

COVID-induced virtual teams: A phenomenon-based framework and methodological advice for studying novel events

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(Information about the authors can be found at the end of this article.)

Abstract

Purpose – We conceptualized the novel phenomenon of COVID-induced virtual teams and its implications and provided researchers with the required information on how to conduct a phenomenon-based study for conceptualizing novel phenomena in relevant ways.

Design/methodology/approach – This article stems from phenomenon-based and, thus, theory-building and grounded qualitative research in the German industrial sector. We conducted 47 problem-centered interviews in two phases (February–July 2021 and February–July 2022) to understand how team members and team leaders experienced COVID-induced virtual teamwork and its subsequent developments.

Findings – Empirically, we found COVID-induced virtual teams to be characterized by a high relevance of shaping positive team dynamics via steering internal moderators; crisis is a novel external moderator and transformation becomes the key output factor to be leveraged. Work-from-home leads to specific configuration needs and interrelations between work-from-home and on-site introduce additional dynamics. Methodologically, the phenomenon-based approach is found to be highly suitable for studying the effects of such novel phenomena.

Research limitations/implications – This article is explorative. Thus, we advocate further research on related novel phenomena, such as post-COVID-hybrid and work-from-home teams. A model of how to encourage positive dynamics in post-COVID-hybrid teams is developed and lays the groundwork for further studies on post-COVID teamwork. Concerning methodology, researchers are provided with information on how to conduct phenomenon-based research on novel phenomena, such as the COVID-induced virtual teams that we studied.

Practical implications – Companies receive advice on how to encourage positive dynamics in post-COVID teamwork, e.g. on identifying best practices and resilient individuals.

Social implications – In a country such as Germany that faces labor shortages, our insights might facilitate better labor-market integration for those with care-work obligations and international workers.

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Originality/value – We offer a first conceptualization of a relevant novel phenomenon, namely COVID-induced virtual teams. We exemplify the phenomenon-based approach as a suitable methodology that serves to build relevant theory using active categorization.

Keywords COVID-19 pandemic, Phenomenon-based approach, Virtual teams, COVID-induced virtual teams, Work-from-home, Germany

Paper type Research paper

Introduction

By March 11, 2020, a disease labeled COVID-19 had spread to 114 countries, counting 118,000 cases and 4,291 deaths, and the World Health Organization (WHO, 2021) declared it a pandemic. In many countries, the subsequent measures to contain the pandemic, referred to as social distancing or “shutdowns,” triggered a turn toward remote work, also in Europe. For example, in Germany, work-from-home became mandatory in spring 2020 unless companies could prove that a certain task could not be carried out remotely (see RKI, 2022). Thus, the pandemic suddenly transformed many on-site teams into virtual teams.

Virtual teams work together using information and communication technologies (ICTs) (Martins & Schilpzand, 2011). They are commonly differentiated into global and non-global virtual teams (Martins & Schilpzand, 2011; Maznevski, 2012), with global teams being set apart by their worldwide dispersion and national-cultural diversity (see Martins & Schilpzand, 2011). However, the new types of virtual teams were COVID-induced. Unlike previous types of virtual teams, they had neither emerged from corporate necessity or strategic considerations nor technological considerations and know-how or employees’ motivation and abilities (Mahadevan & Steinmann, 2023). We thus understood them as a novel phenomenon requiring conceptualization and used them as an example for offering methodological advice on how to conceptualize novel phenomena.

Building from phenomenon-based, thus grounded and theory-building, qualitative research (47 interviews with team members and team leaders in the German industrial sector between 2020 and 2021), this article offers a first conceptualization of COVID-induced virtual teams in a structured way. Its further contribution to research and practice lies in exemplifying the phenomenon-based approach enabling such novel conceptualizations by means of active categorization. Thus, we laid the foundation for transforming the pandemic virtual team experience into learning.

The article is constructed as follows: First, we will outline the rationale for our phenomenon-based approach and detail our methodology and its contributions to establishing relevance and building new conceptualizations. Second, we will identify global virtual teams as the relevant heuristic background for our conceptualization of COVID-induced virtual teams. Next, we will highlight the characteristics of COVID-induced virtual teams, also in relation to global virtual team characteristics and managerial requirements to draw managerial recommendations on how to encourage positive dynamics in virtual teams from there. We will then present our phenomenon-based framework of what characterizes COVID-induced virtual teams, followed by theoretical, managerial and methodological implications. Finally, we will present a summary and conclusions.

Methodology: A phenomenon-based approach to COVID-induced virtual teams

The phenomenon-based approach (Doh, 2015) is a way of capturing emerging, previously unknown managerial and organizational phenomena (such as the COVID-19 pandemic and its impact upon management and organizations). By using existing theories heuristically (Mees-Buss, Welch, & Piekari, 2020) – as we do in our study – the phenomenon-based approach enables the “grounding” of concepts in reality (Glaser & Strauss, 1967).

This requires active categorization (Grodal, Anteby, & Holm, 2021) until reaching theoretical saturation (Murphy, Klotz, & Kreiner, 2017; Walsh *et al.*, 2015). These principles of our approach and our research process, will be outlined in the following.

Underlying considerations: how to study novel phenomena in a way that is relevant

The main issue with novel phenomena is that no theories yet exist to adequately capture them (Hambrick, 2007). If one simply applies existing theories and concepts to them – meaning if one uses existing knowledge as “templates” against a phenomenon to which these do not fit – research relevance diminishes (Von Krogh, Rossi-Lamastra, & Haefliger, 2012). Thus, Doh (2015) argues for a phenomenon-based approach. His rationale was that many managerial and organizational phenomena today span multiple locations, are characterized by high volatility and tend to be multi-directional and multi-focal. Doh proposes (2015) that researchers first need to identify those novel phenomena that are relevant and then use existing theories and concepts as a “mirror” against these phenomena to figure out how to adapt or rejuvenate them in light of a managerial reality that requires new assumptions regarding its underlying features. Grodal *et al.* (2021) have referred to the process by which reality is structured into patterns as “active categorization.” The COVID-19 pandemic experience and how it impacted teamwork, constitutes such a novel phenomenon in need of conceptualization via active categorization.

Thus, our research approach was explorative. Exploration is commonly understood as the first step towards a relevant research design that establishes a fit between a novel context and existing knowledge (Flick, 2009), and in that sense, the qualitative phase of establishing fit between reality and theory precedes the quantitative testing of theories that have already been found to apply to the phenomenon studied (Shah & Corley, 2006). Thus, the difference that a phenomenon-based approach makes is that it “grounds” theory in reality (based on Glaser & Strauss, 1967) or, in other words: it makes sure that the concepts used fit the problem to which they shall be applied.

Consequently, we did not use theory as a “template” but heuristically (Mees-Buss *et al.*, 2020), to come to novel conceptualizations. The stage when the process of conceptualization is completed – which is the endpoint of research – is referred to as theoretical saturation (Murphy *et al.*, 2017; Walsh *et al.*, 2015). This means that we conducted empirical research to conceptualize a novel phenomenon (“active categorization,” see Grodal *et al.*, 2021). As soon as this has been achieved, the empirical phase is completed because the model has been successfully built. In line with the conventions of qualitative research (Flick, 2009), the model does not have to be “true” in the quantitative sense of a rigorous and valid “testing of theory” but rather needs to be “plausible” in the qualitative sense of a conceptual reduction of reality which “fits” this reality and is thus robust enough to be subsequently tested by means of quantitative methods.

What is required for reaching theoretical saturation (“the model”) is thus a process of constantly relating theory back to reality and vice versa: a circular process of reduction by means of which scholars can “densify” reality into patterns. In that sense, also in line with the conventions of qualitative research (Flick, 2009), this article is thus a somewhat reverse representation of the actual research process underlying it, as it transforms a circular process into linearity in hindsight, from the perspective of the theoretical saturation stage.

Details of research design and empirical process

Initially, our research interest stemmed from our own experience, as is often the case in qualitative research (Collins & McNulty, 2020), that is: having experienced COVID-induced virtual teamwork ourselves during the onset of the COVID-19 pandemic and also having experienced the existing models did not suffice for making sense out of this novel reality.

To learn more about this reality, we conducted problem-centered qualitative interviews with COVID-induced virtual team members and leaders in the German industrial sector. We chose problem-based interviews as our specific qualitative method because it combines the topical openness of qualitative research with the specificity of solution-oriented investigations.

We conducted the study in two phases: between February and July 2021 (27 interviews), when employees found themselves in COVID-induced virtual teams for the first time and between February and July 2022 (20 interviews), when organizations were already trying to learn from the experience and achieve learning and transformation beyond the immediate pandemic and when employees were thus already in the transitional phase that enabled them to reflect upon past experiences which were still vivid enough, yet, also not overly detached from present experience. Moreover, thanks to the two phases, we could trace developments in virtual teamwork. During phase 1, COVID-induced virtual teams emerged, and during phase 2, depending on pandemic regulations at that time, some had already developed into COVID-induced hybrid teams, that is: teams that worked together on-site when permitted and remotely (from home) when required by regulations. Therefore, in phase 2, our interviewees could already reflect as to whether they would rather work in a hybrid or in a mainly or exclusively work-from-home mode in the future.

In line with our phenomenon-based approach, we gathered both practical data and theoretical insights simultaneously. This allowed us to simplify reality into patterns while ensuring a harmonious “fit” between theory and the collected empirical material (see Figure 1).

The first guiding principles of what might characterize COVID-induced virtual teams provided us with initial patterns for our active categorization. We then employed this process by means of the two principles as visualized in Figure 1. Principle 1, oscillation, served to correlate insider (interviewee) reflections and outsider (researcher) interpretations. It also related immediate and specific experiences to general and abstract theory and vice versa.

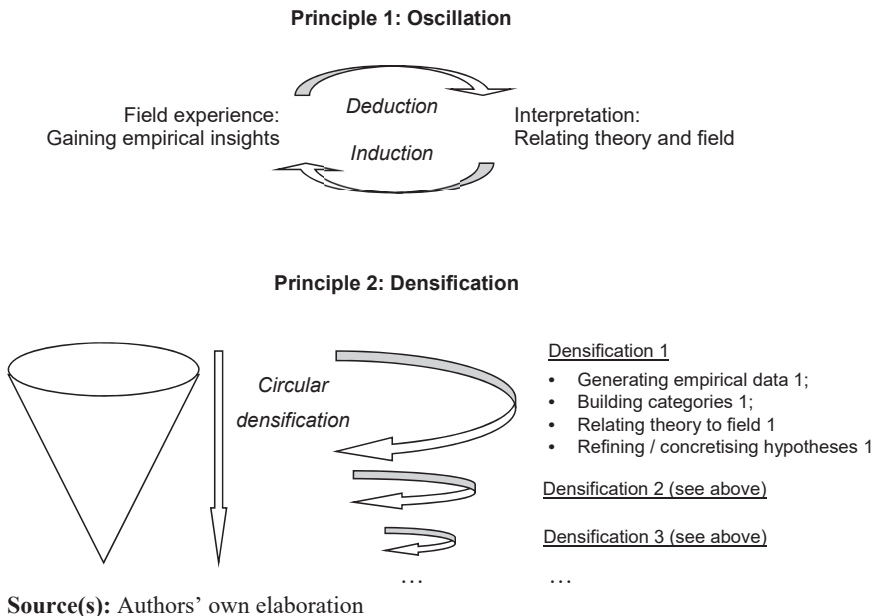


Figure 1. Two principles of phenomenon-based, theory-building qualitative research

Principle 2, densification, employed throughout in a circular manner, served as a multi-phase process for deducing, cross-checking and concretizing insights.

For instance, during the initial interviews, it became apparent that the new virtual work situation was something not experienced before. We could thus relate the empirical data to our hypothesis as researchers and to theory, thus arriving at a more structured understanding as to what exactly makes COVID-induced virtual teams a novel phenomenon of relevance. We could then search for links between these patterns and the existing literature. This means that we considered the existing literature conceptually in the qualitative sense (Welch & Piekkari, 2017), not “systematically” in the quantitative sense (e.g. Grant & Booth, 2009), as is fitting to our phenomenon-based and heuristic building of theory.

Being familiar with the regional industrial sector for various reasons such as academic education and role and/or previous work experiences, we asked individuals who worked or had worked in COVID-induced virtual teams whether they would be interested in sharing their experiences. Next, we interviewed those who agreed outside their working hours, mainly via a virtual meeting tool. We asked for consent and received it prior to the interviews, then we recorded the interviews. We did not pay the interviewees or compensate them for participating. As a benefit, we simply stated that participating might increase one’s reflexivity concerning their current reality.

In line with qualitative research, we did not seek statistical representativeness in our sample but rather looked for individuals whose experiences “mattered” to understand the phenomenon under study (Flick, 2009). The important characteristics also came from the deductive-inductive circular process of densification shown in Figure 1. For instance, we hypothesized that it must be significant whether an employee had access to their own home-working space or not. As more participants agreed than were interviewed, we could thus choose participants with those conditions still required for building our framework. As we were looking for patterns beyond single individuals, we would thus also transfer conceptual insights across them. We reached theoretical saturation after 47 interviews.

Amongst our interviewees, ages ranged from 23 to 60, with a balanced representation of all age groups. In total, 25 interviewees had underage children; 22 had not. Organizational tenure ranged from 0 to 40 years, thus enabling us to include the perspective of those with pre-COVID work experiences in the organization and those without. Moreover, 32 individuals had worked from home pre-pandemic, with one interviewee having been given the option but not choosing it. Compared to pre-COVID work-from-home statistics for Germany (OECD, 2020; Nimsdorf, 2021), this implies that those with prior work-from-home experience were overrepresented in our sample, which might also explain why they volunteered to be interviewed as they felt knowledgeable on the subject matter and potentially also felt that they would not harm their employer when stating the facts about COVID-induced virtual teamwork in their organization. Nonetheless, “problematic” stories of challenges and difficulties were more prominent than stories of success and being at ease with the situation, which surely also reflects people’s general worries and real fears during the pandemic. Women were underrepresented in the sample in absolute terms (14 out of 47) yet slightly overrepresented if one considers the percentage of women performing white-collar work in technical industries in Germany (BMFSFJ, 2023).

Interviewers took notes during the interview which they expanded directly afterward. They then correlated their notes with interview content and also exchanged their insights with each other across interviews. We revisited and commented upon the empirical material collected, as well as the process of categorization in regular intervals, both individually and collectively. For interpreting the empirical material, we employed a multi-step process (Spradley, 1979; McCurdy, Spradley, & Shandy, 2005). First, interviewers started with a category, for example: What are the problems that interviewees mention? Second, we

conducted a domain analysis to identify domains into which this perception is categorized, such as home-working space, care-work obligations, lack of technological infrastructure, or worries. Next, we conducted a taxonomy analysis to find out what the different types of a specific domain might be, such as types of care-work obligations or types of worries. Fourth, we conducted a componential analysis to find out how these categories relate to each other and alternative categories. The main goal when analyzing the empirical material was “active categorization,” aiming at relevant densification of experience into patterns (Grodal *et al.*, 2021), as depicted in Figure 1.

We coded both notes and transcribed interviews manually (Flick, 2009). After domains had been identified, we used informed coding to highlight all contexts of this domain. To identify the taxonomies of a domain, we used exploratory coding. To establish the relations between components, we used linked coding. Finally, we used explanatory coding to classify contexts of interaction into the abovementioned scheme. In regular intervals, we conducted mental cluster analyses to uncover (1) universal collective themes and (2) individual or diverging themes to figure out which experiences were shared and which experiences differed concerning the phenomenon under study. The following insights emerged out of this process.

Global virtual teams as a relevant heuristic background

As became evident during our research, when making sense of their novel work conditions, those with prior virtual team experience compared the experience mainly to previous incidents of having to collaborate across corporate locations and cultures (a global virtual team setting). Moreover, some interviewees had previous work-from-home experience, albeit never extensively but on an add-on basis (e.g. one day per week). However, these work-from-home-experiences were individual and not related to a team setting, as the teams in which interviewees used to work before the COVID-19 pandemic used to collaborate on-site, with the exception of those teams whose physical dispersion prevented on-site collaboration.

Theoretically, we found global virtual teams to be the virtual team phenomenon that was the most conceptualized by management and organization studies thus far (overview in; Jarvenpaa & Leidner, 1999; Jarvenpaa, Shaw, & Staples, 2004; Chudoba, Wynn, Lu, & Watson-Manheim, 2005; Maloney & Zellmer-Bruhn, 2006; Mockaitis, Rose, & Zetting, 2009; Martins & Schilpzand, 2011; Zander, Mockaitis, & Butler, 2012; Maznevski, 2012, 2017; Jimenez, Boehe, Taras, & Caprar, 2017; Mendenhall, Osland, & Bird, 2018). Thus, we deduced that to conceptualize COVID-induced virtual teams, it would be most relevant to relate them back to global virtual team characteristics, out of the combined theoretical and empirical insights gathered thus far.

One key insight from the existing literature on global virtual teams is that leading and collaborating in a global virtual team environment is context-specific and unique to every single team (Stahl, Maznevski, Voigt, & Jonson, 2010). This essentially implies that team members and leaders need to influence team characteristics and team processes in such a way that they are conducive to high performance (Stahl *et al.*, 2010).

However, despite each team’s uniqueness, it is possible to recognize patterns or systematic approaches that assist team members and leaders in handling their tasks. In a literature review, Maznevski (2012) identifies categories proposed for analyzing and managing specific global virtual teams in a structured manner: (1) team members and team configuration; (2) team characteristics, such as diversity and dispersion; (3) team processes, such as convergent and divergent processes; and (4) external and internal moderators, by means of which processes, characteristics and team members and team configuration may be influenced in such a way that positive dynamics in the team are encouraged and negative dynamics in the team are minimized for the highest team output. Summarizing the global virtual team

literature, [Figure 2](#) visualizes these features of global virtual teams and their interrelations in shaping team outputs, such as performance or learning.

The following sub-sections detail the elements depicted in [Figure 2](#), with the purpose of better understanding the COVID-induced virtual team challenge.

Diversity and dispersion: the two main characteristics

Dispersion and diversity are the two main characteristics that distinguish a global virtual team from other types of teams. They emerge from how a team is configured and from the characteristics of its members ([Maznevski, 2012](#)). Dispersion (*where is the team?*), also known as the “dispersion factor,” refers to the different, i.e.: more than one, physical locations of the team ([Martins & Schilpzand, 2011](#)). Diversity (*who is the team?*), depending on the source text, refers to the team’s internationality, transnationality, globality or multiculturalism (e.g. [Maloney & Zellmer-Bruhn, 2006](#); [Maznevski & Chudoba, 2000](#); [Mendenhall, Osland, & Bird, 2018](#)). Beyond that, diversity dimensions might also be profession, class, tenure, hierarchy, religion, ethnicity and other factors, such as cultural and social identities. Both diversity and dispersion increase the complexity of communication. Thus, they are mutually reinforcing elements. However, they also have separate effects on team processes ([Maznevski, 2012](#)).

Divergent and convergent processes in global virtual teams

Dispersion, diversity and their consequences influence the processes in which team members engage ([Maznevski, 2012](#)). Processes in a global virtual team can be divergent or convergent ([Earley & Gibson, 2002](#); [Stahl et al., 2010](#)), with either positive or negative effects on team performance ([Stahl et al., 2010](#)). Communication functions as a meta-level enabler of all these team processes ([Maznevski, 2012](#)). Key positive global virtual team processes are trust ([Jarvenpaa & Leidner, 1999](#)), cohesion and shared identity ([Martins & Schilpzand, 2011](#); [Maznevski, 2012](#); [Stahl et al., 2010](#)), communication ([Maznevski, 2012](#)) and motivation ([Jimenez et al., 2017](#)). From this perspective, global virtual teams perform well if they manage to strengthen the positive (convergent and divergent) team processes whilst minimizing the

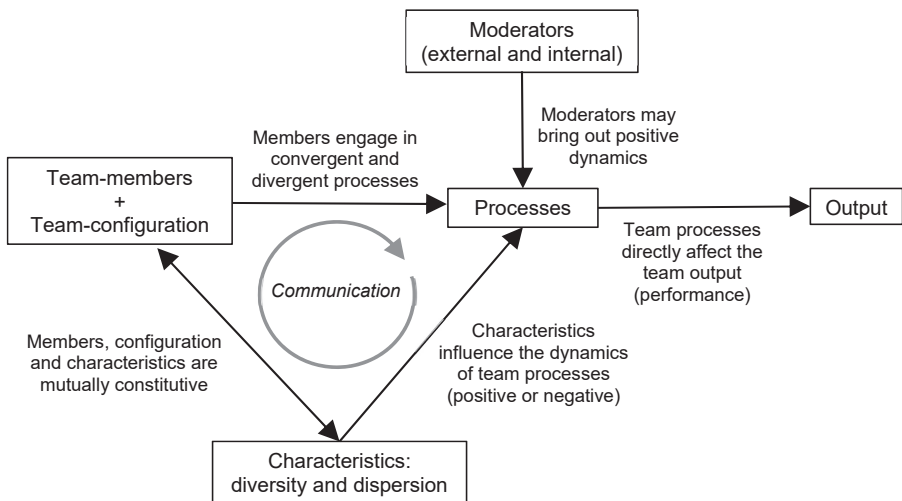


Figure 2.
The relevant heuristic background: Global virtual team factors and dynamics

Source(s): Authors’ own elaboration based on [Maznevski \(2012\)](#)

negative (convergent and divergent) ones. Table 1 summarizes these interrelations, providing an example for each of these processes.

The role of moderators

Moderators can affect and steer the dynamics between team members, team configuration and team processes. Moderators are certain variables that can enhance positive dynamics or mitigate negative dynamics. As processes and their dynamics are directly related to the team outcome, moderators thus “adjust screws” in the team’s performance (Maznevski, 2012). The existing literature on global virtual teams suggests that relevant moderators are leadership (Mendenhall, Osland, & Bird, 2018), team practice (Maznevski, 2012), tasks in terms of task interdependence (Gluesing & Gibson, 2004), the type of knowledge to be transferred (Hajro & Pudelko, 2010) and organizational context (Joshi & Roh, 2009). Teams can shape two of these, namely leadership and practice, whereas the others at least partially depend upon the wider organizational and environmental context. We thus understand tasks, knowledge and organizational context as external moderators and leadership and practice as internal team moderators, even though there is some overlap between the two categories.

Nonetheless, external moderators are relevant to global virtual teams as well. Tasks with a low level of interdependence are organized via standards and routines, respond well to hierarchical structures and do not require frequent interactions and communication (Gluesing & Gibson, 2004). However, tasks with a high level of interdependence are highly flexible and interactive; they benefit from rather flat and distributed hierarchies and reciprocal flows of information and require discretion and mutual adjustment (Maznevski, 2012).

The type of knowledge to be transferred within and beyond the team (Hajro & Pudelko, 2010) can be differentiated into explicit (“know-what”) and tacit (“know-how”) knowledge (Athanasiou & Nigh, 2000; based on Polanyi, 1967). Capturing and codifying explicit knowledge allows for relatively easy transfer, but tacit knowledge is intangible. It is acquired through social and communicative practices, making it challenging to transfer across distances and cultural knowledge bases (Tiwana & Mclean, 2005). Thus, the higher the need for transferring tacit knowledge, the higher the importance of non-virtual interactions for the global virtual team.

Organizational context is relevant in terms of culture and structural design (Joshi & Roh, 2009). A collaborative and innovative organizational culture might facilitate positive team dynamics (cohesion, creativity) and help overcome negative ones (groupthink, conflict; see Maznevski, 2012; Muethel & Hoegl, 2010). More flexible and integrated organizational designs, such as matrix or network designs seem more favorable to positive team dynamics than static and compartmentalized organizational designs such as a functional structure (Maloney & Zellmer-Bruhn, 2006).

The main internal moderators are leadership and practice. Leadership in global virtual teams is based on the ability to manage team dynamics (Malhotra, Majchrzak, & Rosen, 2007; Maznevski, 2012); it also seems to require more distributed power dynamics (Mendenhall, Osland, & Bird, 2018; Stahl et al., 2010). In other words, because the virtual and complex environment makes it impossible for a single person to control and monitor the team (Muethel & Hoegl, 2010), in particular, if task interdependence is high and if tacit knowledge transfer is

	Positive	Negative
Convergent	Trust	Groupthink
Divergent	Creativity	Conflict
Meta	Communication	

Source(s): Authors’ own elaboration based on Maznevski (2012), Stahl et al. (2010) and Jimenez et al. (2017)

Table 1.
Categorization of key virtual team dynamics

required, the focus of the thus collaborative leadership effort lies in establishing the conditions which make it more likely that favorable collaborative practices emerge (Maznevski, 2012). Referring to global virtual team processes, the purpose of these practices lies in supporting positive convergent and divergent processes, such as cohesion and creativity and avoiding the negative convergent and divergent ones, such as groupthink and conflict (see previous sub-section).

Findings: what is special about COVID-induced virtual teams

This section details the characteristics of COVID-induced virtual teams, as built from our phenomenon-based approach (see Methodology Section). The starting point was the previously outlined heuristic background of global virtual teams.

Characteristics of COVID-induced virtual teams in relation to global virtual teams

The delineations proposed for global virtual teams highlighted in the previous section enabled the following definition of COVID-induced virtual teams:

A COVID-induced virtual team consists of people who:

- (1) Collaborate aided by information and communication technology,
- (2) Are dispersed to at least some degree,
- (3) Share the same goal or target to at least some degree,
- (4) Are diverse with regard to some relevant characteristic(s) to at least some degree.

Consequently, the differences between a COVID-induced virtual team and a global virtual team are:

- (1) Regarding (2), the team is dispersed due to different work-from-home environments and conditions and not due to global dispersion. Therefore, there are no time-zone effects to be considered but, for instance, time-scheduling effects emerging from the blur between work, personal life and additional pandemic-induced social responsibilities (such as home-schooling kids or taking care of elderly family members, which varies across individuals). These divergent contextual factors (see 4) put people on different schedules and into different COVID-induced “time zones.”
- (2) Regarding (4), individuals differ not because of larger societal cultures but rather because their divergent identities are not exposed to the same integrative forces, such as organizational and team systems and culture, compared to the non-virtual phase. The relevant contextual factors are thus the divergent micro-level environments in people’s work-from-home environment, not cultural diversity in common sense.

Furthermore, these are major differences between global virtual teams and COVID-induced virtual teams:

- (1) A COVID-induced virtual team is not a newly formed team, whereas a global virtual team may or may not be newly formed.
- (2) A COVID-induced virtual team forms in response to an external crisis, lacking the luxury of deliberate and thoughtful decision-making. It arises due to the necessity of virtual collaboration when other modes are unavailable.
- (3) A COVID-induced virtual team is not in (sole) charge of how to alternate between virtual, hybrid and non-virtual phases. Rather, this choice is made for them for other than organizational or team-related reasons, such as the pandemic-induced mandate of social distancing.

Key dynamics in COVID-induced virtual teams

As COVID-induced virtual teams are not newly formed, they might not experience initial trust issues. However, if the pandemic continues to force COVID-induced virtual teams into virtual phases for longer, then the non-virtual phases should be explicitly utilized to “catch up” on trust. Moreover, as COVID-induced virtual teams persist, the likelihood of new members joining increases, necessitating the establishment of new trust.

The work-from-home environment is a crucial novel factor in COVID-induced virtual teams. In particular, the divergent work-from-home environments to which people are exposed create additional diversity and dispersion effects. For instance, whereas one person might be free to work during the day, another person might find it more convenient to work in the evenings when care work is done. Even others might need to interrupt work frequently to juggle multiple requirements. Thus, disparities in COVID-induced virtual teams often relate to the divergent work-from-home conditions. Conversely, team members mediate internal conflicts of interest, ensuring that no site or group can easily overpower another stakeholder in terms of formal power or knowledge, as is often the case in global virtual teams (see [Maznevski, 2012](#)). Configuration aspects, such as team members per site are not relevant to COVID-induced virtual teams. However, work-from-home also involves divergent workplace conditions, as well as divergent technological infrastructure and skills. This is thus a new power dynamic to be managed.

To COVID-induced virtual teams, work-from-home is a divergent process, while being on-site is a convergent process, adding another essential dynamic. If facilitated appropriately, work-from-home can foster innovativeness and creativity and on-site collaboration can increase trust and cohesion (see [Table 1](#)). However, as team members and team leaders are not in (sole) control over when and how often they may meet on-site, this is a fragile process to be closely monitored.

Discussion: how to encourage positive dynamics in COVID-induced virtual teams

Encouraging positive dynamics is a key aspect of virtual team collaboration. As [Figure 2](#) shows, key factors are team members and -configuration, internal and external moderators, team characteristics (diversity and dispersion), team processes (positive or negative, convergent or divergent) and output factors such as performance and learning. To facilitate positive team dynamics, moderators must be configured accordingly. This section discusses the specifics of how to achieve positive dynamics in COVID-induced virtual teams.

Team members and team configuration

Team configuration, namely determining how many individuals work at each site, is vital in global virtual team processes. Meanwhile, it is not a concern in COVID-induced virtual teams where everyone works individually from home, thereby balancing out power inequalities at the configuration level. However, due to potential differences in technological and physical workplace setups in various work-from-home environments, the crucial aspect to consider becomes: What is the individual’s configuration in terms of their physical and technological workplace? Second, in global virtual teams, team leaders usually choose members based on their expertise and skills. This is different in COVID-induced virtual teams. Managing the diverse needs, skill levels and competencies of COVID-induced virtual team members thus shifts from a configuration aspect to the internal role of “team leadership.”

External and internal moderators

The key external and internal moderators of global virtual teams which – as defined by the literature – are leadership, organizational structure and applied practices (see section

The Role of Moderators). Moreover, COVID-induced teams are also characterized by the external moderator (input factor) crisis. According to [Rosenthal, Charles, and t'Hart \(1989, p. 10\)](#), a crisis is characterized by the three properties of threat, uncertainty and urgency. A threat can be anything that endangers the values of a system, like health and security; it can be either internal or external to management and organization ([Boin & t'Hart, 2007](#)). A threat causes immediate problems and concerns for the public that need immediate attention and resolution (urgency). With this comes uncertainty concerning the present and the future. The initial phase of the COVID-19 pandemic fits these three crisis dimensions. It was a novel and fundamental external threat that required urgent actions under conditions of uncertainty. Thus, external crisis is a novel and key input factor of COVID-induced virtual teams. It regulates when and how a team may meet, thus impacting team characteristics and dynamics. Urgency, threat and uncertainty also impact team formation, configuration, processes and outcomes.

Leadership is another key moderator of global virtual teams (see section The Role of Moderators). Generally, leadership manifests on organizational and team levels, in the interpersonal leadership between team leaders and members and within individual team members ("self-leadership"). Furthermore, in a COVID-induced virtual team, leadership involves crisis management skills, in particular the need to achieve recovery from the current crisis ([Bhaduri, 2019](#)).

In contrast to global virtual teams, organizational leadership is largely an external factor in COVID-induced virtual teams as organizations are in the reactive mode, due to external crises, leadership requirements and performance implications move down to team and individual levels. Instead of being an internal moderator, organizational leadership then becomes part of the external context.

Organizational designs, structures and systems can be conducive to global virtual team performance, for instance, regarding their potential to foster creativity and innovativeness. Conversely, a COVID-induced virtual team's reactive mode and the blur of work and life under pandemic work-from-home conditions impact the team's implementation of organizational designs, structures and systems. Consequently, COVID-induced virtual team practices vary more across teams compared to global virtual team practices, which are mostly influenced, supported and directed at the organizational level. This emphasizes the need for strong self- and shared inner-team leadership in a COVID-induced virtual team.

Applied practices, such as language usage, usage of identical software, or process planning play an essential role in achieving satisfactory global virtual team effectiveness and performance. Ideally, these should align ([Chudoba et al., 2005](#)) and be coupled with synchronous communication (see next section) and regular face-to-face meetings to enhance the success of global virtual teams ([Maznevski & Chudoba, 2000](#)). In a global virtual team environment, global virtual team leaders can strongly influence applied practices. Thus, their appropriate choice is one of the mandatory skills. Conversely, in a COVID-induced virtual team in its initial phase, there is no or only little prior experience regarding appropriate and effective applied practices (due to the novel nature of the crisis), which again underscores the relevance of self-leadership within the team.

Processes

As stated in the previous section, key global virtual team processes are trust ([Jarvenpaa & Leidner, 1999](#)), cohesion and shared identity ([Martins & Schilpzand, 2011](#); [Maznevski, 2012](#); [Stahl et al., 2010](#)), communication ([Maznevski, 2012](#)) and motivation ([Jimenez et al., 2017](#)). Cohesion, the trust potentially resulting from it and shared identity ([Hinds & Mortensen,](#)

2005), highly motivates the team. However, they are difficult to establish under the conditions of diversity and dispersion.

In a COVID-induced virtual team, these difficulties are increased by the crisis conditions of “urgency, threat, and uncertainty.” The dispersion effect is brought about differently, namely by the need for social distancing, not by factual geographical distances. Conversely, COVID-induced virtual teams do not have the time-lag effect linked to global dispersion. Instead, different work-from-home environments cause it.

We may differentiate communication into synchronous (virtual meeting) and asynchronous (e-mail) (Jonsen & Gehrke, 2014). Synchronous communication is the “richer” mode, contributing to cohesion and shared identity more, if all team members participate and engage equally. It needs to be structured and facilitated accordingly (Jimenez *et al.*, 2017) and, ideally, be complemented with regular face-to-face meetings for even higher trust-building and cohesion (Jarvenpaa & Leidner, 1999). However, in a COVID-induced virtual team in its social distancing phase, face-to-face meetings are not an option. Thus, it remains crucial to focus even more on how leaders organize, guide and conduct virtual meetings to enhance their quality and capacity for building trust.

We may differentiate motivation into autonomous motivation (own willingness to participate) and controlled motivation (pressure to participate) (Zander, Zetting, & Mäkelä, 2013). A low willingness to participate on an individual level enhances the creation of reluctance on a team level. This reluctance further influences participation in team processes or willingness to become familiar with other members, thus inhibiting further cohesion and trust-building (Zander *et al.*, 2013). We may assume that, in a COVID-induced virtual team, initial autonomous motivation is lower due to the experience of crisis. Therefore, it is crucial how leaders motivate team members to participate and find the right degree of control for doing so. Moreover, self-leadership enables individuals to rise to the challenge.

Output factors

Key output factors of global virtual teams identified by the literature are performance and learning effects. Martins and Schilpzand (2011, p. 44) define team performance as “the extent to which the team meets standards of quantity, quality, and timeliness of task outputs that the team was assembled to achieve.” Performance results from the interplay of the abovementioned inputs and mediators. In global virtual teams, performance is one of the most researched factors (Maznevski & Chudoba, 2000; Martins & Schilpzand, 2011). For COVID-induced virtual teams, the correlation between diversity and performance has not yet been researched; for global virtual teams in general, scholars have found strong correlations (e.g. Presbitero & Toledano, 2017; Henderson, Stackman, & Lindekilde, 2018; Presbitero, 2019; Presbitero & Teng-Calleja, 2019). For instance, cross-cultural composition and increased diversity enhance creativity and prevent the formation of culture-based sub-groups (Ang *et al.*, 2007; Kadam, Rao, Kareem, & Jabeen, 2020).

Learning effects and “lessons learned” build a repertoire of experiences for global virtual team members, providing them with a wider range of possible solutions to meet future global virtual team challenges (Zander *et al.*, 2012). For COVID-induced virtual teams, learning effects, if achieved, can be assumed to be of even higher relevance and scope, as rooted in novel crisis learning effects.

Another outcome of COVID-induced virtual teams is transformation: a new external crisis and potentially significant impacts on how individuals, teams and organizations work (the remote work transformation). This could result in a completely new way of working that combines the best of both worlds, possibly emerging as post-COVID hybrid teams. However, to achieve this, teams must first achieve performance during the virtual phase, transfer learning effects across phases and then integrate these across teams on an organizational level.

Based on these characteristics of COVID-induced virtual teams, we must assume that leadership qualities are even more relevant to COVID-induced virtual teams than to “normal” global virtual teams. First, the COVID-induced virtual team context is new to all, and all team members of COVID-induced virtual teams must readjust. Conversely, in a “normal” global virtual team, there will be organizational cultures integrating the interpretive schemes and behavioral modes of team members. Organizational culture will be at least partially headquarters-induced and influenced by majority-minority relations. Some team members will be newer to the global virtual team environment, whereas others are already experienced in it. This then implies that only some team members (those at a remote site or those at the site with the least employees or those with the least amount of tenure) might struggle and have to adjust. In the case of COVID-induced virtual teams, the shifts in work context and context requirements are new to all. On the one hand, this balances out power dynamics; on the other hand, it also increases the challenge to all involved.

Implications: A phenomenon-based framework for managing COVID-induced virtual teams

Based on the previous considerations, [Figure 3](#) presents the crucial aspects of COVID-induced virtual teams, thus providing researchers and practitioners with a phenomenon-based framework.

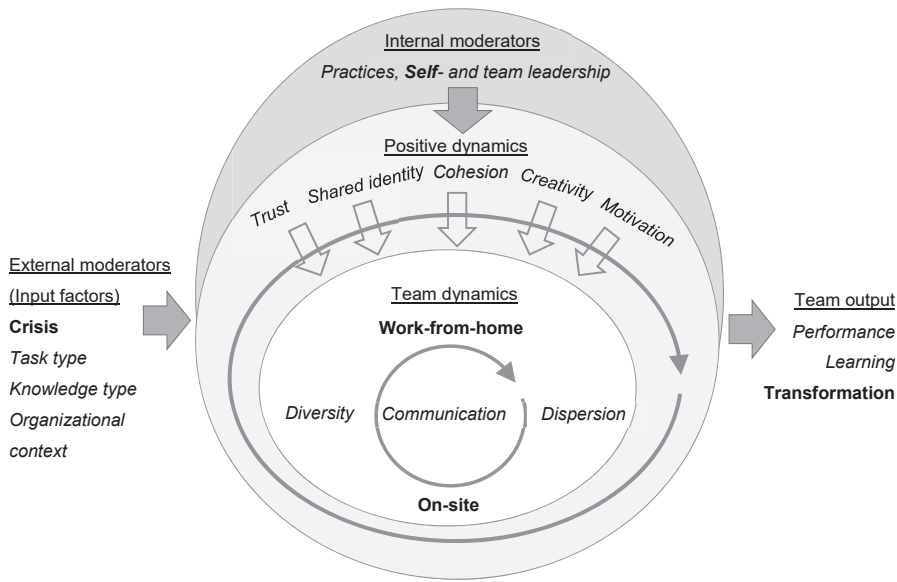
As [Figure 3](#) visualizes, diversity and dispersion are key convergent-divergent dynamics in both global virtual teams and COVID-induced virtual teams. COVID-induced virtual teams are furthermore influenced by the divergence of diverse work-from-home environments and convergent on-site collaboration. Communication remains a meta-level process running across them in both.

Team-external moderators (input factors) are task and knowledge type, organizational context and crisis, with crisis being a factor specific to COVID-induced virtual teams. Team output factors are performance, learning and transformation, the last one being a novel factor.

Crisis and transformation as novel input and output factors of COVID-induced virtual teams raise the bar in terms of both input challenges and output opportunities. For them, novel strategies and practices need to be designed and implemented and strategic importance should be placed on them.

Practice and leadership remain team-internal moderators. Due to the less prominent influence of external factors on the dynamics of COVID-induced virtual teams, they are well-suited for self-leadership. This means each team member takes responsibility for identifying and experimenting with best practices, establishing rules and developing practices, especially in the initial phase (see [Barry, 1991](#)). This is a relevant finding for the positive divergent processes of diverse teams, such as creativity. The more teams support team members' self-leadership, the higher the team's transformative potential. This finding aligns with previously proposed trends, such as self-organization via holacracy ([Schell & Bischof, 2021](#)). However, to utilize the transformative potential of COVID-induced virtual teams, organizations and managers will have to cope with increasingly flexible work arrangements and diverse employee experiences and expectations, both of which make it more difficult to control productivity. This then increases the relevance of trustful relations with employees.

To learn from the team-based COVID-induced self-leadership experience, organizations should encourage individual leadership skills, invest in team collaboration skills and turn away from the idea of “strong” and “individual” leadership on higher organizational levels. They should also seek to leverage and capitalize upon the collaborative and self-leadership skills that COVID-induced virtual team members and leaders have developed quasi-accidentally. At the same time, COVID-induced virtual teams that did not succeed to avoid



Legend:
Characteristics which are unique of COVID-induced VTs
Shared characteristics of GVTs and COVID-induced VTs

Source(s): Authors’ own elaboration

Figure 3. COVID-induced virtual team factors and dynamics: A phenomenon-based framework

repeating their mistakes require scrutiny. In a sense, the COVID-19 pandemic threw teams into a worst-case scenario, thus highlighting how the lack of key input factors and moderators impacts output factors. When investigating such incidents to establish patterns, scholars and practitioners may develop an “early warning system,” also in relation to non-COVID-induced virtual teams, which prevents team failure or low performance in the future.

The crisis is the most relevant external input factor of COVID-induced virtual teams. After the immediate crisis has passed, it is therefore relevant to collect and consolidate the learning that has taken place in COVID-induced virtual teams. Because of the established characteristics of COVID-induced virtual teams, this learning needs to emerge from grass-root levels, as COVID-induced virtual teams differ much from each other because each of them made their own rules as they went along. Thus, we may expect that team experiences will vary widely within the same organization. Organizations should seek to integrate these diverse experiences and to identify “best” and “worst” practices and their root causes.

After the end of the immediate crisis, formerly COVID-induced virtual teams are now able to choose their collaboration mode more freely, in particular, to alternate between off- and on-site collaboration and communication strategically. From there, new opportunities emerge. For instance, strategizing as the collaborative social process by means of which “strategy” is made on the level of practice (Jarzabkowski, 2005) was a key requirement for COVID-induced virtual teams to overcome the “void” in which they were thrown. This “void” was due to the virtual non-existence of a strategic organizational framework (as the crisis condition severely limited organizations’ strategic independence). For example, as outlined, organizations could not decide when to work on-site or off-site, let alone the COVID-induced virtual teams

themselves. Rather, this decision resulted from pandemic regulations. However, as outlined in the global virtual team overview, some knowledge exchange is more conducive to virtual communication whereas other knowledge requires rich and, thus, on-site communication. How to move beyond the strategic “void” post-pandemic is thus key to post-COVID team success.

Wider outlook: facilitating post-COVID hybrid teamwork and beyond

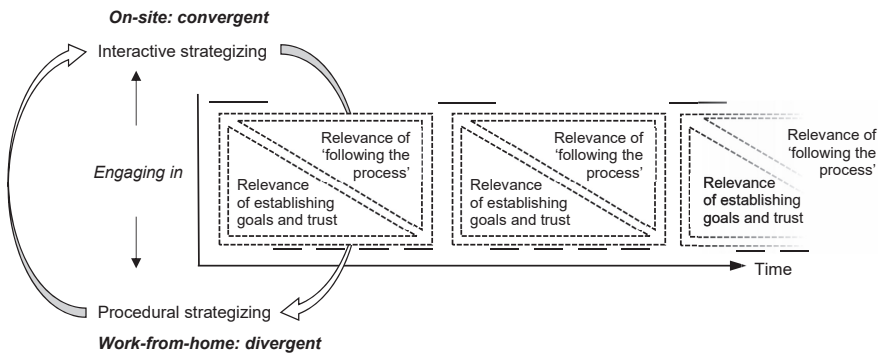
Workplace flexibility is expected to be an indispensable feature of the post-COVID workplace (Bal & Izak, 2020). The most likely future scenario emerging from the remote work experience induced by the COVID-19 pandemic is that work in general, also teamwork, will be more hybrid than it used to be, due to an increase in flexible work arrangements, such as work-from-home or work-from-anywhere. This then requires organizations to build an employment relationship based on trust and to relate to an increasingly diverse and autonomous workforce. At the same time, there is the organizational fear of losing control over employees and the ability to monitor key indicators such as working hours, productivity and performance (Bondarouk & Ruël, 2009; Caligiuri, De Cieri, Minbaeva, Verbeke, & Zimmermann, 2020).

Structuring how knowledge should be exchanged in the post-COVID hybrid teams to be envisaged might provide a way out of this dilemma. As already outlined, in contrast to global virtual teams, COVID-induced virtual teams are a “strategizing” environment. This implies that they need to figure out strategy as they go along, thus creating strategy via practice (see Jarzabkowski, 2005).

We may differentiate the activity of strategizing into two kinds (Jarzabkowski, 2005). First, there are interactions by means of which people create and exchange tacit knowledge, or, in other words: “shared meanings.” This requires face-to-face interactions. Second, there are activities directed toward conducting a procedure. These activities travel better than technology. The suggestion for hybrid teams is to occasionally meet and ensure alignment (interactive strategizing), start the next remote phase (“doing things”) and when there is a risk of too much dispersion and loss of coherence, initiate the next interactive and on-site strategizing loop. It is at this point that a team will need to re-align themselves again by means of on-site interactive strategizing.

This insight then leads to specific recommendations for how to manage post-COVID hybrid teams. First of all, one needs to alternate between off- and on-site collaboration. Second, the frequency of doing so should be based on the knowledge that needs to be exchanged: explicit or virtual; tacit or on-site. Third, each location requires a specific purpose, namely on-site for interactive building of shared meanings and trust and off-site (work-from-home) for procedurally carrying out tasks. Throughout, one should pay attention to the degree to which shared goals and trust have already faded when being in the divergent virtual mode and to moderate this effect by means of making appropriate location decisions. Figure 4 visualizes this process:

As Figure 4 suggests, a post-COVID hybrid team will need to meet again as soon as rules, procedures and practices start developing “a life of their own” and as soon as team members cannot remember the purpose why these rules, procedures and practices had been established in the first place. Secondly, if trust weakens and relations falter, it’s time to meet on-site again. Since geographical dispersion is not a factor for post-COVID hybrid teams, they can strategically choose their collaboration location. However, when doing so, they still need to take additional diversifying effects, such as the ability to use technology, work-from-home with children or care work, as well as individuals’ divergent subjective perceptions on these matters, into account (Zacher & Rudolph, 2020).



Source(s): Authors' own elaboration

Figure 4.
Suggested patterns for
post-COVID hybrid
team collaboration

From there, wider societal and labor-market implications emerge. For example, Germany is an environment in which a shortage of skilled workers is already described and assumed to increase (SVI, 2023). As our study suggests, diversity in COVID-induced virtual teams and post-COVID hybrid or work-from-home teams also intersects with other factors, resulting in inequalities. For instance, those who are not bound by social relations and could, consequently, be available for work 24/7, might have difficulties distancing themselves from work in the new flexible virtual teamwork environment. Moreover, in a gendered organizational environment, such as the German industrial sector which we studied (BMFSFJ, 2023), post-pandemic conditions of work might disadvantage those with care-work obligations. For example, team meetings might be scheduled during care-work hours or when children and other family members might be visible “co-workers” in a shared home-working space (e.g. during virtual meetings), which superiors and colleagues may interpret as a lack of professionalism. Thus, a part of the post-COVID work-related challenge is to leverage the potential of those groups whose home demands might visibly interfere with their work resources, in an environment in which work becomes increasingly flexible and de-localized.

To identify post-COVID hybrid team “high potentials,” it might be helpful to learn from those who proved to be highly resilient during the crisis in order to better understand which individual processes enabled employees to cope with crisis demands more or less successfully. For example, as related to inner processes, Mahadevan and Steinmann (2023) suggest that meta-cognitive intelligence, namely the ability to reflect upon past experiences and use them for preparing for future unexpected events, might be a determining factor regarding which individuals show resilience in the post-COVID teamwork environment the best.

At the same time, the condition of labor shortage in Germany also bears an integrative potential, in particular in light of global virtual teamwork. For example, Germany is now actively seeking qualified workers from abroad (SVI, 2023) and the link that we identified between COVID-induced and global virtual teams might be a selection criterion concerning the workers sought. If, as we propose, existing boundaries between global and non-global and between virtual and non-virtual teams, as well as between work and home, become increasingly blurred in a post-COVID, hybrid and work-from-home team environment, then the individuals with global team experience might fit excellently the German post-pandemic workplace, even though they might not be familiar with the specifics of how work is done in Germany and the boundary conditions thereof. Moreover, companies could transfer learning from global to local teams and, when employing individuals remotely and under work-from-home, potentially even work-from-anywhere, conditions, they might reduce the costs of setting up and maintaining high-performing teams.

Methodologically, as exemplified in our article, the phenomenon-based approach seems well-suited for analyzing novel and shifting phenomena in relation to existing knowledge and to known corporate and managerial strategies and actions. Secondly, the phenomenon-based approach also enables researchers to move concepts from one phenomenon to another in order to probe their applicability. For example, as [Mahadevan and Steinmann \(2023\)](#) have shown, a traditionally “cross-cultural” concept such as “cultural intelligence” might also be applicable to the novel *immer*-cultural context of COVID-induced virtual teams, thus providing managers and organizations with novel insights into the leadership skills required for managing post-COVID teams successfully. Thus, phenomenon-based research bears the potential of cross-fertilization of disciplines and application areas.

Depending on goals and purposes, phenomenon-based research can use qualitative, quantitative methods, or a combination. In our case, we opted for a qualitative approach. In line with the pros and cons of qualitative versus quantitative research, the qualitative approach seems the most suited when the goal is to deliver deep insights into specific and complex phenomena in need of reduction and patterning. Due to the conditions of external crisis, corporate and managerial reactions to the COVID-19 pandemic were characterized by threat, uncertainty and urgency. This means that there was a cacophony of “explanations” and “strategies” proposed at the moment, which makes it even more difficult to identify patterns in the experience and which again underscores the relevance of a qualitative phenomenon-based approach to establish some permanence and homogeneity in otherwise fleeing and heterogeneous crises-responses. After such a qualitative, explorative approach, and after the moment of immediate crisis has passed, one might then employ quantitative methods for higher generalizability and for transferring learning from crisis to post-crisis. This then also enables phenomenon-based investigations of a larger scope, such as the comparative study of COVID-induced virtual teams in different national cultures, under different types of legal regulations, or in different industries. These are thus fruitful quantitative methodological avenues for further phenomenon-based research, based on the understanding that it is often the combination of qualitative, explorative and category-building methods and of quantitative, category-testing and -refining methods that deliver the outcome of the highest relevance (see also [Shah & Corley, 2006](#); [Mahadevan, 2013](#)).

Summary and conclusions

The COVID-19 pandemic constituted a managerial and organizational crisis in the sense that it fundamentally challenged how people worked together and how organizations operated and employees and organizations needed to “make sense” out of these novel circumstances ([Caligiuri et al., 2020](#); [Christianson & Barton, 2021](#)). Consequently, what “work” meant and how it was executed changed for most (see [Georgiadou, Roumpi, Magrizos, McDonnell, & Vrontis, 2022](#)). Specifically, established teams were sent home, giving rise to a new, previously unknown type of team, namely COVID-induced virtual teams. This is a new phenomenon that requires conceptualization.

Thanks to our phenomenon-based, and thus grounded and theory-building, qualitative research, we were able to identify existing conceptualizations of global virtual teams as the relevant heuristic background from which to understand COVID-induced virtual teams in a structured manner. We found that COVID-induced virtual teams display a higher relevance of internal team moderators, the additional external moderator of crisis and the additional output factor of transformation. Work-from-home as an additional aspect of team configuration introduces technological and workplace diversity-related configuration aspects, the need to manage people’s divergent skills and competencies and the requirement to consider diverse work-from-home conditions. Further dynamics are the interrelations between work-from-home and on-site collaboration.

Key implications for future post-COVID hybrid teamwork emerge in the areas of crisis leadership, self- and distributed leadership and for managing team divergence and convergence by means of structured strategizing in post-COVID hybrid teams in a way that takes advantage of the specific dynamics induced by divergent work-from-home environments and convergent on-site interactions. Besides offering a first conceptualization of COVID-induced virtual teams, the contribution of this article lies in laying the groundwork for further empirical studies on post-COVID hybrid teams, which also constitutes the study's limitation as it does not go any further than that. Thirdly, this article provides researchers with an empirical exemplification of how to implement the phenomenon-based approach for higher theoretical relevance. This is particularly relevant in the face of novel phenomena, the experience of which goes so "deep" that it seems almost impossible to reduce their complexity to patterns, in particular when an immediate crisis adds strong elements of threat, uncertainty and urgency to the experience. To transfer crisis learning to the post-crisis phase, further phenomenon-based research should conceptualize the emerging phenomena of post-COVID hybrid and work-from-home teams and, when doing so, probe other known conceptualizations of existing phenomena for their applicability.

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