemic-induced shift to remote work in Italian professional service firms on the application of management controls. Their interviews indicate that supervisors tried to keep control over the employees by using monitoring technology and increasing the number of online meetings. Employees felt obliged to demonstrate their effort through what the authors call "voluntary visible practices". Based on survey data from 83 business unit managers in the Netherlands, Bedford et al. (2022) provide evidence that companies used tighter budgets

to react to the challenges of this crisis. In addition to for-profit organizations, hospitals also came into focus during this crisis. Huber et al. (2021) analyzed the role of accounting during the Corona pandemic in five German hospitals. Based on interviews, ethnographic observations of meetings, and document analyses performed in 2020, they find that the number of beds for COVID-19 patients played a significant role in organizing critical resources. Based on the answers from 82 CFOs of Greek public hospitals collected in the period from November to December 2020 Pavlatos and Kostakis (2023) found a positive effect of the Corona pandemic on the budgets for planning, resource allocation and cost control, particularly in hospitals with cost information of high quality in terms of completeness, timeliness, and structure. Both articles focus on the technical side of management accounting, i.e., indicators and further instruments, like planning processes.

2.2 Organizational resilience and management controls

In the context of ecology, Holling (1973, p. 14) defined resilience as “a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables”. This perspective has been further developed in various research fields. The research field of organizational (as opposed to individual) resilience is significant for the present study. In this context, Lengnick-Hall et al. (2011, p. 244) state: “Organizational resilience is defined here as a firm’s ability to effectively absorb, develop situation-specific responses to, and ultimately engage in transformative activities to capitalize on disruptive surprises that potentially threaten organization survival”. Thus, the authors stress both the ability to resist the immediate effects of a crisis and the ability to adapt to and even capitalize on it. Similarly, according to Buliga et al. (2016), robustness, i.e., the ability to keep an organization functional in times of strain, and adaptability, i.e., the ability for “effective and fast action during crises” (Buliga et al., 2016, p. 653) and for the “development of mechanisms for learning and innovation” (Buliga et al., 2016, p. 653), constitute the two main components of resilience. Buliga et al. (2016) further argue that they form the poles of a resilience continuum and that organizations might focus only on one of them but also, by allowing for contextual ambidexterity, can position themselves at the midpoint between both poles. As hospitals provide services of general interest, ideally, they should be permanently functional and quickly adaptable in times of crisis. Thus, management controls that allow this kind of ambidexterity in hospitals in times of crisis are particularly desirable.

The differentiation between complexity-reducing and complexity-absorbing routines discussed in the literature provides a reasonable theoretical lens to operationalize further these two main capabilities: Complexity-reducing routines (1) are dedicated to maintaining stability, (2) regulate interactions, and (3) reduce coordination effort, while complexity-absorbing routines (1) enable flexible action through broad-based plans, (2) identify unexpected events at an early stage, and (3) ensure flexible decision-making (Boisot & Child, 1999; Lengnick-Hall & Beck, 2005; Kunz & Mur, 2021). In terms of resilience, as elaborated by Lengnick-Hall and Beck (2005) and further discussed in Kunz and Mur (2021), complexity-reducing routines

are related to organizational robustness, while complexity-absorbing routines foster organizational adaptability.

These two ways to cope with a crisis can be related to the general characteristics of management controls. Management control systems comprise the systematic use of management accounting systems, like budgeting or cost accounting, and further organizational controls, like personal controls or culture, to achieve organizational goals (e.g., Chenhall, 2003). Thus, management control systems can be defined as rules, routines, procedures, and processes that ensure organizational goal achievement. This broad understanding encompasses codified components, such as budgets, performance measures, or reports, and control elements at the interactional level, such as direct control by a business unit controller or the discourse on specific key figures conducted with him/her.

As first discussed by Adler and Borys (1996) and introduced into the performance management literature by Ahrens and Chapman (2004), organizational rules, routines, procedures, and processes can be designed in two general ways: „The term enabling generally refers to procedures that capture organizational memory, codify best practices, and help employees to deal more effectively with the inevitable contingencies associated with work processes. In contrast, coercive refers to forcing compliance, leaving little room for deviation from the rules and procedures in place, and reducing the role of employee commitment” (van Veen-Dirks et al., 2021, p. 270). These types of formalization pursue different goals: While coercive systems make work processes foolproof and assure compliance with preset rules and targets, enabling systems mobilize local knowledge and experience (Hartmann & Maas, 2011). The latter pursues this goal through the four design principles: repair, flexibility, internal transparency, and global transparency (Adler & Borys, 1996; Ahrens & Chapman, 2004; van Veen-Dirks et al., 2021). Repair means that enabling systems can be fixed easily by employees in case of occurring problems. Enabling systems are flexible because they provide employees with adequate leeway to deviate from the formal system. Internal transparency allows employees to understand the mechanisms underlying the formal system. Global transparency assures that employees understand the relationship between the system and the broader organizational context. These four characteristics were derived by Adler and Borys (1996) based on machine production technology. As Ahrens and Chapman (2004) stress, the basic characteristics of management control systems partly deviate from major characteristics of these technologies and, therefore, enabling components of management controls might contain elements that are at odds with what Adler and Borys (1996) initially termed enabling. To allow a stringent analysis, we therefore define the two terms so that their core content is preserved, but at the same time, they can be applied to the present context. As already mentioned, coercive systems are characterized by ensuring compliance with rules and objectives and allowing foolproof handling of processes, leading to a simplification of coordination. In contrast, taking together the four previously discussed characteristics of enabling systems, we can derive that these systems foster the possibility of adaptation through repair and flexibility as well as access to information to put these systems in context.

While Adler and Borys (1996) evaluate enabling formalization positively and coercive negatively, current research questions these connotations (van Veen-Dirks et

al., 2021). In the context of crisis, it has to be asked whether these evaluations apply without restriction. An acute crisis requires fast reactions. They can be achieved in two ways: First, the employees can (flexibly) decide and act as they see fit to activate their knowledge. Second, it may be necessary to provide clear rules and to control their observance to enable a swift and coordinated reaction. As indicated by the previous definition of the types, the former approach is related to enabling management controls providing flexibility, whereas the latter is more likely to be described as a coercive approach resulting in tight controls. Hartmann and Maas (2011, p. 453) suggest such tension in the overarching context of uncertain situations, in which crises can be classified as subcategories. They argue that: “pre-planning, behavioural constraints and monitoring become less effective since, as uncertainty increases, accounting performance measures become less informative about managerial performance”. Further, they stress that in case of uncertainty, stringent management control systems, e.g., budgeting, become more critical (Hartmann & Maas, 2011). Additionally, they point out that different types of uncertainty might exert different effects on enabling versus coercive control systems. We pick up this discussion and refrain from evaluating the two types. Instead, a connection between the categorization into enabling/coercive systems and complexity-absorbing/complexity-reducing routines can be seen. As previously discussed, enabling systems are designed to allow for flexible reactions to adapt to changing circumstances. Thus, they tend to be complexity-absorbing. In contrast, coercive systems are designed to limit the scope of action of employees to achieve tight coordination of individual activities. Consequently, they are designed in a complexity-reducing way.

As mentioned earlier, management control systems comprise codified components and interactional processes to foster goal achievement. The codified components comprise instruments like budgets, performance measures, or reporting systems, which are applied to guide and monitor decision processes. These systems can be designed both in an enabling (complexity-absorbing) or a coercive (complexity-reducing) way: They either can aim to foster flexible action-taking by providing the possibility to adapt the system, or they make precise specifications that must be adhered to and are non-negotiable.

The interactional processes are closely linked with the management accountants' roles. In the organizational context, roles comprise a set of expected behavioral patterns and activities performed by the role taker (e.g., Goretzki et al., 2013). They are based on a common understanding of the relations between certain organizational activities and actors to perform these activities (Berger & Luckmann, 1967). Over the last decades, literature discussed two main roles of management accountants: (1) decision support and (2) decision control (Byrne & Pierce, 2007; Baldvinsdottir et al., 2009; Hartmann & Maas, 2011). The first role can be further differentiated in the so-called bean counter, which deals with collecting, preparing, and providing information relevant to decision-making, and in the more business-oriented role as a business partner. While the former plays a more passive part in management decision-making as s/he only provides the ground for decision-makers by preparing the relevant numbers, the latter is more engaged in decision-making as such and has a “more strategic, forward-looking and collaborative role orientation” (Byrne & Pierce, 2007, p. 472). However, both sub-roles are still dedicated to supporting decision-makers, while the

second role, also called the corporate policeman, deals with controlling decision-makers and ensuring compliance with organizational guidelines and goals.

As stressed by Kunz and Mur (2021), decision support, and here particularly business partnering, promotes the adaptability of decision-making processes to changing situations and thus supports complexity absorption. In contrast, the corporate policeman role, i.e., limiting the scope for action by decision-makers to ensure goal achievement and thereby avoiding unnecessary coordination and follow-up work, is closely related to complexity-reducing routines (Kunz & Mur, 2021). However, contrary to Kunz and Mur (2021), we also see a close link to complexity-absorbing routines in the task profile of the second sub-role of decision support, the role of information provider. As business partners, information providers contribute to fast and flexible decision-making by providing relevant information.

The previously discussed relationships form a theory-driven framework that is depicted in Fig. 1 and will be picked up again in Sect. 5. To the best of our knowledge, we provide the first attempt to subject both the management accountants' roles and the formalization of hospital management control systems to a structured and joint analysis during crises. Moreover, we broaden the perspective to bridge the gap between research on management controls and management accountants during crises and literature regarding organizational resilience. The developed theory-driven resilience framework, based on concepts from management control research and organizational resilience research, provides a starting point for theory building and future research. Therefore, our research adds another perspective to the current literature by focusing on the changes in management accounting tools and the role of the management accountant as well as the main topics guiding these changes. Moreover, our novel framework links these observations to the literature on organizational resilience, bridging the gap between two so far separated research fields.

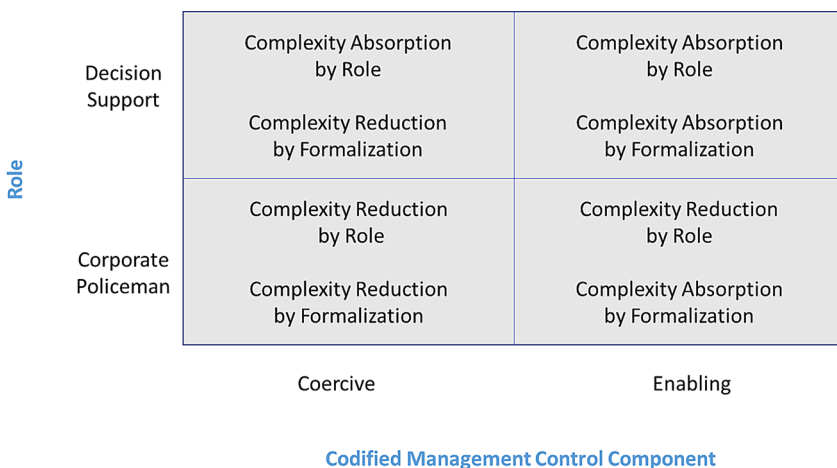


Fig. 1 The resilience framework

3 Method

3.1 Data collection

3.1.1 Interviews at the beginning of the pandemic (interview wave 1)

To receive a broad overview of the developments within hospital management accounting departments, we stretched our data-gathering phase over a longer period of time and organized it into two waves. The first wave comprised 10 in-depth expert interviews with hospital senior management accountants. As we strived to conduct these interviews during the first wave of the pandemic in Germany, the willingness of potential interview partners to participate was minimal due to time constraints. However, it was necessary for us to capture the immediate impressions of the interviewees without delay in a clearly defined, short period of time. Extending the interview period to reach more interviewees could have led to distortions due to the dynamic course of the pandemic. Therefore, we dispensed with it. However, within the analyzed hospitals, the kind of reactions by those clinics affected by Corona were very similar, which indicates that we have already reached a state of theoretical saturation (Glaser & Strauss, 1967; Glaser, 1992).

To acquire the experts for the first study, contact was sought with management accountants in German hospitals. The search was conducted on the internet. The confirmed COVID-19 case numbers in various German regions served as a reference point for determining those hospitals affected mainly by the pandemic, which were presumably also confronted with the most drastic effects on management accounting departments. Due to differences in aims and scope between hospitals in private and public ownership, we focused only on hospitals in public ownership. We decided to do so because university hospitals, for example, fall into this category, and we expected them to have been particularly affected by the pandemic due to their equipment and expertise. We further strived to generate a cross-regional sample. Thus, a total of 30 management accounting departments in German hospitals were contacted between June and July 2020. Ten management accountants (three female, seven male) communicated their willingness to participate in the survey and were subsequently interviewed. In addition to university hospitals and hospital associations, municipal hospitals are represented. The hospitals are situated across Germany, disposing of at least 600 beds. Nine of the ten interviewees held a managerial position in hospital management accounting. To preserve anonymity, a personal identifier (B01 to B10) was assigned to each interview.

Due to the Corona pandemic, the interviewees were given a choice of two options for interviewing. In addition to interviews via videoconference or telephone, the interviews could be conducted in writing, using the interview guide as a questionnaire. The verbal interview was preferred by six of the ten respondents. The data collection took place from July 10 to September 18, 2020. While hospitals 1 to 9 were affected by the pandemic, as they had to care for COVID-19 patients, hospital 10 was not directly affected. The telephone and videoconferencing interviews ranged from 45 min to 57 min, with 51 min on average. Five of them were recorded, while for one telephone interview a transcript was prepared during the interview. The ques-

tions of the remaining four interviews were completed in writing, with further contact between the interviewer and interviewees via e-mail.

To have a comparable set of material, the interviews were structured by using a semi-structured interview guide, and they were conducted by the same person, i.e., one of the authors. As enabling controls are likely to be seen as more favorable than coercive control and the business partner role is more prestigious than the role of information provider or even policeman, we did not ask directly for these issues. The aim of the interviews was, therefore, to obtain a description of the overall situation by the interviewees, from which the aspects of interest to us could be extracted without drawing the interviewees' attention to them directly and thus running the risk of biased answers. At the same time, the interviewees should be truthfully informed about the aim of the interview study in order to be able to give informed consent. Therefore, our questions targeted the areas to be studied, but terms such as coercive and enabling were avoided. Accordingly, the main parts of the guide contained questions regarding (1) the current situation, (2) the proceeding in the crisis and measures taken, (3) the consequences of these measures, (4) the effects on the revenue and earnings situation, and (5) the expectations regarding future developments. These main parts were complemented by an initial phase containing information regarding data protection and entry questions to "break the ice", as well as a final phase in which the experts could add more information to the single questions and in which they received information about the further analysis of the received data. The reason behind this structure is as follows: The first main part gives the interviewee the opportunity to start from the currently perceived situation and to describe it. Against this background, there is then a logical sequence from measures taken, their consequences, effects on the financial situation, to the outlook for the future. The complete guide can be found in the Supplementary Material.

3.1.2 Interviews in a later phase of the pandemic (interview wave 2)

The second wave of interviews was performed in July and August of 2022 to further corroborate the long-term effects of the crisis, with partly different interviewees in partly other hospitals compared to the first wave. This partly different sample is due to the fact that it was still difficult to find interview partners due to time restrictions resulting from the post-pandemic preparations. Besides, there had been some personnel changes in the departments. The acquisition process was like the one in the first wave. Through internet search and experience from the first study, 35 hospitals were identified as potentially relevant, as they resembled characteristics comparable to the sample of the first wave of interviews, i.e., possible affection by the Corona pandemic and at least 600 beds. They were contacted via e-mail between June and July of 2022. Eleven persons were willing to participate. All experts were in senior positions in management accounting in these hospitals. Eight were male, and three were female. Ten interviews were conducted via video conferencing and one interview via telephone. One interviewee was part of a management accounting department that steered two hospitals. Thus, the eleven participants provided insights for twelve hospitals. The interviewees were assigned the identifiers B11 to B21. The interview durations ranged from 48 to 73 min, averaging approximately 61 min.

To elaborate on the long-term effects of the pandemic, the applied interview guide covered questions regarding (1) changes in the strategic aims and measures of the hospital and the management accounting in the context of the pandemic, (2) changes in the operational aims and measures of the hospital and the management accounting in the context of the pandemic, (3) the role of the management accounting department during the pandemic, and (4) learnings from the pandemic. Again, these main parts were complemented by an initial phase containing information regarding data protection and entry questions to “break the ice”, as well as a final phase in which the experts could add more information to the single questions and in which they received information about the further analysis of the received data. The reason for this structure is as follows: Strategic aims form the primary driver of a hospital's activities. Therefore, possible changes here constitute an essential starting point for reorientating the organization. However, to achieve these changes, strategic goals must be operationalized and broken down to the operational level, which is addressed in the second part of the interview. The third and fourth parts shed more light on the role of management accounting and thus provide further information to put the results of the first wave of interviews on a broader basis. The complete guide can be found in the Supplementary Material.

3.2 Data analysis

Interviews conducted by telephone or video conferencing were transcribed. Due to the thematic research interest, only the verbal level was transcribed in the text version. The transcription was done according to the current orthography and using High German. Furthermore, sentence breaks, word duplications, pauses in speech, and filler words were removed. Punctuation was set in favor of the readability of the interviews. In addition to the transcripts, a parallel transcript was prepared for one of the telephone interviews due to a lack of consent for audio recording. This was then edited to refer to the questions asked. The questionnaires based on the interview guide were recorded for evaluation as completed by the experts. All interviews were conducted in German. Thus, the following statements are translated into English.

We conducted a two-step approach combining two methods of qualitative research which are typically not combined. However, this two-step approach allowed for a very detailed elaboration of the material, which would not have been possible otherwise. In the first step, the material of the first wave of interviews was evaluated using qualitative content analysis, according to Mayring (2016). The advantage of this approach is its rule-guided procedure and the step-by-step analysis of the material, which guarantees intersubjective comprehensibility. The collected data are sequentially dissected. In general, the focus is on the category system developed to represent the material. The present analysis aimed to condense the experience of the experts in the Corona pandemic to the decisive points of view. For this purpose, the transcribed source material was paraphrased close to the text in order to condense the collected data. The formation of categories was inductive. Overall, six categories could be identified within the transcribed interviews, of which three are relevant to the present research focus. These categories, which contain further subcategories, are: (1) *measures taken by management accountants*, (2) *consequences for the work*

of management accountants, and (3) management accountants' role. Material pertaining to these three categories became part of the second step of elaboration. The remaining three categories comprise (4) effects on hospital profitability, (5) effects on future crisis treatment and hospital planning, and (6) additional hospital effects. They go beyond the issues addressed here and, therefore, are not considered further.

The material of the second wave of interviews was analyzed by applying the previously mentioned method. As the second interview wave comprised learnings from the experiences during the crisis, the naming of the resulting main categories differed somewhat from the first interview wave, but they covered essentially the same topics (and also contained further subcategories): (1) strategic orientation in hospital management accounting, (2) measures and effects on management accountants' tasks, (3) management accountants' role, and (4) lessons from the pandemic for hospital management accounting. Besides these main categories, the material also provided insights regarding (5) the strategic orientation of the hospital and (6) measures taken by the hospital, which go beyond the scope of our research question and thus did not become part of the second step of elaboration.

In the second step of data analysis, we used the identified categories and subcategories as a basis for applying the Gioia methodology (Gioia et al., 2013). This method strives to join the data-driven categories identified in the first step of analysis with a more theory-driven perspective. The method encompasses the derivation of 1st order concepts, 2nd order themes, and the aggregation of these themes into overarching aggregated dimensions. Thereby, it allows a structured and transparent progressing from the original statements to theory building. We added the previously mentioned preceding step to this data analysis to get a grip on the material and to identify those parts of it that are relevant to the research questions in a structured way. However, it became apparent that the categories identified in the first step were still too closely related to the structure of the interviews. Therefore, they did not get to the core of the statements. Following the Gioia methodology, the statements, i.e., the basis for the categories and subcategories, were further analyzed, leading to a rearrangement and a merging of the subcategories. This approach broke through the original structure and led to meaningful 2nd order themes and, finally, aggregate dimensions. Figure 2 depicts the resulting data structure.

4 Results

We identified four aggregate dimensions (1) Mindset of Adaption, (2) Keep Business Going, (3) Internal Interactions, and (4) Gatekeeping (i.e., external interaction). While the first dimension operates as an overarching driver of the whole transformation processes initiated by the pandemic, the remaining three dimensions tackle more specific areas of transformation. Therefore, we discuss the Mindset of Adaptation first, and then delve deeper into the other three areas.

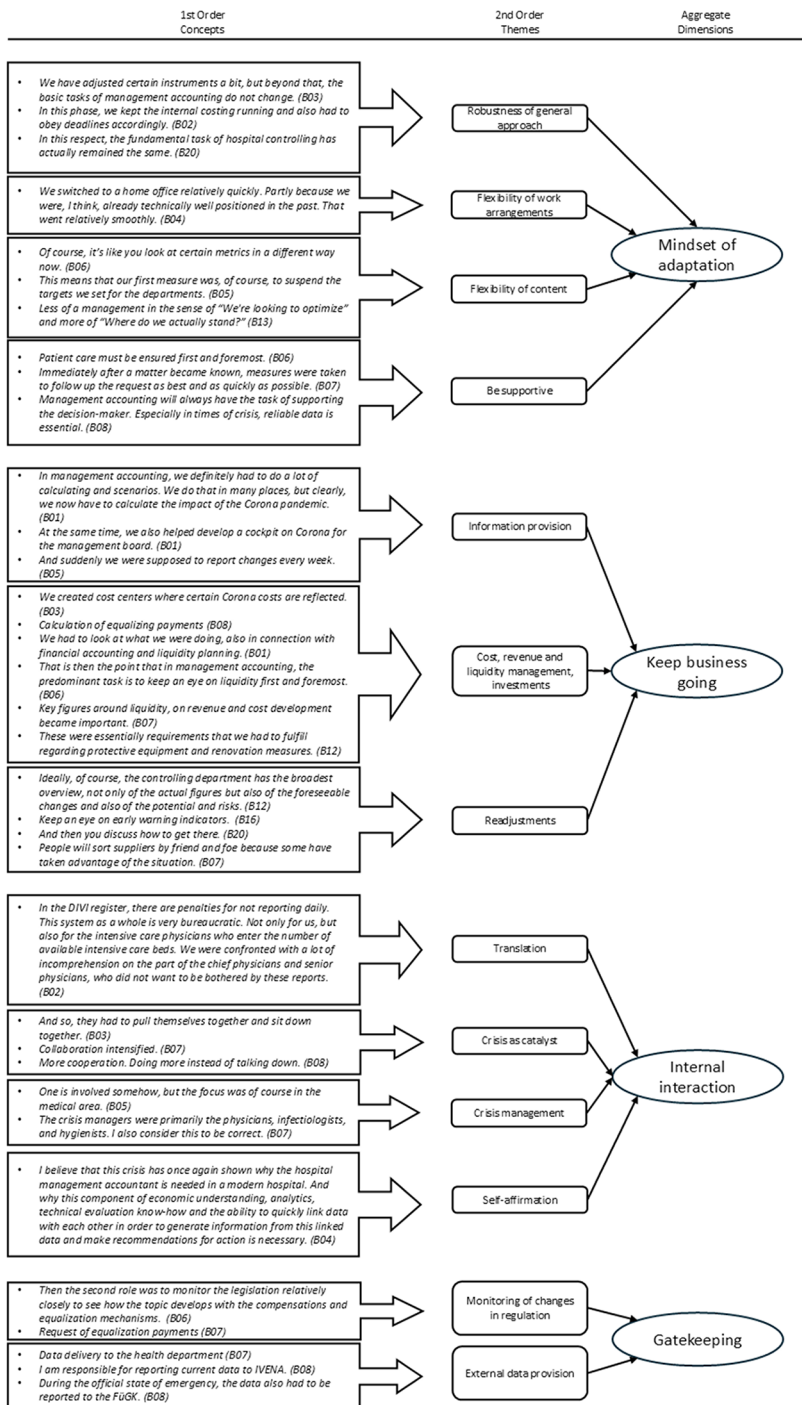


Fig. 2 Data structure

4.1 Mindset of adaption

The first aggregate dimension revolves around aspects related to the general approach to the crisis and the emerging *Mindset of Adaptation*, which comprises four 2nd order themes. The statements of the interviewees showed a tension between changes that were implemented quickly and a high degree of stability in the activities. A closer look at the statements revealed that the basic procedures and the general approach of management accounting remained unchanged (*robustness of general approach*), while the content of the activity, like key figures provided or targets set (*flexibility of content*), as well as the organization of work (*flexibility of work arrangements*), were redesigned. The fundamental requirement to support the other areas of the hospital in the best possible way was at the center of all these considerations (*be supportive*).

Through all the interviews, we gained the impression that although the new situation caused pressure and stressful situations, the principles of management accounting and its general procedures in information provision provided a framework that stabilized the work of the management accounting departments. It helped them to quickly find their way through. In these argumentations, management accounting as a set of fundamental approaches and practical action-taking came to the fore. Interviewees stressed that management accounting has instruments at its disposal that are not tailored to a specific situation but are flexibly adaptable:

In my opinion, management accounting and control only works if you act agilely in response to certain situations. Basically, instruments are there for that. Of course, we also basically have the idea, we have created instruments for it, we have data available. But depending on which situation occurs, we react differently. (Interviewee B04)

This is in line with the observation that most of the interviewees indicated an absence of any crisis plan for management accounting. In contrast to the existing crisis plans in the medical field, in management accounting no “pigeonhole plans” were used, but rather situation-specific and ad hoc reactions to the various requirements (Interviewee B05). Interviewee B03 has very well summarized the impression of this robustness of the general management accounting approach:

We have adjusted certain instruments a bit, but beyond that, the basic tasks of management accounting do not change. (Interviewee B03)

Moreover, as significant learning, the interviewees highlighted that the quality and speed of data provision and the capability of management accounting to react flexibly are of high importance.

Within this generally robust approach towards crisis management, management accountants acted highly flexibly in terms of their work arrangements and in terms of the content of their work. In reaction to the lockdowns and the primacy of social distancing, the work organization had to change quickly by establishing home office arrangements and practices of distant work (*flexibility of work arrangements*). While not in all instances the transition went smoothly, in general, this change could be

implemented quickly, as the relevant systems were accessible also from home due to already prior digitization activities:

We switched to a home office relatively quickly. Partly because we were, I think, already technically well positioned in the past. That went relatively smoothly. (Interviewee B04)

Thus, this part of flexible adaptation to the situation was not very problematized. However, an increase in bureaucratic effort and work was discussed. They resulted from the supplementary tasks of the management accounting department regarding evaluations, reports, and structural changes (Interviewees B08 and B09):

Additional bureaucratic effort due to supplementary queries and data transmissions to claim liquidity provision. (Interviewee B09)

However, Interviewee B03 mentioned in this regard that the capacities of the department were not strongly challenged during the crisis. Thus, within the departments, the perceived strain from the crisis differed. For example, several interviewees reported that a stable rate was recorded regarding the sickness rate of employees in the management accounting department, i.e., these departments were not affected by a severe increase in workload. In addition, several experts stressed that the changes induced by the pandemic very quickly became routine.

Yet, interviewees discussed in much more detail how they had to adapt the content of their work. For example, the changing key figures were mentioned. As in times before the crisis, both financial and non-financial indicators played an important role. However, the content of both changed, as further elaborated on when discussing the aggregate dimension to *Keep Business Going*. For the 2nd order theme *flexibility of content*, the exact content of these key figures is less interesting than the way this change of content is discussed. Interviewees indicated that the whole way of looking at particular issues changed, as expressed by Interviewee B13:

Less of a management in the sense of “We’re looking to optimize” and more of “Where do we actually stand?” (Interviewee B13)

For example, external circumstances, in particular the requirement to keep beds free and postpone elective procedures, meant that normal performance management activities could no longer be carried out, as those responsible had no means of generating revenue and influencing adherence to budgets. In line with this issue, several interviewees explicitly indicated that the management accounting departments had to suspend budgeting and target setting, e.g.:

The quarterly performance reviews with the chief physicians were discontinued rather quickly at the beginning of March. (Interviewee B08)

This special economic situation naturally has consequences for how we steer

our individual specialist departments. We steer the departments based on results, based on target results, and it goes without saying that management based on target results makes no sense in the crisis. This means that our first measure was, of course, to suspend the targets we set for the departments. In the end, we decided relatively early in the year not to set any targets for the departments in terms of economic goals, which they can't achieve at all, because they are not allowed to demonstrate that they have done so. (Interviewee B05)

Beside this tension between the stability of the general management accounting approach and the need to adapt in a flexible manner content and work arrangement to the specific situation, one fundamental attitude of mind hovered over all the statements. All interviewees stressed the importance of being supportive and performing the needed adaptations as quickly and as service-oriented as possible.

Immediately after a matter became known, measures were taken to follow up the request as best and as quickly as possible. (Interviewee B07)

This mindset was not only related to the support of internal processes but also to the general societal situation. The main focus was on ensuring patient care, i.e., several interviewees stressed in one or the other way that in this particular situation, the provision of services of general interest came to the fore and economic considerations were pushed into the background:

At the time when Corona was very fierce, at the end of March, no one asked about the costs. The only question asked: How do you get it implemented?" (Interviewee B01)

The topic of corporate management was of secondary importance, because it was clear that in the acute situation of the pandemic, patient care must be ensured first and foremost. (Interviewee B06)

Of course, in normal times, patient care is an important point of reference for hospital work. However, the statements of the interview partners gave the impression that the tense health situation in the whole country had also brought their work closer to this point of reference.

4.2 Keep business going

The second aggregated dimension that emerged from the interviews is *Keep Business Going*. While the previously mentioned mindset of adaptation captures the general attitude towards the need for adaptation and its various manifestations, the present dimension encompasses issues related to the concrete areas in which measures are to be taken to keep the hospital operational. In this context, the areas for which management accountants are also responsible in normal operations arose, namely *information provision, costs, revenues, liquidity, and investments and readjustments*.

Many statements dealt with measures undertaken in the context of information provision and reporting, a core element of management accounting also in regular times. However, information provision shifted during the crisis. To this end, instruments were adapted for managing the pandemic situation, and the focus was placed on current conditions and their effects. Interviewee B05 described this as follows:

We have adapted our instruments. Well, in management accounting, it is always an issue how we get our information, and suddenly, we needed other information, and that led to the fact that we had to adapt tools. We changed our existing tools to provide different information to the departments than before. (Interviewee B05)

Particularly, the reporting system was adapted to the requirements of the Corona crisis. New reports had to be created, ensuring comprehensive reporting on the pandemic. Examples of newly created or modified reports included COVID-19 testing, intensive care bed capacities, and the impact on earnings and liquidity (e.g., Interviewee B03). Also, process indicators were taken into account. Examples of this were the development of length of stay, ventilation hours, and operating theater times. Some interviewees classified such indicators as particularly important. For example, Interviewee B06 stated:

First and foremost – to deal with the acute crisis – it was process-relevant metrics, so really occupancy management, patient occupancy, etc. (Interviewee B06)

Furthermore, changes to short-term information provision were mentioned by the experts. They described a change from monthly, quarterly, and annual to daily and weekly reporting, i.e., a considerable shortening of reporting cycles (Interviewee B05). Several departments also developed additional dashboards or cockpits comprising the relevant key figures (e.g., Interviewees B01 and B04). Moreover, the management accounting department was tasked with recording the pandemic impact. The effects were compiled through forecasts and simulations, also regarding liquidity planning and safeguarding. Interviewee B01 described this as follows:

In management accounting, we definitely had to do a lot of calculating and scenarios. We do that in many places, but clearly, we now have to calculate the impact of the Corona pandemic. (Interviewee B01)

In terms of cost, i.e., revenue and liquidity management, management accountants coordinated and processed the special payments according to the “COVID-19-Krankenhausentlastungsgesetz” granted by the government as compensation for the fact that beds were kept available and planned interventions were suspended. Also, the situation in 2020 was estimated by determining the additional expenses and revenue shortfalls, as well as the effects on earnings and liquidity (e.g., Interviewees B03 and B05). Solvency was increasingly monitored more strictly to be able to continue to accompany measures:

That is then the point that in management accounting, the predominant task is to keep an eye on liquidity first and foremost. (Interviewee B06)

In this context, the creation of new cost centers resulting from changeover processes must also be mentioned. Due to the ward moves – to create wards and areas where only COVID-19 patients were treated – changes were made to the cost center structure:

We created cost centers where certain Corona costs are reflected. (Interviewee B03)

In terms of financial ratios, liquidity, revenue, and cost development were looked at more closely. For example, Interviewee B07 expressed this as follows:

Key figures around liquidity, on revenue and cost development became important. (Interviewee B07)

Here, particular attention was paid to rising costs due to additional expenses, including masks, testing, and pharmaceuticals. Besides, it was added by Interviewee B06 that the hospital management accountant could act as a *financial crisis manager* if short-term liquidity bottlenecks were to be overcome. Additionally, several interviewees indicated that they had to initiate investments in connection with the pandemic to allow for the needed rearrangements in the hospital processes, e.g., through the acquisition of contactor suits and respirators (e.g., Interviewees B06, B12, and B18).

While during the first interview wave, several interviewees indicated that there was still no restoration, the statements of the second interview wave show that management accountants started to look more intensively at the future again and to make *readjustments* based on the learnings from the pandemic years. They stressed that despite the still existing burdens of the pandemic and the need to put financial aspects aside in the most critical phases of the pandemic, long-term health policy changes should not be any longer neglected, and financial performance had to come into focus again (Interviewees B12, B16, and B20). The view thus broadened again at this point to a more considerable extent. The importance of a non-negative financial result became more important (Interviewee B20). Moreover, management accountants started to question what services the hospital should still provide in the future in order to be profitable (Interviewee B18). Furthermore, the most critical challenges for hospitals existed even before the pandemic, e.g., the trend to outpatient treatment and the need for process optimization. These were only exacerbated by the pandemic and should remain important beyond it (Interviewee B13).

Also, the importance of early warning systems was emphasized by Interviewee B16. Others addressed problems with suppliers that would lead to a change in the way they are treated in the future.

People will sort suppliers by friend and foe because some have taken advantage of the situation. (Interviewee B07)

The experiences during the pandemic are generally seen as valuable and are being used as an opportunity to make improvements.

4.3 Internal interaction

The crisis has also contributed to the intensification and the change of *Internal Interactions*, our third aggregate dimension. Several experts spoke about the lack of understanding of documentation among medical staff. At this point, the interviewees commented on the difficulty of making documentation requirements comprehensible to medical staff, for example, for intensive care capacity reports supplied to the DIVI (i.e., Intensive Care Register, Deutsche Interdisziplinäre Vereinigung für Intensiv- und Notfallmedizin, <http://www.divi.de>). Here, conflict situations arose between the management accounting and the medical departments:

In the DIVI register, there are penalties for not reporting daily. This system as a whole is very bureaucratic. Not only for us, but also for the intensive care physicians who enter the number of available intensive care beds. We were confronted with a lot of incomprehension on the part of the chief physicians and senior physicians, who did not want to be bothered by these reports. (Interviewee B02)

As the documentation and timely provision of data to the external addresses had an influence on penalty fines, management accountants had to act restrictively here and constantly communicated the necessity of providing the relevant data. This approach stands out from the other descriptions given by the interviewees, as it was the only area in which management accountants could not react in a flexible and supportive way. They had to insist on the data provision by the medical staff. In this sense, they had to *translate* the externally imposed necessity into the organization.

In contrast, the other internal interactions were portrayed much more positively. Overall, the crisis was a *catalyst* that improved cooperation between departments and active action-taking.

And so they had to pull themselves together and sit down together. (Interviewee B03)

Collaboration intensified. (Interviewee B07)

In terms of involvement in *crisis management*, several experts described that the management accountants were involved in the meetings and the preparation of evaluations (Interviewees B04 and B09), while others did not see any involvement. These interviewees described that the focus of crisis management was on patient care and thus on medical issues and not on management accounting and management controls (e.g., Interviewee B03). Overall, it can be concluded from these insights that the involvement in crisis management was predominantly given, but to the extent of the tasks of management accounting as indicated by the following statement:

One is involved somehow, but the focus was of course in the medical area. (Interviewee B05)

Moreover, interviewees denied that management accountants acted as crisis managers.

The crisis managers were primarily the physicians, infectiologists, and hygienists. I also consider this to be correct. (Interviewee B07)

I think crisis capable yes, manager in parts. So, a yes and no, because in the end: the crisis itself is certainly managed by others than by a management accountant. But it wouldn't work as well without the management accountant. (Interviewee B04)

Interviewees stressed the hospitals' mission of care in this regard, i.e., according to Interviewee B06 patient care forms the priority goal of the hospital, why medical issues stood in the first place. Furthermore, a certain degree of *self-affirmation* was noticeable in the interviews, as indicated by the following statements:

I believe that this crisis has once again shown why the hospital management accountant is needed in a modern hospital. And why this component of economic understanding, analytics, technical evaluation know-how and the ability to quickly link data with each other in order to generate information from this linked data and make recommendations for action is necessary. (Interviewee B04)

Management accounting will always have the task of supporting the decision-maker. Especially in times of crisis, reliable data is essential. (Interviewee B08)

None of the interviewees indicated that management accounting was not helpful in this situation. On the contrary, it gave the impression of being heavily involved, even if, by its very nature, it was not at the center of medical activities.

4.4 Gatekeeping

Finally, *Gatekeeping* was identified as our fourth aggregate dimension. It comprises two 2nd order themes: *Monitoring of changes in regulation* and *external data provision*. As indicated by several interviewees, the management accounting department closely monitored legislation during the crisis. Here, a particular focus was placed on monitoring regulations related to the financial support for hospitals through compensation mechanisms and special settlements, as indicated in this statement:

Then the second role was to monitor the legislation relatively closely to see how the topic develops with the compensations and equalization mechanisms. (Interviewee B06)

In addition, interviewees mentioned that they were involved in recording reports via the DIVI Intensive Care Register and the IVENA (i.e., Interdisziplinärer Versorgungsnachweis, <http://www.ivena.de>) system, for example:

I am responsible for reporting current data to IVENA. (Interviewee B08)

The interviewees stressed that management accounting played an important role in this context. It was responsible for these reports in the sense of securing and reconciling the data. Thus, overall, management accountants were an important gatekeeper between the hospital and official agencies.

5 Discussion and conclusion

5.1 Observations regarding management control systems and management accountants' roles

The Corona pandemic comprises what Hayne (2022) calls a crisis resulting from a discontinuous and unpredictable environmental change. According to the author's findings, this type of crisis results in for-profit organizations changing management accounting, i.e., executives cleanse the accounting systems and reports, make sense of the past, create digestible metrics, and implement forms of accountability. Our results indicate that in hospitals, similar processes can be observed, i.e., the management accounting departments adapted their activities, implemented new metrics, and reduced some activities, like performance measurement, while they intensified others, like information provision. These activities were embedded in overarching aggregate dimensions that emerged during the previous analysis. To derive further conclusions from these dimensions and their underlying 2nd order themes, we apply the resilience framework developed in Sect. 2.2.

First, we will focus on the changes during the crises regarding management control systems and management accountants' roles, which can be directly drawn from the 1st order concepts and 2nd order themes (Sect. 5.1). Second, we discuss in a broader sense the consequences of these observations (Sect. 5.2).

As outlined in Sect. 2.2 and Fig. 1, management accounting departments can combine the types of codified components and management accountants' roles to foster adaptability (achieved by complexity-absorbing) and robustness (achieved by complexity-reducing). While a combination of adaptability and robustness can be achieved by combining a complexity-reducing codified component with a complexity-absorbing role and vice versa, true ambidexterity can only be reached if both codified components and roles entail both kinds of orientation. This status can be reached if the management accounting department combines different roles with codified components from which some are designed in a complexity-reducing way while others are rather complexity-absorbing.

In terms of codified components of management control systems, the experts discussed, as indicated by the 1st order concepts and 2nd order themes, mainly (1) performance measures and budgets, (2) reporting, indicators, and dashboards, (3)

monitoring of regulation, (4) the DIVI and IVENA databases, (5) liquidity management, and (6) investment management. The interviews also provided insights into the role of management accountants in relation to these components. Specifically, the following findings can be identified: As indicated by e.g., Interviewees B03, B05, and B08, in normal times, performance management comprised the monitoring of budgets, target results, and performance reviews. As illustrated by the cited statements, these activities were intended to control the decision-maker's compliance with organizational goals, e.g., as indicated by Interviewee B03:

We normally steer by applying budgets. (Interviewee B03)

This indicates that, for example, these budgets were intended “to communicate to people in the organisation how they are expected to behave” (Hartmann & Maas, 2011, p. 449), which comprises, according to Hartmann and Maas (2011), a coercive perspective. Moreover, management accountants providing these budgets were in the role of a corporate policeman, as they had to keep an eye on the accomplishment. However, these measures were suspended immediately at the beginning of the crisis in March 2020. Furthermore, they were not replaced by any other performance targets. Instead, the hospital's management accounting focused on preparing for the expected high increase in COVID-19 patient numbers and followed the target: Be as prepared as possible. Thus, this development indicates a reduction of both a complexity-reducing codified component of management control systems and interaction processes by abolishing performance measurement activities thought beforehand to force goal achievement in a coordinated manner.

In contrast, the importance of reporting, indicators, and dashboards increased. While standard reports were still (partially) prepared, additional information provision on the particular situation became necessary, i.e., further indicators were prepared, like the number of COVID-19 tests and COVID-19 patients. Furthermore, the reporting cycles were considerably shortened to adapt to the fast-changing situation. In some cases, this was supplemented by the design of unique dashboards adapted to the users' needs. In this context, management accountants acted mainly as information providers. Overall, these processes were intended to provide decision-makers and the whole organization with the needed information to adapt quickly to the changing circumstances. Thus, these activities had a complexity-absorbing character. Moreover, management accountants had to monitor the development of regulations, as they were fast changing. This monitoring system, in combination with the accountants' role as an information provider, was intended to quickly provide the hospital staff with external information relevant to planning on operating decisions. So once again, both the codified component and the management accountants' role were directed towards complexity-absorbing mechanisms.

Regarding the processes related to the DIVI and IVENA register databases, the introduction of complexity-reducing activities can be observed: The databases, as such, do not form a codified component of management control systems as they are an externally given system. However, hospitals had to establish processes to administer the relevant data in a timely manner, and management accountants had to monitor and enforce these processes to avoid high punishment fees. In this context, manage-

ment accountants had to act as corporate policemen, as they had to enforce the data provision by the physicians, as indicated by Interviewee B02. Moreover, the process as such was not intended to provide the physicians with any flexibility or information for their activities. Still, it was intended to provide regulatory institutions with the information to coordinate crisis management across the country, as the intensive care bed occupancy influenced regulatory measures.

As mentioned, e.g., by Interviewee B06, liquidity management became an important issue due to the loss of revenue caused by the postponement of elective interventions. Thus, securing liquidity was essential for maintaining business operations. Several interviewees emphasized this. Liquidity ratios were important key indicators incorporated in reporting to keep decision-makers informed. However, liquidity management functions as a coordinating instrument designed to enforce an economic allocation of scarce liquidity resources. This holds especially true in crises. A mixture of complexity absorption and complexity reduction can, therefore, be observed here. The statements of the interviewees also indicate a mixed management accountants' role in this context. For example, liquidity ratios were part of the decision-makers reporting (e.g., Interviewees B01 and B03). The management accountant thus acted as an information provider. At the same time, Interviewee B06, for example, emphasized that they had to keep an eye on liquidity. This statement points complementarily in the direction of a corporate policeman, i.e., also a monitoring function. Consequently, the interviewees' statements indicate a hybrid role similar to the hybrid codified component. Finally, management accountants assumed a supporting role in investment management to keep the process running. The system itself was designed to allow for a rapid changeover to the new situation. Thus, it can be classified as enabling (e.g., Interviewee B06).

To summarize, management accounting departments had to establish coercive procedures, which were introduced externally via regulations (e.g., DIVI, IVENA), while they simultaneously fostered enabling procedures related to reporting, monitoring regulations, and investment management. In each case, the codified component and the role were concurrent, i.e., the departments operated by combining a status in the lower left quadrant with a status in the upper right quadrant in Fig. 1. Liquidity management takes on a special role, as the management accountant has both a supporting and a controlling function, and the system itself contains both enabling and coercive elements. Thus, it can be positioned in the center of Fig. 1. Finally, the departments reduced coercive procedures and the policeman's role in relation to performance management.

5.2 Transformation of hospital management controls in crises

As indicated by the previous discussion, management accounting departments initiated a transformation to navigate through the crisis by changing the weights put on the different roles and types of formalization. This transformation process was embedded in the overarching themes represented by the four aggregated dimensions. In particular, the aggregate dimension (1) *Mindset of Adaption* can be considered as an outer layer that affects the remaining three aggregate dimensions, i.e., (2) *Keep Business Going*, (3) *Internal Interaction*, and (4) *Gatekeeping*, as it determines where

they put their main focuses. In turn, the remaining three dimensions exert a direct impact on the selection of combinations between roles and management control components as exhibited in Fig. 1.

In more detail, management accounting departments quickly developed a mindset of adaption that was expressed as the belief in the stability of general procedures and the will to flexibly adapt work arrangements and management accounting's content, as well as a general notion of being supportive. This mindset shaped how business continued and how internal interactions and gatekeeping (i.e., external interactions) were organized. In turn, these three dimensions lead to an optimal portfolio of activities combining certain roles and formalization types. In particular, concurrent roles and formalization types prevailed, i.e., the policeman role combined with a coercive management control system (lower left quadrant in Fig. 1) or the decision support role combined with enabling management control systems (upper right quadrant in Fig. 1).

Our findings add to the existing literature as follows: So far, literature on enabling and coercive formalization mainly focuses on management controls in general (Ahrens & Chapman, 2004; Tessier & David, 2012; Bisbe et al., 2019; Väisänen et al., 2021), performance measurement (Wouters & Wilderom, 2008; Jordan & Messner, 2012; van Veen-Dirks et al., 2021), and budgeting (Hartmann & Maas, 2011) in normal times and in for-profit organizations. Similarly, literature on management accountants' roles (Byrne & Pierce, 2007; Baldvinsdottir et al., 2009; Goretzki et al., 2013) concentrates on management accountants in for-profit organizations and on their role's development over longer time periods as part of a changing profession. The present study combines both research streams and expands their perspective to the particular situation of hospital management accounting in times of crisis. We identified those management controls that became important during a crisis and elaborated on their kind of formalization in terms of enabling versus coercive design in this situation, where enabling systems stood out. Moreover, we observed that the role of the decision supporter, both in the form of information provider and business partner, came to the fore in the COVID-19 crisis. However, besides providing information for the DIVI and IVENA systems, management accountants also had to act as corporate policemen to secure access to financial resources. The findings indicate that management accountants defined their role during this crisis strongly out of the need to cope with the situation. They accepted that they often were not part of the inner crisis management team but, at the same time, had to deliver adequate information quickly. These recalibrations regarding roles and management control systems were embedded in themes revolving around a particular mindset to foster quick adaptation, activities to keep the business going, and crisis-appropriate handling of internal and external (i.e., gatekeeping) interaction partners. Thus, the combination between our empirical findings and the resilience framework adds to the literature on hospital management controls and management accountants (e.g., de Harlez & Malagueno, 2016; Huber et al., 2021; Pavlatos & Kostakis, 2023). As already observed by other scholars, management control and management accounting change in times of strain (Endenich, 2014; Janke et al., 2014; Huber et al., 2021; Bedford et al., 2022; (Hayne, 2022)). Our resilience framework constitutes a grid to organize these observed changes in the context of hospitals and thereby provides a building block to advance theory

building. In this sense, we complement the observations by Huber et al. (2021), who mainly focus on the relevance of the key figure of the number of beds for COVID-19 patients.

Moreover, the findings also put extant literature into another perspective. Pavlatos and Kostakis (2023) find that budgets were more intensively used for planning, resource allocation, and control in Greek hospitals most affected by the pandemic. They argue that “it is likely that public hospital administrations most affected by the health crisis will increase the intensity of budget use for resource allocation so that there is greater financial discipline and better cash flow management” (Pavlatos & Kostakis, 2023, p. 17). This observation contrasts our findings, which indicate that although management accountants kept a close eye on liquidity, they put the standard cost accounting and performance management activities aside to support the medical crisis interventions. The differences between the two studies may result from different prerequisites affecting Greek and German hospitals. However, they also might, at least partly, be due to the differing research methods. Pavlatos and Kostakis (2023) administered a questionnaire to public hospital CFOs, while we performed qualitative expert interviews, which allowed the respondents to set their own priorities and express their perceptions in a more holistic way.

Finally, our findings align with those discussed by Hayne (2022) for companies. While the author observes that crises related to a discontinuous and unpredictable environmental change enforce management accounting, crises due to a continuous and predictable environmental transformation result in the questioning of the truth and value of its practices. The pandemic constitutes a discontinuous and unpredictable event. As the previous analysis indicates, this event strengthened the position of management accountants and made them and the management accounting systems indispensable instruments to cope with the situation. These observations point to the generalizability of Hayne's (2022) findings.

5.3 Paths for future research and limitations

From these observations, paths for future research can be identified. First, we have observed six management control systems that were particularly affected by the crisis. This finding provides a starting point for more in-depth analyses that focus on each of these systems and investigate their individual relevance and particular development during crises. Based on such insights, best-practice recommendations can be derived that foster the development of more resilient management controls in hospitals. Second, in the present results, the decision-support function of management accountants plays an important role. Due to the environment, the role of management accountants as information providers is more important than business partners. To gain a more comprehensive understanding of the role of management accountants in crisis, a more in-depth comparison of their roles in different contexts, e.g., industries, is needed. The crisis analyzed here was primarily a medical crisis, as emphasized by the interviewees. Therefore, management accountants did not have the content-related knowledge to manage this crisis. The financial market crisis, on the other hand, was an economic crisis that required business knowledge, a core competence of management accountants. These differences suggest that the optimal design of the roles and

tasks of management accountants differs depending on the type of crisis. Third, the previous analysis indicates a clear pattern in relation to the applied framework: While we can observe several activities of the analyzed management accounting departments along the diagonal from the lower left quadrant to the upper right quadrant, we did not observe a corporate policeman role in combination with enabling procedures and vice versa. For example, we found no evidence that a reporting system was designed to provide flexibility and information to employees while being overseen by a management accountant to monitor its use. Nor were the performance measurement elements made more flexible while retaining the monitoring role of the management accountant. Instead, they had to be discontinued altogether. In our study, we can only observe how the departments reacted to the situation. However, we cannot evaluate whether these reactions were the most appropriate ones. In the broader context of uncertain circumstances, literature on the optimal calibration of management controls in crisis is still scarce, particularly regarding the best combination between role and formalization types. Our observation points to a pattern, which can be the starting point for future research by evaluating its success in coping with the crisis. Such an assessment can be achieved by follow-up studies in hospitals, which elaborate on the ongoing recalibration processes of management accounting departments (in hospitals) to cope with the Corona pandemic over several waves. Thereby, deeper knowledge can be gained, whether the observed pattern is the optimal pattern to cope with crises in the long run. Fourth and interestingly, only Interviewee B06 mentioned the attempt to apply artificial intelligence to optimize processes to cope with the crisis. These attempts were quickly discontinued, as these techniques did not adapt fast enough to the constantly changing situations. At the same time, however, the general discussion on the development of management accounting departments, especially in the practical literature, emphasizes the importance of these techniques (e.g., Oesterreich et al., 2019). It is therefore necessary to ask how such methods should be designed to provide added value for management accounting and management control systems in times of crises. Fifth, the discussion of our results is descriptive in nature and does not allow any prescriptive derivation of effective measures to be taken in particular situations. We encourage future research to use our resilience framework to identify recommendations for optimal action-taking.

The present study suffers from one limitation: Due to the minimal access to the relevant experts during the crisis, our findings are based only on the statements of 21 experts, from which one expert was not directly affected by the crisis. This limited number of interviewees makes it challenging to generalize the results. Consequently, the present study constitutes a first attempt to exploratively gain more insights into the reaction of management accounting departments to crises in hospitals. However, despite the small number of interviewees, the observed reactions converge toward a similar pattern, allowing for deriving future research paths.

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Data availability Anonymized data is available upon request.

Declarations

Competing interests and funding The authors have no competing interests to declare that are relevant to the content of this article.

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Authors and Affiliations

Jennifer Kunz¹  · Laura Brix¹ · Roberta Di Carlo¹ · Jens O. Brunner^{2,3,4} 

✉ Jennifer Kunz
jennifer.kunz@wiwi.uni-augsburg.de
Jens O. Brunner
jotbr@dtu.dk

¹ Chair of Controlling, Faculty of Business Administration and Economics, University Augsburg, Universitaetsstrasse 16, D-86159 Augsburg, Germany

² Department of Technology, Management, and Economics, Technical University of Denmark, Kongens Lyngby, Denmark

³ Faculty of Business and Economics, Faculty of Medicine, University of Augsburg, Augsburg, Germany

⁴ Center for Excellence in Healthcare Operations Planning, Next Generation Technology, Region Zealand, Ringsted, Denmark