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Organizing care during the COVID-19 pandemic: The role of accounting in German hospitals

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Purpose: This study provides insight into the roles of accounting in the management of the COVID-19 pandemic in five German hospitals.

Design/methodology/approach: We conducted three rounds of interviews, ethnographic observations of meetings, and document analyses in five German hospitals between February and August 2020.

Findings: We found that actors repeatedly used a central set of indicators (the number of beds for COVID-19 patients) when adapting a healthcare infrastructure to the pandemic. Accounting figures allowed actors to problematize prior configurations, organize processes to make uncertainty plannable, and virtualize changes to resume treating non-COVID-19 patients.

Originality value: We contribute to the accounting in crisis literature by adding an organization-focused study. Adding nuance to key themes in the literature, we show how the organizations and the field level interact and how organizing locally preceded economizing. We also offer a non-binary example to the question of whether or not changes revert back to “normal” after a crisis event.

Practical implications: We offer suggestions about scenario planning and inter-organizational learning which have implications for healthcare practitioners.

Keywords: COVID-19, hospitals, accounting in crises, healthcare, non-financial indicators

Paper type: research paper

Introduction

How do hospitals use accounting to manage the COVID-19 crisis? We posed this question repeatedly while investigating five German hospitals from early March 2020 to August 2020, during the first wave of the COVID-19 pandemic. Much was at stake during this time, as hospitals worked to treat emergency COVID-19 patients as quickly as possible, while also treating other emergency patients. Even before the pandemic had fully erupted in Germany, news from Italy and Spain was dire and urged actors to prepare for a potential catastrophe. Doctors, nurses, and support staff were all tasked with managing their own existential anxiety and uncertainty while working together during an uncertain and ambiguous situation. An infrastructure for delivering care was in jeopardy and in need of adjustment if lives were to be saved. This paper shows how hospitals have used accounting to organize critical resources so that medical experts could carry out their life-saving work.

Based on interviews, observations of meetings, and document analysis, we suggest that accounting played small, yet important role in the hospitals' management of the early phases of the COVID-19 crisis. During the initial months of the pandemic, an indicator (the number of COVID-19 beds) was used to problematize an already existing infrastructure for care, calling into question standard operating procedures and the physical layout of hospital operations. During the height of the first wave, this indicator was elaborated into a set of indicators. The hospitals used this set of indicators to transform the uncertain and ambiguous situation of a pandemic into plannable actions, specifically concerning staff and materials. This allowed the hospitals to advance their staff planning procedures and find new solutions for procuring materials. In the final months of the first wave, bed indicators were used to virtualize the emergency configurations to facilitate a gradual return to "normal", while also maintaining the capacity to deal with future waves of COVID-19.

Our findings complement previous literature on the roles of accounting in non-financial crises. We add an organization-focused study to prior research, which has primarily discussed accounting's role in field level changes (e.g. Sargiacomo, 2015; Rahamen, Neu & Everett, 2010). In taking this perspective, we add nuance to three key themes in the literature. First, our study shows how a relatively stable infrastructure can be changed rather quickly, not through governmental intervention, but at the local organizational level. Second, by focusing on a non-financial indicator, we show how accounting impacts local organizing before taking on the economizing function emphasized in previous literature (Miller & Power, 2013; Rahaman et al., 2010). Third, while prior literature has discussed whether or not changes are reversed after a crisis (Sargiacomo, 2015), we show that this question should not be dichotomous. Accounting helped virtualize the emergency configuration of an infrastructure, allowing it to be mobilized when deemed necessary. Taken together, our findings point toward the varied roles that accounting can play in organizational settings during times of crisis. Although accounting figures have only an indirect impact on actual care, they are important prerequisites for facilitating critical healthcare work during the pandemic.

Literature Review

What role does accounting play during crisis? Following previous work in accounting, we define a crisis as a situation, which poses a threat to an organization's achievement of its goals, restricts the time available for response, and appears as a surprise (Ezzamel & Bourn, 1990). Prior research has found considerable variations in how organizations use accounting to deal with crises (e.g. Barbera, Guarini & Steccolini, 2016).

A body of literature has recently emerged around the topic of accounting and non-financial crises (Rahaman et al., 2010; Sargiacomo, 2015). While financial crises, especially the Global Financial Crisis of 2007-9, has been studied in considerable depth, our knowledge of the role of accounting in non-financial crises is less systematic. There are, however, a few recurrent themes in the literature. Sargiacomo (2015), for instance, shows how the Italian National Health Service orchestrated its response to the 2009 earthquake in Abruzzo, Italy by introducing an accounting classification scheme. Accounting classifications, as inscriptions, facilitated the distribution of money through a “working infrastructure” which gave “order and visibility to earthquake-insured people and associated ‘additional costs’” (p. 85). This work highlights how accounting plays “a pivotal role in analyzing and diagnosing government interventions” (p. 70). While this study stands out for its level of detail, it also demonstrates how accounting is part of a wider infrastructure, which shapes the distribution of money as well as relations between geographically disparate entities and organizations during times of crisis. Sargiacomo’s study is also an exemplar in that these themes are studied primarily from a field level perspective, focusing more on governing actors’ responses and less on care providing organizations.

Rahaman et al. (2010) studied how accounting influenced the ways in which an alliance of NGOs combated the AIDS/HIV pandemic in Ghana. They show how “[a]ccounting arranged participation by providing forward-looking budgetary information and by functioning as an obligatory passage point in the alliance” (p. 1095), which led to standardized practices governing participation in and the maintenance of the alliance. The authors emphasize that accounting enabled control at a distance, exerted disciplining power, and undermined the activities it was meant to encourage. These power effects point towards the importance of understanding whether accounting regimes established during a crisis revert back to earlier arrangements, or remain as a “new normal”.

In these prior studies, the economizing function of accounting – its ability to constitute activities or organizations in financial terms – has received ample attention. This is reflected in the focus on the distribution of monies and the ensuing power effects in studies by Sargiacomo (2015) and Rahaman et al. (2010). Sargiacomo (2015) emphasizes that accounting is part of a larger infrastructure of financial and non-financial activities in which accounting enables the distribution of financial resources, which can then be used for urgent local responses. Rahaman et al. (2010) show how accounting affects power structures between organizations through the distribution of emergency funds.

What is less clear, however, is how accounting influences and is affected by *organizing* in times of crisis. Previous work on crisis has overlooked what happens inside organizations where the financial implication of accounting inscriptions is just one aspect of a broader set of challenges faced during a crisis. Thus, to build on and advance the debate about the role of accounting in (non-financial) crises, we want to shift attention away from the relationship between accounting and economizing and focus more on accounting’s role in organizing activity (Miller & Power, 2013). With this interest in mind, we refine our research question: What role does accounting play in making the COVID-19-crisis actionable and plannable within organizations?

Answering this question allows us to connect to some of the recurrent themes in the accounting in crisis literature, such as how the transition into a “new normal” occurs; the role of the organizations in response to crises; how accounting relates to financial and non-financial activities and more fundamentally, how economizing and organizing relate to one another. At the same time, we must not forget that COVID-19 poses very real challenges for patients, care workers and administrative staff. Thus, we attempt to outline the practical implications of our findings and provide useful insights for practitioners across healthcare.

Methods

This paper is based on an on-going, longitudinal ethnographic research project. Since 2017, we have regularly observed a “best practice group”, which works to develop a joint risk management system for five hospitals. The group’s composition has changed over time, but regularly consists of physicians working in hospital administrations as hospital managers, quality managers, and management accountants. All five hospitals are part of the same conglomerate but are geographically dispersed across five different federal states in Germany. So far, we have observed 17 multi-day meetings and logged 210 hours of observation. Over the past several years, we have concentrated on the group’s social interactions and the ways in which these influence the design of a joint risk management system. This focus shifted unexpectedly in early March 2020, when we observed a meeting in which members shared their experiences with the early response to the pandemic. Because the COVID-19 pandemic became an important topic for the group, we decided to conduct additional interviews (some via telephone, some in person) with members of all five hospitals.

We conducted an initial round of interviews in early March and agreed to conduct additional rounds of telephone interviews in order to follow further developments. Our interviewees were all fully trained medical professionals who had at some point in their careers taken on management tasks. They were part of various task forces in the hospitals and thus excellently placed to have a comprehensive overview of their respective organizations’ response to the pandemic. Given the relatively small size of the hospitals, the distance to the front line health workers directly treating COVID-19 patients was short, which added further depth to their accounts. Two more rounds of interviews were completed in mid-April and June. Additionally, we observed five “best practice group” meetings (two online and one in person) in which the interviewees exchanged experiences about the pandemic. There were also countless informal conversations during lunch breaks, coffee breaks and over dinner, which helped us further understand hospitals’ reaction to the pandemic. In August, after working through our analysis of the empirical material, we returned to the group and discussed our interpretations, this time face to face. We also shared summaries of our interviews with the best practice group to validate our interpretations and facilitate learning among practitioners. In total, we conducted 17 interviews, which provided insights that were essential for understanding the role of accounting hospitals’ management of COVID-19.

Our empirical material was analyzed inductively, as our primary focus was to understand how the hospitals managed the care of COVID-19 patients. The number of intensive and intermediate care beds for treating COVID-19 patients emerged as an important figure for our interviewees. We followed this observation and mapped out how five hospitals deployed these indicators. To understand the context in which the hospitals operated, we collected regulatory and legislative documents, which referred to the management of intensive and intermediate care beds. Additional documentary research helped us understand the field level of German healthcare (regulatory actors working on the federal and state levels) and their relations to hospitals.

Findings

We present our findings in three parts, each marked by a different role assumed by an accounting figure – the number of beds. In the first months, the number of beds helped problematize the existing infrastructural setup of each hospital. During the height of the first wave of the pandemic in Germany, the hospitals elaborated “number of beds” into several indicators, which helped organize uncertainty

and ambiguity into plannable actions. At the end of the first wave, bed indicators were used to virtualize a re-configured infrastructure for care so that elective procedures could resume without losing the capacity to quickly respond to another wave of COVID-19.

Problematizing the pre-pandemic infrastructure (January – March 2020)

During our first round of interviews, the situation around COVID-19 was shrouded with uncertainty. While rumblings of a potential virological threat had been around since December 2019, a concrete response did not occur until early February, when the first COVID-19 cases were reported by an automotive supplier in the south of Germany. Yet even then, the actual scope and definition of the problem remained ill-defined. When dramatic images started to come from Italy and Spain around this time¹, the worst case scenario started to become more obvious: overcrowded emergency rooms, substantial staff shortages, and people dying, all culminating in a collapsing healthcare system. One very immediate fear of physicians was needing to triage, a procedure used in emergency situations, where patients are prioritized given their chances of survival, and that care would be withheld from low priority patients for the sake of conserving precious resources. A broad consensus quickly formed that the triage of care should be avoided by all means. Interviewees noted that they were familiar with triage, but considered it only necessary for large single event emergencies, such as the collision of two buses on a highway. With the threat of COVID-19, hospitals would be forced to triage care for a prolonged period, resulting in the certain surrender of many lives. Taking this as a strong normative starting point, the number of available intensive care beds for patients coming to the emergency room started to emerge as an important indicator.

At this point in time, the definition of the indicator “number of beds” was not yet clear, both in terms of quality (what exactly counts as a bed for the care of COVID-19 patients was not officially defined in Germany at that time) and quantity (how many are needed). Nonetheless, it became a focal point for the problematization of the existing care infrastructure. Prior to COVID-19, the overall number of beds was tracked by hospitals. Consensus held that the occupancy rate should be around 80% – low enough to be able to deal with emergencies and patient turnover times, and high enough to be economically efficient. This thinking was no longer adequate with the possibility of a mass influx of patients on the immediate horizon. This led to the decision to cancel all elective procedures. Hospitals are normally only prepared for a certain number of emergency patients and a different number of patients with infectious diseases. There are standard operating procedures (SOPs) and contingency plans, which document how to deal with the outbreak of an infectious disease. These plans also proved inadequate, as the events anticipated in quality and risk management systems – such as the Noro-virus – were spatially and temporally much more confined. Similarly, the physical layout of the hospitals was also deemed inadequate for taking up large numbers of infectious patients. Usually, each department had its own rooms for quarantine. While this layout worked for treating “normal” patients who needed, for instance, heart surgery and happened to be infectious, this was not considered sufficient for a pandemic. As medical staff told us, the normal setup would mean transporting infectious patients through the entire hospital and would make it difficult to pool personnel who could treat COVID-19 patients.

Our respondents continuously used to the number of beds as central point of reference when discussing how to organize the resources needed to deal with the potential intake of high numbers of COVID-19 patients. Internal task forces were established which held interdisciplinary meetings among

¹ Cases begin to spike in Italy (21st February) and Spain (3rd March):

<https://www.businessinsider.com/coronavirus-pandemic-timeline-history-major-events-2020-3?r=DE&IR=T>

senior medics, such as the head of pharmacy or the chief hygienist, drafted suggestions for adjusting the existing material infrastructure for treating patients. For instance, one hospital sought to convert a department into an area exclusively for patients with COVID-19. This required the creation of special pathways for COVID-19 patients coming into the emergency room via ambulance. This ensured that patients with any cold-like symptoms could be kept from possibly infecting other patients in the emergency room. This also ensured that staff was protected from infections. The number of beds was an important source of information, which allowed actors to think about the possibility of re-structuring departments and the pathways to and from these departments. The indicator was still ill-defined, as it was a summary term for multiple types of beds. The necessary quantity of beds (and the locations where they would be needed) was still unclear and could only be estimated based on information systems which were already in place prior to the pandemic. Nonetheless, the indicator allowed medical experts to communicate about the challenges of the new virus and thereby re-organize existing resources.

By the end of February, the hospitals' parent organization demanded that intensive care beds for COVID-19 treatment be prepared. The problem with this demand was that the hospitals lacked a concrete definition of what was needed: nobody knew how many beds would be necessary and worse, there was no regulatory guidance on how to organize the provision of these beds. In the initial regulatory debate, the increase of testing capacities for the public took priority over the number of beds. As medical experts explained to us, this problem was aggravated by the medical complexities of different types of intensive care beds, which allowed for different interpretations of the term, "bed". Many recognized, however, that the number of beds would become a much more important issue once adequate testing capacity had been established for staff and patients. The race against time to prepare for an unprecedented challenge had begun.

Developments also started on the field level during this time. While the collection of COVID-19 cases was already mandated by German law (under the Federal Infection Protection Law), hospitals and laboratories are required to report COVID-19 cases to state public health departments on a daily basis (which then reported to the Robert-Koch-Institute²). In February and March 2020, public authorities in each German state established task forces for managing COVID-19 patient care reporting. Slowly, the number of intensive care beds for COVID-19 patients became an important indicator for funding decisions. To provide hospitals with financial support, the federal government passed the COVID-19 Hospital Relief Act (Krankenhausentlastungsgesetz) on March 27th, which granted bonuses for each additional intensive care bed that was implemented.

In the time from January to March, our informants detailed how an infrastructure for organizing "normal" care was called into question and in certain places, re-configured to orchestrate new activities (such as the flow of patients into / out of isolated spaces). The number of beds began to emerge as an important indicator in this context. Hospitals started to prepare more isolation beds by reducing the bed capacity for other stations and cancelling elective procedures. Those beds started to fill with newly isolated patients. At the same time, the "bed" was still ill-defined. While it was clear that more beds were needed, it was not yet fully understood how to organize or account for them. This ambiguity was the result of the need to digress from existing SOPs and routines. At the field level, the aggregated number of intensive care beds also started to emerge as a key indicator. The focus, here, was on a general call to arms and preparing a revised funding structures. In sum, rather than being a clearly defined indicator with a target, the number of COVID-19 ready intensive care beds was

² The Robert-Koch-Institute is responsible for the coordination of epidemic and pandemic situations in Germany.

used as a problematizing device for finding out where exactly the organizational challenges of the emerging pandemic would lie.

Organizing for intensive care beds (April – June 2020)

Our second round of interviews was conducted in April 2020, during the height of the first wave of COVID-19 in Germany. During this time, we saw a clearer definition of the “number of beds” indicator emerge. This more elaborated version of the indicator, now actually a set of indicators, allowed actors to plan in the face of uncertainty. In this sub-section we show how the indicator was made more explicit, how it allowed to organize staff and materials, and how it was used on the field level to orchestrate a national response.

Between April and June, actors elaborated the indicator “number of beds” into three types of “COVID-19 beds”, indicating the type of treatment the patient can receive. The first type of beds are intensive care beds with extracorporeal membrane oxygenation (ECMO) ventilators, where the most severe cases could be treated. Most hospitals began first by equipping beds in their intensive care units (ICUs) with ECMO ventilators. Simultaneously, beds in intermediate care units (which were close to intensive care units) were upgraded to ECMO intensive care beds. The second type of beds was equipped with lower level ventilators, which were used to help sustain severe cases for several hours before ECMO ventilators were available. The third type of bed was used for treating less severe cases; it did not have any additional equipment, but was kept in physical isolation. While we did not find a single point of origin for this categorization of beds, it reflected a broad consensus of emergency medics across all five hospitals. In practice, this set of indicators allowed managing physicians to differentiate and aggregate bed-types to produce an overall picture of available capacity. For example, in one hospital, 12 intensive care beds, 10 upgraded intermediate care beds, and 14 beds from an adjacent department equipped with ventilators gave medical staff a maximum capacity of 36 intensive care beds for COVID-19 patients. Additionally, 20 intensive care beds were equipped with less powerful ventilators. 60 “normal” beds (without ventilators) were reserved for COVID-19 patients, and 70 beds for non-COVID-19 emergency patients.

In each hospital, emergency task forces met daily, often multiple times to process the latest challenges in day-to-day operations. Two of the biggest organizational challenges were related to staffing and the allocation of materials to provide care for each COVID-19 bed. Both of these issues were made plannable, at least to some degree, through the set of bed indicators. With regard to staffing, the scheduling of physicians, nurses, and support staff was frequently identified as a core problem, as available beds were practically useless without readily available trained personnel. Hiring new nursing staff proved difficult, and training already-hired nurses in intensive care (and for the use of ventilators) took too long to help alleviate pressing staff shortages. The available number of staff was thus short-dated and fixed. Hospitals also had to worry about staff becoming infected with COVID-19 and being quarantined for up to two weeks. Managers claimed that existing enterprise resource planning software (such as SAP) offered no convenient possibility to see how many people (with the right qualifications) would be available if x staff members contracted COVID-19 for n days. In one hospital, this resulted in the manual construction of up to seven different excel sheets, which could be used to track and schedule staff. The elaborated set of indicators allowed actors to allocate physicians, nurses, and patient transport staff to the planned number of beds. Even more importantly, the calculated staff demand allowed for scenario planning, e.g. for when staff became infected. This had not been originally been anticipated in hospitals’ IT systems, yet proved critical in keeping the hospitals operational.

The other major challenge to treating COVID-19 patients was the procurement and allocation of material resources. These resources included safety equipment for staff such as face masks, sanitizing fluids, and in one hospital safety glasses, but also ECMOs and ventilators – all essential to keeping a COVID-19 bed operational. While respondents from all five hospitals considered their hospitals generally well equipped with these materials, the pandemic introduced a new element of scarcity. The indicator allowed our interviewees to translate the abstract need for materials into concrete numbers, which then allowed for more creative procurement. For instance, one hospital in a city with a large seaport relied on existing contacts to borrow ventilators from harbored ships. This was facilitated indirectly by the indicator, which allowed hospitals to articulate a demand and give their request logistical substance. The bed indicators also allowed managers to calculate the demand for hand sanitizers, which eventually resulted in one hospital's pharmacy producing its own sanitizing fluids for internal use. While the examples vary, the common theme is that making resource demand plannable allowed actors to find new and creative ways for dealing with anticipated shortages.

On the field level, similar to what happened inside the hospitals, the indicator “number of COVID-19 beds” was elaborated into three categories. A new legal provision³ mandated hospitals to report, on a daily basis, the number of intensive care beds with invasive ventilation, non-invasive ventilation, and with ECMO equipment, to the German Interdisciplinary Association for Intensive and Emergency Care (DIVI). As of April 16th, the national information system which tracks intensive bed capacities (called “DIVI Intensive Care Register”) was in full operation. In April, the DIVI intensive care register was further development by each Federal state ([skverlag.de, 2020](https://www.skverlag.de)), which added interfaces and other bed capacity information systems. Thus, the DIVI intensive care register on the federal level did not replace, but added to the existing state-specific reporting systems that began in March. According to our respondents, this layering of an infrastructure (Reilley & Scheytt, 2019) had little impact on the care of COVID-19 patients on site. At this stage, indicators were more important for communicating with the public than they were for governing hospital activity. Regulators also used the newly set three types of beds for the care of COVID-19 patients for preparing (emergency) funding decisions, as we will see below.

During the height of the first wave, we see how the indicator “number of COVID-19 beds” became elaborated into a more well-defined set of indicators. The indicator provided clearer definitions and a more differentiated understanding of beds, which in turn, allowed actors to better organize personnel as well as plan and procure material resources. Continuing from the start of the pandemic, internal processes were still re-designed, mostly ‘on-the-fly’, to help orchestrate activities around the issue of bed capacity. This kind of redesign was necessary for adjusting to the challenge of the virus, which was now in full force. Whereas the COVID-19 bed was still being elaborated in the first months, management and medical personnel were now working to (re)align people, routines, and technologies into a care infrastructure that would help account for and manage the COVID-19-ready bed. Meanwhile, similar definitional work was done on the field level, at this stage with the primary target of collecting stable and reliable information necessary to inform the public and prepare for new funding possibilities. By elaborating the number of COVID-19 beds, actors in the hospitals and on the field level were able to transform the urgent and messy problem of COVID-19 into something which could be planned and organized.

³ DIVI-Intensivregisterverordnung

Virtualizing COVID-19 beds (June – August 2020)

By June 2020, the infection curve flattened considerably in Germany and resulted in a decreasing amount of COVID-19 patients in hospitals. Less than two-thirds of all intensive care beds were occupied (Risklayer, 2020). The situation had stabilized and during this time, our respondents seemed calmer and more reflective in interviews. Overall, our respondents were reasonably satisfied with how their hospitals had dealt with the pandemic, given the high time pressure and difficult circumstances. An indicator for this was that triaging was avoided in all hospitals. Around June 2020 the hospitals decided to re-admit patients for elective surgeries. The number of COVID-19 beds allowed the hospitals to anticipate the further mid-term development of their capacities. The problem was keeping beds unoccupied during times of low infection rates used valuable materials and personnel. As non-COVID-19 patients started to undergo previously postponed treatments, hospitals were challenged with finding a way to reduce bed capacity, while maintaining readiness for the next wave of the pandemic.

With the increased influx of patients without COVID-19, the indicator “number of COVID-19 beds” assumed a different function than it had during the prior months. Even though the actual beds started to be used as “normal” intensive care beds, our respondents emphasized that hospitals needed to be able to switch back into crisis-mode at any time. In the second phase (April – June), the indicator was used to plan the need for staff and resources and organize their availability. In this third phase, organizing was focused on returning to normal while keeping the infrastructure for a higher number of COVID-19 available in case of a second wave. This meant that staff planning was further complicated because schedules with normal duties had to be complemented with COVID-19 emergency plans. Discussions about resources also ensued, as some hospitals refused to return borrowed ventilators.

Decisions about bed capacity were also informed by mandates coming from the field level. The number of available COVID-19 beds was now collected in the national DIVI register. This allowed for more communication, planning and organizing of the national response to the pandemic. Regional task forces used a combination of national and regional registers to direct the flow of patients. This was important because of the individual hospitals’ reduction of capacities. Regulators, however, did not directly intervene on the matter of capacity anymore.

Moreover, the earlier requirement to make as many beds as possible available was replaced with a more indirect mechanism: hospitals received financial aid based on their ability to make their earlier capacity of COVID-19 beds available within 72 hours⁴. For the hospitals, reporting duties intensified and decisions about returning equipment had an emergency medical and a monetary dimension to them. Our interviewees doubted how realistic this arrangement was in practice. Staff planning is rather inflexible, even if all ventilators, ECMOS, and safety equipment are available. Labor regulations and the risk of infections during another outbreak meant that the 72 hour deadline would be difficult to execute. Our interviewees suspected that this was not an acute problem, however, as a second wave would not come about immediately, but build up over several weeks – a prediction that sadly proved to be true.

A manifestation of the field level importance of the indicator was that from August 2019 on, the official website of the DIVI register showed the back-up capacity of hospitals which could be activated when needed (see figure1).

⁴ An initial 50,000 EUR was combined with an extra 560 EUR per day per bed until September 2020.

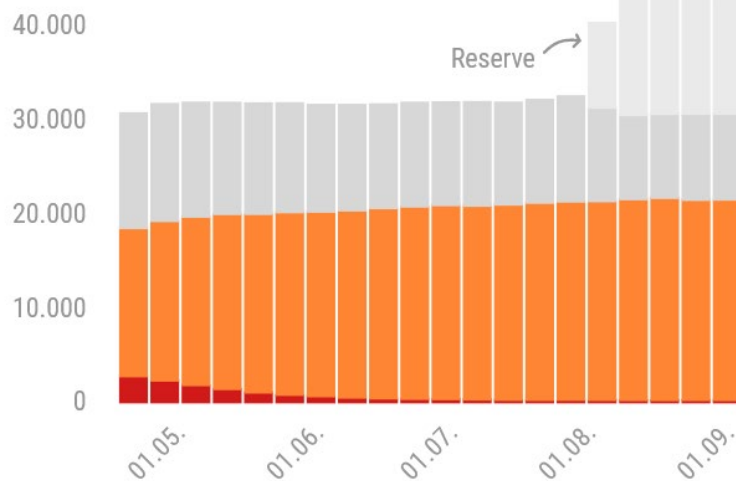


Figure 1: Average bed capacity per week in German hospitals (Berliner Morgenpost, 2020)

During the final months of the first wave of the pandemic in Germany, the indicators around the “number of COVID-19 beds” were virtualized. One representation of this can be found on the official website of the DIVI register, which shows the back-up capacity of hospitals, which can be activated when needed (see figure1). The infrastructure for treating large numbers of emergency COVID-19 patients was transformed into virtual elements which were able to run ‘in the background’ and could be activated when needed. On the field level, the ability to ‘boot up’ a COVID-19-ready infrastructure was also supported by monetary incentives for hospitals. The target was not keep hospitals prepared, even if the then current number of actual COVID-19 patients was low.

Discussion

What role does accounting play in making the COVID-19-crisis actionable and plannable within organizations? Through several rounds of interviews, document analyses, and observations of meetings, we found that much of the response to COVID-19 was organized around a set of indicators related to the number of COVID-19-ready beds. In hospitals, the aim was to organize as many COVID-19-ready beds as reasonably possible and to avoid triaging care for infected patients. During the first months of the pandemic, the hospitals used the number of beds to problematize their existing infrastructure for care. In the following months, the hospitals elaborated a set of indicators and used them to make the uncertain and ambiguous demand for staff and materials plannable. At the end of the first wave of the pandemic in Germany, the indicator was used to virtualize the beds. This way, health workers could finally resume important non-COVID-19 procedures which had to be postponed earlier in the pandemic. In sum, the set of indicators surrounding the “COVID-19 ready bed” played a varied and indirect, yet important role in allowing medical workers do their life-saving jobs.

With these findings, our study contributes to the literature on the roles of accounting in non-financial crises in three ways. First, our study adds a more organization-focused approach to previous literature (Sargiacomo, 2015; Rahaman et al. 2010), and in doing so, illustrates the complex relation between organizations and field level regulators. Prior studies have shown how accounting instruments, deployed by government actors, shift power relations and re-configure infrastructures for care (Sargiacomo, 2015). Our study complements this work by highlighting how infrastructures for care are

not only changed through regulatory intervention, but are also re-configured locally. The hospitals in our case had significant autonomy and relied on bed indicators to problematize an existing infrastructure for care, transform an uncertain situation into plannable action, and to virtualize emergency arrangements. Regulatory actors, meanwhile, used hospitals' reported bed figures to prepare funding decisions, inform the public, and in some regions, facilitate the coordination of the hospital capacity. These findings shed light on the variety of organizing roles accounting can assume during non-financial crises. Future research could develop a better understanding of the conditions under which power relations between organizations and the field level are mobilized through accounting.

Second, our findings point to a different relation between accounting, organizing, and economizing than prior literature has suggested. Miller & Power (2013) understand economizing as the constitution of activities or organizations in financial terms through accounting practices. This has been found to be an important source for power during crises. Sargiacomo (2015) found that an accounting classification enabled the distribution of emergency funds in a way which shifted power towards those governing the funds. Similarly, Rahaman et al. (2010) found that coercing actors into financial responsibilities through reporting practices could facilitate the abuse of power. Our findings differ, as we focus on non-financial indicators – the number of beds – and their implication in organizational responses to crisis. In our case, the organization of care provision took precedence over economic considerations, which were enacted later through funding policies at the field-level. Organizing was, in different forms, in the foreground of how actors related to the set of indicators. By accounting for bed capacity, managing actors and medical personnel could better assess the demand for staff, ventilators, masks, and safety equipment which were necessary for treating patients. Accounting had thus played the role of a facilitator and enabler for changing a stable infrastructure and offering health care professionals a platform to engage with the crisis. Rather than redefining organizational entities (beds) in economic terms, accounting played an indirect role in making small yet fast changes to the infrastructure for care. Future research can further elaborate on the mechanisms underlying the different relations between infrastructure stability, economizing and the impact of crisis on local organizing.

Third, we address the question of whether or not the changes made during a crisis become permanent or are eventually reversed (Sargiacomo, 2015; Rahaman et al. 2010). Our study shows that questions of change during times of crisis should not be dichotomous. With the term of virtualizing, we describe how an organizational and economic infrastructure can be reverted to its earlier non-crisis setup, while retaining its identity as a (possible) emergency measure. During the later stages of the first wave, COVID-19-related intensive care beds were removed, but remained latent accounting entities. In processes of planning around the storage of necessary materials and some alterations to the funding structure, COVID-19 beds – represented by a small set of indicators – remained an object of organizational attention although they were not physically present. Sadly, the Autumn of 2020 quickly showed that this emergency setup would be necessary again. Our findings imply that the shift in organizational and economic relations during a crisis can affect infrastructures in more subtle ways than prior research has suggested. Future research may look more closely at the power effects of virtualizing parts of an infrastructure in a potential state of exception.

While these findings add to previous research on accounting in crisis situations, we do not want to overlook the real-world challenges facing our healthcare systems. For this reason, we have outlined several practical implications of our findings. First, we see the possibility of virtualizing a crisis configuration of an infrastructure as a potentially valuable lesson for hospital staff. The virtualized setup in our case has allowed hospitals to react quickly to regional increases in the number of COVID-

19-cases in recent months. Given how experts are starting to build more and more knowledge about the virus, virtualized capacity could help produce detailed scenario planning, especially during the “lulls” between different waves. In our case, a version of this approach was employed for staff planning during the height of the first wave of the pandemic. Such activities could be expanded to other parts of the infrastructure of care and based on the set of bed indicators. In preparing different levels of operations for different scenarios, hospitals could possibly become even better prepared for future challenges. Similarly, scenario planning for this crisis could help design new routines that are adapted to other future crises.

Second, for policy makers, we believe that field level regulators, rather than steer through strict directives, should facilitate learning at a local level and emphasize each organizations’ ability to learn quickly. This approach allowed front-line medical workers in our case to draw on medical expertise and experience to arrive at practicable solutions. For the management system which helped track the availability of staff and materials, this meant that existing systems, e.g. IT, had to be revised. In the meetings we observed, we saw a decentralized and ad hoc approach to learning. Within our modest means, we tried to facilitate this inter-organizational learning through mirroring our insights back to our respondents and preparing executive summaries. This is a small example of how learning happens locally. More systematic approaches to help organizations learn to deal with the pandemic could further utilize the strengths of local experts.

Finally, we should note that the context of our study is important for making sense of its contributions. The German healthcare system is generally well-funded and consists of a wide range of actors who are forced to regularly work toward consensus (Reilley & Scheytt, 2019). This may explain why the funding decisions influenced by accounting instruments were less prominent than in cases where government bodies and organizations were not as well funded (e.g. Rahaman et al. 2010). In this way, our setting has allowed us to foreground organizational issues instead of ideological power struggles (Al Mahameed et al., 2020). Since we could show significant differences to prior literature with regard to which issues were deemed important, we urge future research to consider these differences in different contexts more systematically.

References

- Al Mahameed, M., Belal, A., Gebreiter, F. & Lowe, A. (2020). Social accounting in the context of profound political, social and economic crisis: the case of the Arab Spring. *Accounting, Auditing & Accountability Journal*. EarlyCite.
- Barbera, C., Guarini, E. & Steccolini, I. (2016). Italian Municipalities and the Fiscal Crisis: Four Strategies for Muddling Through. *Financial Accountability & Management*, 32(3), 335-361.
- Berliner Morgenpost (2020). Klinik-Monitor Deutschland. <https://interaktiv.morgenpost.de/corona-deutschland-intensiv-betten-monitor-krankenhaus-auslastung/> (last accessed: 22.12.2020)
- Ezzamel, M., & Bourn, M. (1990). The Roles of AIS in an organisation experiencing financial crisis. *Accounting, Organizations and Society*, 15(5), 339–441.
- Miller, P. & Power, M. (2013). Accounting, Organizing, and Economizing: Connecting Accounting Research and Organization Theory. *Academy of Management Annals*, 7(1), 557-605.
- Rahaman, A., Neu, D. & Everett, J. (2010). Accounting for Social-Purpose Alliances: Confronting the HIV/AIDS Pandemic in Africa. *Contemporary Accounting Research*, 27(4), 1093-1129.

- Risklayer (2020) Risklayer Kreisebene Quellen. https://docs.google.com/spreadsheets/d/1wg-s4_Lz2Stil6spQEYFdZaBEp8nWW26gVyfHqvcl8s/edit#gid=1361694174 (last accessed: 27-08-2020).
- Reilley, J. & Scheytt, T. (2019). A Calculative Infrastructure in the Making: The Emergence of a Multi-Layered Complex for Governing Healthcare. *Research in the Sociology of Organizations*, 62, 43-68.
- Skverlag.de (2020) Kritik an DIVI-Intensivregister-Verordnung zeigt Wirkung. <https://www.skverlag.de/rettungsdienst/meldung/newsartikel/kritik-an-divi-intensivregister-verordnung-zeigt-wirkung.html> (last accessed: 27-08-20).
- Sargiacomo, M. (2015). Earthquakes, exceptional government and extraordinary accounting. *Accounting, Organizations and Society* 42(1), 67-89.