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Unlocking the Success to Remote Employee Motivation: Insights from Merck KGaA's Post-COVID Journey

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Abstract

The global pandemic has drawn attention to remote work models, not least fuelled by the discussion of advantages related to work productivity, energy efficiency, and cost savings. Maintaining a large workforce of office employees, Merck KGaA, Darmstadt, Germany (later referenced as Merck KGaA or Merck), applies these labor forms to a great extent through its flexible working guidelines governing the framework conditions of such arrangements. However, recent studies emphasize the adverse impacts of enforced remote settings on employee motivation, which is linked to the increased isolation of Merck's employees during the pandemic. Consequently, this study aimed to investigate the factors affecting post-pandemic remote employee motivation and identify improvement areas based on the needs satisfaction analysis of the Self-Determination Theory (SDT) by Ryan and Deci (2000). To support those efforts, a case study method was applied, which included multiple data collection methods involving self-observation, internal documentation, desk research, and five qualitative interviews with a cohesive team working at the company. The study found that hybrid arrangements are preferred over fully remote work due to the importance of interpersonal communication and relationship building. Based on mediation through the working context and individual factors, a layered model of remote employee motivation was developed to address the unsatisfactory dimensions of the investigated needs by improving networking, communication, and teamwork alignments.

Keywords: employee motivation, remote work, self-determination theory, post-COVID, employee needs satisfaction, hybrid work arrangements

Abstrakt

Światowa pandemia przyczyniła się do popularyzacji pracy zdalnej, która jest związana z szeregiem takich korzyści jak obniżenie kosztów, zwiększenie wydajności pracy oraz wzrost efektywności energetycznej. Firma Merck KGaA Darmstadt, Germany (dalej: Merck KGaA lub Merck), utrzymując dużą kadrę pracowników biurowych, stosuje w znacznym stopniu różne formy pracy zdalnej, która jest realizowana na podstawie ramowych warunków zawartych w umowach oraz elastycznych wytycznych wewnętrznych. Ostatnie wyniki badań przeprowadzonych w przedsiębiorstwie świadczą jednak o niekorzystnym wpływie wymuszonej pracy zdalnej na motywację pracowników, co jest wynikiem zwiększonej izolacji pracowników podczas pandemii.

Celem badań przedstawionych w artykule było zbadanie czynników wpływających na motywację pracowników zdalnych po zakończeniu okresu pandemii oraz identyfikację obszarów usprawnień w oparciu o analizę satysfakcji potrzeb z wykorzystaniem Teorii Samostanowienia (SDT) Ryana i Deci (2000). Dodatkowo zastosowano metodę studium przypadku, podczas której analiza została oparta na danych zgromadzonych podczas pięciu wywiadów jakościowych przeprowadzonych z członkami wybranego zespołu pracującego w przedsiębiorstwie, samoobserwację, a także dokumentację wewnętrzną. Badanie wykazało, że pracownicy preferują rozwiązania hybrydowe w porównaniu do pracy w pełni zdalnej ze względu na znaczenie komunikacji interpersonalnej i budowania relacji. W oparciu o mediację poprzez kontekst pracy oraz czynniki indywidualne opracowano wielowymiarowy model motywacji pracowników zdalnych. Model zwraca uwagę na dotychczas nie w pełni adresowane wymiary potrzeb poprzez poprawę współpracy w sieci, komunikacji i pracy zespołowej.

Słowa kluczowe: motywacja pracowników, praca zdalna, teoria samostanowienia, post-COVID, zaspokojenie potrzeb pracowników, hybrydowe formy pracy.

Introduction

Grounded on technological advancements and the 2019 coronavirus disease (COVID), remote work has been a rising disruptive factor in many businesses (Jawabri et al., 2022). Although the most recent adoptions may be described rather as enforced remote work due to the aforementioned macroenvironmental factor, they are often perceived as a win-win situation for employers and employees as illustrated by the changing preferences of working adults (Popovici & Popovici, 2020). However, there have also been many discussions over the adverse effects of remote work on employee engagement and motivation (Jawabri et al., 2022).

Contemporary studies emphasize that "pervasive feelings of loneliness, anxiety, and reduced well-being" (Becker et al., 2022, p. 449) threaten employee motivation in remote settings. This is particularly important considering the role of motivation as a stimulator for on-the-job behavior and lower turnover rates in organizations, which currently find themselves in a war for talent (Dobre, 2013; Nahkod et al., 2020). Given the recent popularity of remote work and its predicted perseverance in the future, studying this accelerating phenomenon in connection to employee motivation is thus of great relevance (Pura, 2021).

Taking this into consideration, this study aims to investigate the aspects mediating post-pandemic remote employee motivation and improvement measures by comparing employee and manager perspectives at Merck KGaA. The choice of the chemical and pharmaceutical company is justified by the availability of large amounts of data and the high share of partially remote-working office employees at around 44% of Merck Group's total workforce.[1]

The article is structured as follows: the subsequent part offers a review and summary of the theoretical findings of recent studies concerning remote employee motivation, which provides the basis for the research gap identified. This is then followed by the methodological part, after which the empirical findings and analysis are presented and discussed in relation to the literature review. Finally, the article is concluded with the response to the research question and a demonstration of the theoretical and practical implications for the company under consideration.

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[1] Merck Annual Report. (2020). *Number of employees*. Retrieved May 6, 2023, from https://www.merck-group.com/en/annualreport/2020/notes/employees/31-number-of-employees.html

Remote Employee Motivation: The State of the Art in Literature

Theoretical Foundations of the Remote Working Context and Motivation

To derive relevant classifications for the vocabulary used in this article, several views on remote work and motivation are presented hereinafter. Remote work refers to "organizational work performed outside of the normal organizational confines of space and time" (Olson, 1983, p. 182). Despite the recent attention given to the topic, the practice has been studied since the 1970s, when it was also referred to as "work from home" (after: Adekoya et al., 2022). Rooted in the enforced remote work settings from the pandemic, current researchers predict post-COVID work to be a hybrid mix (Borse et al., 2021). This served as the background to study the psychological matter of employee motivation, which Hollyforde and Whiddett (2002) define as the physical or psychological driver of human behavior. In addition, Ryan and Deci (2000) highlight the relation of motivation to resolution and mobilization in realizing positive organizational consequences, such as commitment, energy, and innovation. The term can further be differentiated into extrinsic and intrinsic motivation, the former being defined as initiating a behavior to receive separate consequences, while the latter refers to behavior resulting out of personal reasons and fulfilment (Kessler & Bartunek, 2013).

As the conceptual framework of this study, the SDT by Ryan and Deci (2000) concentrates on this distinction, whereby intrinsic motivation is the preferred state for improved well-being and performance. Simultaneously referred to as autonomous motivation, it can also be obtained through the process of internalization (Ryan & Deci, 2000). As visualized by their self-determination continuum, this process is facilitated by satisfying the three basic psychological needs termed competence, relatedness, and autonomy (Ryan & Deci, 2000). Competence involves taking on challenges and mastering the environment, autonomy entails feeling in control of one's actions, and relatedness refers to meaningful social interactions and feeling cared for by others while also caring for them (Kessler & Bartunek, 2013). This conception was later adapted to the workplace context, suggesting that performance and well-being are affected by the type of motivation employees perceive in terms of their job activities (Deci et al., 2017). This adaptation includes social context and individual dif-

ference variables, with organizational support and managerial styles affecting the satisfaction of employees' basic psychological needs (Deci et al., 2017). To put it in general terms, "more autonomous forms of motivation will predict greater persistence, performance quality, and well-being over time than will controlled forms" (Deci et al., 2017, p. 22). As evidenced by the effects of remote work elaborated in the following, it may be expected that the satisfaction of autonomy is higher compared to the two other needs. The utilization of this theory is justified by both the frequency of application to remote working contexts and the comprehensiveness in realizing the factors affecting remote employee motivation discussed in the subsequent paragraphs.

Impacts, Mediating Factors, and Improvement Propositions

Considering the overall impact of remote work on employee motivation, the reviewed literature presents a negative effect by trend, although mixed research content prevails in the area of the advantages of remote work. The research of Borse et al. (2021) explored factors impacting the productivity and job motivation of remote workers. It appears, on the one hand, positive associations relate to increased productivity, flexibility in scheduling tasks, and higher working hours based on saved commuting times. On the other hand, their results suggest that remote work environments threaten personal and professional relationships, negatively impacting on-the-job motivation (Borse et al., 2021). Similar findings of Nwoko and Yazdani (2022) evidence the notion of lower employee motivation in remote work based on their quantitative research conducted with workers in Nigeria. The mentioned reduction of motivation is currently explained through challenges such as difficulties in 'unplugging' after work, blurred boundaries between work and personal life, limited collaboration with colleagues, more distractions at home, and detachment from the workplace (Borse et al., 2021; Jawabri et al., 2022; Pura, 2021; Borghouts et al., 2022). As such, the remote working context highly impacts the interpersonal and psychological sphere of the work environment. Although the setting is partly associated with a beneficial work-life balance and higher flexibility, it expresses the need for higher support and interactions to decrease social isolation and stress.

Taking this into account, studies applying the SDT framework find that the satisfaction of the three basic psychological needs positively affects remote

employee motivation (Nwoko & Yazdani, 2022; Orsini & Rodrigues, 2020). It is proposed that employees who have a say regarding their work schedule, receive higher levels of support, and have more frequent meet-ups with their colleagues, are potentially more motivated (Nwoko & Yazdani, 2022). Nonetheless, Becker et al. (2022) state that the satisfaction of needs also depends on the employees' unique social baseline assumptions and separation preferences, which should be additionally considered. Regarding overall mediating factors, a distinction can be made between organizational factors and the employee's individual situation (Nwoko & Yazdani, 2022).

In line with the presented theories, existing propositions of improving the motivation levels among remote workers focus on the dimensions of guidance, contextual factors, working structures, and adjusted interpersonal communication formats and tools within the management perspective. For instance, several studies suggest guiding arrangements such as micro-breaks, and clear task articulations (Borse et al., 2021; Nahkod et al., 2020). Within the structural dimension, researchers debate over the level of flexibility to be provided to employees in scheduling their work and the necessity of structures through time frames and limits (Jawabri et al., 2022; Orsini & Rodrigues, 2020). However, it is necessary to consider some implementation difficulties relating to the fact that there is usually a lack of feedback when motivating employees, which is also affected by a certain time lag between efforts of work encouragement and the individually perceived success (Nahkod et al., 2020). Since remote work arrangements gravitate towards hybrid models, this becomes even more difficult to maintain as individual preferences are less visible and apparent.

To summarize, the foregoing literature has highlighted the challenges associated with remote employee motivation and the general mediating factors, such as individual and socio-contextual influences. Following those investigations, emphasis has been put on the importance of personal relationships and communication among remote-working employees, while improvement propositions have been mainly viewed from the management perspective. However, most of the research reviewed herein focuses on remote work during the pandemic, which has been previously identified as enforced remote work. Fuelled by the predicted perseverance of remote work arrangements and the importance of recognizing individual and non-generalizable factors, this study aims to examine those conditions in a post-pandemic remote setting.

In this context, Merck's staff perspective and lessons that can be learned from the pandemic are also taken into account, given that the predicted negative influence prevails.

Description of the Methodology

Using the identified research gap as the foundation, this study aims to answer the following research question:

How can managers and employees improve motivation in a post-COVID remote work environment?

Here, the general objective is to identify improvement areas and possible recommendations related to enhanced motivation in a post-COVID remote setting of employees working in the pharmaceutical and chemical industries. To verify and operationalize the impacts of remote work arrangements on employee motivation, as defined in the literature, the research object refers to employees and a respective manager of a cohesive team working at Merck's headquarters. The team selection based on purposive non-probability sampling enabled comparability within the study results and ensured that the described research objects operate in a flexible arrangement, including remote settings as the article's primary focus. The company choice is justified by the internal data availability and existing personal networks, among other factors.

Data collection

For the purpose of collecting data, a case study method was chosen, defined as the qualitative investigation of a confined system over time by gathering extensive and detailed data (after: Strumińska-Kutra & Koładkiewicz, 2018). Referring to Yin's typology of cases, the applied method takes on a descriptive and explanatory character based on the above-described sampling technique (after: Strumińska-Kutra & Koładkiewicz, 2018). As the characteristic of case studies, data triangulation was adopted based on the following four research methods and data sources, as also visualized in Appendix 1 (Strumińska-Kutra & Koładkiewicz, 2018). As the first data source, **desk research**

was utilized to gather information about the context of the case by reviewing published (secondary) sources, such as industry-specific information, press releases, website articles, and governmental regulations (Woolley, 1992). This was supplemented by the consideration of **internal documentation**, such as company documents, to provide additional valuable information as part of the case context investigation. For the third and primary data collection method, individual **semi-structured in-depth interviews** were arranged around "a set of predetermined open-ended questions" (Dicicco-Bloom & Crabtree, 2006, p. 315) based on separate guidelines for the manager and the employees. The interview data were obtained within a time frame of two weeks (20.03.23–02.04.23), whereby five interviews (4 employees; 1 manager) were conducted with an average duration of 47 min via Microsoft (MS) Teams, also used to record the interviews. The recordings were afterwards transcribed using MS Word Online and analyzed by applying MAXQDA, a "computer-assisted qualitative data analysis software" (Dicicco-Bloom & Crabtree, 2006, p. 318). The transcribed interviews were coded and summarized using an inductive code system (see Appendix 2). Further steps included the incorporation of visualizations and the Questions-Themes-Theories model. As the fourth and last data source, **self-observation** was conducted before the collection of interview data to obtain self-awareness and reflections based on the aforementioned personal networks with the case company (Choy, 2014).

Data analysis and limitations

The findings section follows an analytical structure composed of descriptive analysis and cross-case synthesis as the transcripts were coded in a simplified two-wave process according to one code system and compared in tables to identify patterns and causalities (Strumińska-Kutra & Koładkiewicz, 2018). This code system consisted of inductively generated codes assigned to several themes and corresponding sub-categories, as shown in Appendix 2. The sub-categories generated in an initial coding process were assigned to the main categories in a second process, containing personal information, management style, remote work setting, perception of remote work, influencing factors of remote motivation, SDT – autonomy, competence, and relatedness, areas of improvement, implemented strategies/techniques, and important aspects.

Although the applied qualitative research methods allow for rich contextual descriptions and exploration of specific behaviors, there are certain limitations such as the risk of loss of objectivity and limited generalizability, as well as obstacles in the form of time-consuming data collection processes compared to quantitative methods (Choy, 2014). Furthermore, the sample did not include a fully remote-working employee and was restricted to a small sample size, which restrains the comparability to the pandemic as well as the findings' representativeness. Regarding the coding of interview data, only a simplified two-wave process was applied as described above, which could have been further enhanced by applying a more stringent and proven methodological approach. However, the interviewer bias could be decreased through the conducted self-observation.

Findings

The following paragraphs will describe and compare the findings from the five interviews conducted among the participants to obtain instructive insights into their perceptions of motivation in a remote working environment.

Remote Work Setting and General Perceptions

The first part of the interview guideline investigated the remote work setting, degrees of remote working, and general attitudes. Hereunto, the former two themes were excluded from the manager's interview, although it is notable that they work in a hybrid model themselves. Regarding the family and housing situation, Employees 1 and 2 live in two-person households, whereby the former makes use of a shared office compared to the single offices of all other interview participants. Employees 3 and 4 live in a four- and three-person household, respectively. Overall, these individual situations exhibit a comfortable setting as the possibility of spatial separation is given at least to a certain extent, which was identified as a necessity for a successful division of work and personal life.

Concerning the equipment received from the company, the interviewees only referred to their laptops and the flexible working guidelines. However, the employees themselves acquired additional equipment during the pandemic, such as headsets and webcams. Even though the obtained amount

of equipment may seem surprising given the size of the company, it should be noted that German employees had access to government subsidies and tax reliefs during COVID and did thus not express dissatisfaction with the received support.[2]

All interviewed employees work in a hybrid model, with the most common ratio being three remote and two office days per week. An exception is the case of Employee 2 with four remote working days, which, however, is also related to their personal situation of the longest commuting time and a sensorineural hearing loss, limiting their ability to follow conversations including simultaneously speaking participants. However, there is no fully remote-working employee represented in the sample, which needs to be considered when assessing the satisfaction of the three needs. Yet, the similar degree of remote work among the team members hints at a certain positive influence on the overall attitude as no peer pressure is asserted:

"It's great to know that in our team, we are all working several days from home, so we have the possibility for each and every meeting to dial in remotely. There, I would say, it is very easy to feel comfortable and have a good feeling to work from home."

Employee 4

Building on this, the overall perception of the interview participants (including the Manager) displays a strongly positive tendency, as also validated by the number of coded segments for the positive (21 coded elements) and negative aspects (9 coded elements), respectively. Nevertheless, such quantification of qualitative coding must be viewed critically, as one coded element can include several arguments of the interviewees' statements. Here, the most frequently mentioned advantages refer to fewer interruptions, less or no commuting time, as well as higher flexibility and independence relating to an improved work-life balance. The negative aspects pertain to aggravated interactions and connections with colleagues, the feeling of isolation, merging confines between work and private life, and increased pressure related to the need for constant availability:

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[2] Federal Ministry of Finance. (2022). *Pandemic-related assistance*. Retrieved April 21, 2023, from https://www.bundesfinanzministerium.de/Web/EN/Issues/Public-Finances/Corona/pandemic-related-assistance.html

"If I'm working from home, I somehow feel more stressed because I'm not available in the sense of when I am in the office, everyone can see that I'm working. So that's some pressure I put on myself to really show that I am working consciously."

Employee 1

While for Employees 1, 3, and the Manager, the loss of personal interactions and supervision, as well as teamwork effectiveness stand out, the overall trend suggests a positive perception with slight variations to individual degrees. This perception is, however, rather attributed to the hybrid mode of the current work model which is perceived as facilitating the lack of collaboration in fully remote settings. The latter can be identified as a reoccurring motive and key finding since all participants ruled out a completely remote work model.

SDT – Satisfaction of the Basic Psychological Needs

The aforementioned positive and negative perceptions can be attributed to the so-called unsatisfactory and satisfactory dimensions of the three basic psychological needs by Ryan and Deci (2000), as will be elaborated in the following part, which makes up the outer layer of the developed model on employee motivation influences. Beginning with **autonomy**, the interview results pointed to the free choice of work location and the degree of remote working within Germany, except for one 'non-mandatory' team office day. The same applies to independent work scheduling and goal setting around existing meetings. At this juncture, the interviewed employees emphasized differing work schemes compared to the office setting. This is mainly based on the fulfilment of household responsibilities during prolonged breaks and the enablement of 'focus work' by decreased numbers of meetings. Although the mentioned office attendance rule suggests an unsatisfied dimension, it was perceived as strongly positive representing a basis for alignment:

"It's great for me that we have this defined office day within the team, where I know that I will meet a lot of other colleagues […] as this also helps me to be engaged."

Employee 4

Even though work outside the German borders is not so easy to enforce due to tax regulations, the employees expressed no distinctive need for further freedom or guidance. Interestingly enough, Employee 2 highlighted that the international environment of the company already requires staff to work in online settings even when being at the office, which is crucial to realize concerning the adaptation to such environments. Moreover, Employee 1 stressed the desire for increased transparency regarding day-to-day flexibility, i.e., not working 8 hours at a stretch, which the Manager also picked up. Generally, the analysis portrayed a high valuation of the Manager's trust and provided freedom, which relates to their management style. While empowering their employees to perceive their purpose, they aim to leverage a balance between the provision of necessary structures and liberty. The team members' descriptions of existing differences in remote working procedures and management approaches compared to the office setting also mirror the Manager's minimalist technique:

> "I am on purpose trying to avoid having too many differences except for where I see something needs to be covered in addition to the virtual world."
>
> Manager

As predicted by previous studies investigating the need satisfaction during the pandemic, autonomy appears as greatly satisfied, possibly even higher than in the office environment as work is scheduled based on private obligations and individual preferences.

This is contrasted by the need for **competence**. Although the employees reported sufficient hard skills and increased productivity due to fewer disruptions, the soft skills and development opportunities seem to be lacking in a remote setting. Being especially relevant to younger interviewees, this can be linked to decreased networking and informal knowledge-sharing ('bush telegraph'), as well as difficulties in virtually transmitting nonverbal communication components as pointed out by the majority of interview participants:

> "I think on the bottom line, human beings are more or less relying on personal interaction with respect to personal development."
>
> Employee 3

As mentioned by Employees 1, 3, and the Manager, additional barriers include the lack of immediate feedback and transparency over colleagues' availability. Given their short time with the department, the first interviewee further reported missing out on onboarding and mentoring during the first few months. According to Employee 4, a distinction can be made between the effectiveness of on-the-job development opportunities and external ones, since they assert that the latter is more easily facilitated in a remote setting compared to on-the-job development being characterized by face-to-face interactions. The remote setting thus imposes digital facilitation methods, such as presentations, on work-related exchanges. This was grasped as time-consuming and low-quality by Employee 3 and the Manager. Therefore, this employee expressed the need for further equipment in the form of a 'whiteboard' tablet based on their collaborative working methods, which also links to the Manager's aspiration for virtual reality appliances for remote interactions, although identified as rather unfeasible. To summarize, the findings suggest that the need for competence is not as satisfied, whereby the focus is on networking, knowledge exchange, and personal development. Since those components were identified as being tied to the on-site environment, the interviewees' emphasis on the hybrid work model can be explained:

> "For all the reasons mentioned before, I strongly prefer the hybrid version."
>
> Manager

Furthermore, age, career position, personal work patterns, and the time being part of the team seem to influence the mentioned perceptions as external influences. Accentuated by the higher effort and unnatural setting of video conferencing, employees encounter certain communication barriers. Since they are consequently somewhat reluctant to reach out to their peers, this also affects the team cohesion discussed in the following part.

Looking at the aspect of communication in terms of **belongingness/relatedness**, it is primarily pursued via private messages (PMs), group chats, and video calls over MS Teams. Whilst the interviewees perceived this method as convenient due to quick responses, the team's international context, and tool familiarity, the leverage of personal interactions and relationship building were termed as inadequate. Nevertheless, none of the participants proposed the use of different tools for fear of information overload and confusion. Although

somewhat conditioned by the previously mentioned degree of collaboration, the overall team cohesion was reported as being satisfactory. Herein, the Manager highlighted personal gatherings, meeting infrastructures, and the office presence alignment as facilitators. As evidenced by the presented findings, the feeling of belonging within the team is strongly influenced by the artificial environment of communication in remote settings:

> "I mean, we are still a young team. So, in this respect, you start to get to know the team members and the remote setting doesn't help to accelerate this process."
>
> Employee 2

Another interesting observation could be made regarding the relation to the overall company, which Employee 3 and the Manager perceived as negatively influenced by the remote environment since the identification with the company's values is present to a lower extent in the home-office context. On the other hand, Employees 1 and 4 recognized a positive influence on the perceived employer image. Once again stressed by this lower satisfaction of belongingness, the current remote work model appears insufficient regarding the facilitation of personal interactions and relationship building, although it includes highly satisfactory hybrid forms. This contentment might, however, be related to the temporally close comparison with the pandemic setting. Linked to the previously described need for competence, the interview findings exhibit certain enhancement opportunities, which will be exemplified in the subsequent section. However, it should be considered that the maturity of adaptation to existing structures and tools offers a limited potential scope of change.

Mediating Factors Affecting Motivation in a Remote Setting

Regarding the general factors affecting remote employee motivation, the positive aspects highly correlate with the perception discussed above. The more diverse negative factors relate to anonymity as a virtual communication barrier, fewer exchanges, and networking, as well as lower connections with managers and employees. Whilst an overall focus lies on those weakened interpersonal connections and components of communication, such as nonverbal cues, some exceptional findings regarding the individual participants

contain a higher need for organization and frequent feedback as expressed by Employee 1. In addition, Employee 3 emphasized isolation and decreased identification with the company as major challenges. Exceptionally, Employee 4 reported the merging confines between work and private life, and the resulting struggle of 'shutting off' and working overtime. although they shared the overall higher satisfaction with Employee 2. This might be partly because of their personal situation as a parent of a small child. The Manager greatly shared the features named by their employees but stressed the increased need for meeting infrastructures and team alignment.

The described factors suggest that individual preferences influence the level of satisfaction with the remote work environment. It can be distinguished between the impact of external factors mentioned earlier, such as task type, management style, etc. influencing all participants to a certain degree, and internal factors, such as work patterns, demographic influences, etc., which constitute the aspect of individual perception and mediate employees' motivation in the post-COVID remote work environment as the core of this study's investigation. This is associated with the aforementioned imbalance among the interviewees as illustrated by the code matrix depicting higher correlations of negative factors for the coded elements of Employees 1, 3, and the Manager (see Appendix 3). Nevertheless, the findings indicate that the hybrid setting is not generally associated with reduced motivation, but rather a higher potential risk of such:

> "I think on some days, especially with regards to not having constant exchanges with colleagues, the motivation level can potentially skip faster than when I'm in the office."
>
> Employee 1

Although this decreases the need for improvement and makes the hybrid model a 'lesson learned' from the pandemic, the examination of needs satisfaction discussed previously could identify certain problem areas that need to be considered.

Areas of Improvement and Implemented Strategies

Central to the formulation of recommendations, the recognized improvement areas include networking and exchange with colleagues, mentoring and on-

boarding, as well as transparency over flexible work arrangements, and employees' availability or need for collaboration. Moreover, the connection to the overall company and virtual communication barriers play an important role. Regarding the exchanges of both personal and professional matters, the provision of additional equipment might be considered dependent on individual preferences and available resources.

Moreover, the interviewees were questioned about their individual strategies for maintaining remote work motivation. This can be summarized by referring to micro-breaks for recalibration and reflection, a higher number of calls through active connection-seeking, and routines. Some interviewed employees further mentioned that they apply to-do lists and set themselves daily deadlines to organize tasks, while a less frequent answer involved minimizing distractions by regularly clearing one's desk. The Manager's perspective stressed meeting infrastructures and personal gatherings. To sum up, the emphasis is on implementing structures that frame and separate remote working from personal life and offer the necessary conditions for teamwork effectiveness. However, additional measures will be proposed in the conclusion, as the described techniques do not holistically address the identified improvement areas.

Finally, the interview results suggest certain prerequisites for effective remote working, including employee characteristics, such as a high degree of independence, self-organization, and -motivation, as well as clear task and goal setting from the management perspective. Further highlighted by the team leader and parts of the interviewed team members was the importance of interesting and engaging tasks.

Analysis and Discussion

Based on the findings and the results of the analysis, a layered model of remote employee motivation has been constructed. The following graph (see Figure 1) visualizes this model in a post-COVID work environment, containing the satisfactory and dissatisfactory dimensions identified through the investigation of the three basic psychological needs of autonomy, competence, and relatedness/belongingness based on Ryan and Deci (2000). The model pertains to the hybrid mode as the post-COVID remote work environment, whereby two layers mediate the satisfaction of needs.

Figure 1: Layered Model of Remote Employee Motivation
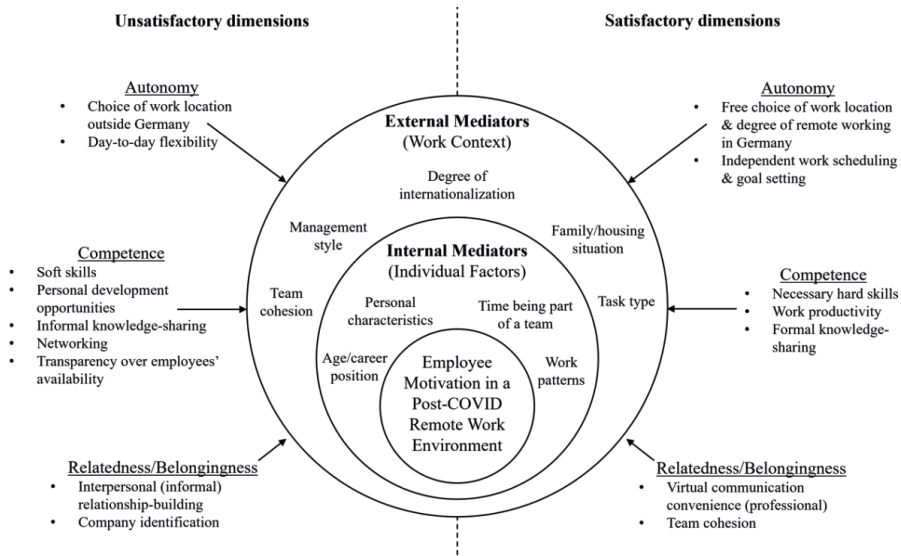
Source: Self-prepared figure based on the analysis of interview results and the SDT (Ryan & Deci, 2000).

The first outer layer of the external factors describes the overall remote working context and contains team cohesion, management style, degree of internationalization, and family and housing situation, as well as task type. The second inner layer covers the internal mediators being composed of an individual's age or career position, personal characteristics, the time being part of the team, and preferences in work patterns.

Juxtaposing those findings to the literature review, this article strongly challenges the assumption of reduced employee motivation in post-pandemic remote settings and suggests that it is instead merely associated with a higher potential risk of such (Jawabri et al., 2022; Borghouts et al., 2022). This can be correlated with hybrid forms that mark the post-COVID work environments by including a certain degree of office presence, as also predicted by the literature and desk research (Borse et al., 2021). The mentioned on-site component seems to compensate for some of the lacking dimensions encountered in a fully remote work setting. The latter was consequently identified as insufficient in facilitating personal relationships and interactions on a natural basis due to the virtual communication barriers described in detail in the findings. Hence, it can be concluded that post-COVID remote work settings require at least some degree of office presence to sufficiently satisfy the

needs of competence and belongingness for long-term employee motivation and commitment. From the interview data, it further appears that the higher motivation after the pandemic could also be linked to the already existing adaptation to remote work and virtual tools. Regarding the overall perception of the respective work model, the interview results could validate a certain ambiguousness of advantages and disadvantages as synthesized in the literature but displayed a more positive tendency than expected (Borse et al., 2021). The increased concentration and focus reported by the interviewees contrasts the remote work concerns found in the desk research and parts of the literature (Popovici & Popovici, 2020).

Building on the SDT model, the interviews confirmed the prediction of overall higher satisfaction with autonomy compared to the other two basic needs (Deci et al., 2017). However, the study revealed a stronger emphasis on the personal situation and contextual factors mediating this need satisfaction. Hence, the above-presented model adds further dimensions and a layered prioritization to the individual and work context factors expressed in the SDT model of the workplace (Deci et al., 2017). This allows for a more nuanced analysis of the needs satisfaction and related impacts on remote employee motivation. Nevertheless, it should be noted that the limited sample size of the conducted interviews might lead to a somewhat higher weighting of those individual discrepancies.

While the mentioned layers may be universally applicable, the unsatisfactory and satisfactory dimensions of the aforementioned model refer to the specific case of this study, which must be taken into account when replicating similar research. Comparing the investigated case to the existing improvement propositions of the literature, it might, however, be regarded as a best-practice example for other establishments in terms of management style and work schedules (Nahkod et al., 2020). Although this study verifies the findings of related motivational studies concerning the correlation between higher motivation and needs satisfaction, it suggests that they may not need to be fully satisfied for a sufficient remote work motivation (Nwoko & Yazdani, 2022; Orsini & Rodrigues, 2020). By also covering the employee perspective and influence of team dynamics, which were neglected by preceding studies, this article thus represents a theoretical contribution to the existing literature in realizing and visualizing their impact and enabling a temporal comparison based on new insights into the topic.

Conclusion

Referring to the research question of how managers and employees can improve motivation levels in a post-COVID remote work environment as the most central component of this study, hybrid models dominate the post-pandemic setting and constitute a major improvement by transforming the critically reduced motivation to a potential risk factor. The latter can be minimized by addressing the unsatisfactory dimensions of the presented model through dealing with the three basic psychological needs by Ryan and Deci (2000), as further elaborated in individual sections. Therefore, the post-pandemic remote employee motivation can be identified as being highly bound by the existence of a certain office presence, as well as the two layers of working context and individual factors. Based on the application of the conceptual model of the SDT by Ryan and Deci (2000) within the qualitative investigation of a remote-working team, it is possible to recognize areas for improvement and related practical recommendations for which the general research objective of the study has been achieved.

In light of the identified limitations, future research could include a longitudinal analysis of the perception and influencing factors of hybrid work models based on the temporal proximity to the pandemic setting. Moreover, quantitative research elements and cross-company investigations could validate the potential generalizability of the presented findings and model. Regarding the identification of research objects for this study, this would entail a higher sample size and a more representative sampling process to enable results applicable to a greater population of working adults, possibly also containing cross-cultural considerations since the research findings highlighted a number of individual factors.

Drawing on the satisfactory dimensions of the above-presented model and the outer layer of the work context, the chosen case exhibits a positive example. The management style should provide for the necessary infrastructures, communication, and alignment, adding to interesting task types and spatial separation in remote workspaces. Otherwise, there is a compelling argument for an incremental improvement process by initially adapting the dissatisfactory dimensions of the three basic needs and consecutively aligning them with the team members' individual situations and preferences. This might include increasing day-to-day flexibility, virtual communication training, and targeted on-site events, among other factors and aspects.

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Appendixes

Appendix 1

Table 1: Overview of Collected Data

Data source	Detailed Sources	Data Amount	Sum of Data
Desk Research	Chemjobber. (2021). How the pandemic changed the industrial chemistry workplace. Chemical & Engineering News, 99(4), 1–9. Retrieved March 16, 2023, from https://cen.acs.org/careers/employment/pandemic-changed-industrial-chemistry-workplace/99/i4	9 pages	**78 pages**
	Chartered Institute of Personnel and Development. (2020). Working from home: What's driving the rise in remote working? London. Chartered Institute of Personnel and Development. Retrieved April 21, 2023, from https://www.cipd.co.uk/Images/working-from-home-1_tcm18-74230.pdf	14 pages	

Desk Research	Da Silva, A. D., Georgarakos, D., & Weißler, M. (2023). How people want to work – preferences for remote work after the pandemic. ECB Economic Bulletin, 1. Retrieved April 7, 2023, from https://www.ecb.europa.eu/pub/economic-bulletin/focus/2023/html/ecb.ebbox-202301_04~1b73ef4872.en.html	8 pages	
	Die Bundesregierung. (2023). Corona-Arbeitsschutzverordnung endet vorzeitig. Retrieved May 17, 2023, from https://www.bundesregierung.de/breg-de/themen/coronavirus/corona-arbeitsschutzverordnung-1744496	3 pages	
	Drug Discovery and Development. (2022). Pharma 50: The 50 largest pharmaceutical companies in the world. Retrieved May 17, 2023, from https://www.drugdiscoverytrends.com/pharma-50-the-50-largest-pharmaceutical-companies-in-the-world/	3 pages	
	Federal Ministry of Finance. (2022). Pandemic-related assistance. Retrieved April 21, 2023, from https://www.bundesfinanzministerium.de/Web/EN/Issues/Public-Finances/Corona/pandemic-related-assistance.html	4 pages	
	Gartner Press Release. (2021). Gartner Forecasts 51% of Global Knowledge Workers Will Be Remote by the End of 2021. Retrieved March 16, 2023, from https://www.gartner.com/en/newsroom/press-releases/2021-06-22-gartner-forecasts-51-percent-of-global-knowledge-workers-will-be-remote-by-2021	2 pages	**78 pages**
	Merck Annual Report. (2020). Number of employees. Retrieved May 6, 2023, from https://www.merckgroup.com/en/annualreport/2020/notes/employees/31-number-of-employees.html	1 page	
	Merck KGaA. (2023). The Vibrant Science & Technology Company. Retrieved March 16, 2023, from https://www.merckgroup.com/en/company.html	10 pages	
	Morgan, P. (2022, September 15). A Remote Work Model Challenges Employers And Employees. Forbes. Retrieved March 24, 2023, from https://www.forbes.com/sites/paulamorgan/2022/09/15/a-remote-work-model-challenges-employers-and-employees/?sh=672e5dc42ac9	10 pages	
	World Economic Forum. (2023). Future of work: What does remote working look like around the world? Retrieved March 24, 2023, from https://www.weforum.org/agenda/2023/02/remote-working-around-the-world/	14 pages	

Internal Documentation	Knowledge Base HR4YOU. (2023). Flexible Working Policy: Internal documentation. Retrieved March 16, 2023.	4 pages	**4 pages**
Interviews	Interview 1 (Employee)	00:56:23	**03:59:00**
	Interview 2 (Employee)	00:39:54	
	Interview 3 (Employee)	00:50:03	
	Interview 4 (Employee)	00:45:40	
	Interview 5 (Manager)	00:47:00	
Observation	Self-observation	6 pages	**6 pages**

Source: Self-prepared table (page numbers refer to A4 format).

Appendix 2

Table 2: Detailed Description of Inductive Coding Process

Examples (if applicable)	Sub-categories (1st cycle)	Main codes (2nd cycle)
n/a (anonymity of interview participants must be ensured)	Name	Personal information
	Age	
	Position	
"One important point from my point of view is to find the right balance between setting the guardrails, giving guidance, providing mentorship but also letting them work on the topics, deliver on the topics and take not only responsibility but even accountability […]" – Manager	n/a (category was only applied to the manager's interview transcript and did not require further sub-categories)	Management style
n/a (privacy and anonymity of interview participants must be ensured)	Family & housing situation	Remote work setting
	Degree of remote working	
	Remote workspace	
	Equipment and support	
"You have less distractions by any means, to be honest, and you are also really free to decide when you need some breaks. During Home Office, that's something I really appreciate. And I think the main difference or the point I wish would be somehow better is that if I'm working from home, I somehow feel more stressed because I'm not available." – Employee 1	Positive aspects (e.g., less distractions)	Perception of remote work
	Negative aspects (e.g., higher stress)	

"I greatly enjoy working from home because of a very simple reason, I spare 3 hours a day of commuting. And so, that's really 3 hours more of life basically. So in this respect, that's really a perfect opportunity. So, having the possibility to work from remote. On the other hand, the challenge, of course, is that kind of chatting with colleagues is not as easy, so sometimes you do it via teams so that's fine, but it's not the same as if you are at the same location, of course." – Employee 2	Positive (Less interruptions/disruptions; Higher flexibility & independence; Work-life balance)	Influencing factors of remote motivation
	Negative (Difficulty of shutting off after work; Higher stress level; Higher need for personal feedback; Higher need for structure/organization; Higher anonymity; Lower connection; Less exchange/networking)	
"I think that I'm really flexible and that I can really decide it on my own on which days I would like to go to the office or work from home. Of course, my decision depends on my daily schedule. If I know that there's an important workshop or meeting that is planned face-to-face, I would try to make sure to really to be on site because I think that there are also a lot of advantages to meet the colleagues in such a bigger meeting. But I'm really flexible and if I'm not feeling so well or if I have some private challenges, so to say, then I can make sure that I'm also working from home from Monday to Friday." – Employee 4	Choice of location and time of work	SDT – Autonomy
	Remote work schedule	
	Goal & task-setting	
	Need for freedom/ guidance	
"I think that the setting in the office is more natural. If you are seeking some information or if you have questions about some topics regarding the projects we're working on, it's more natural to go to the room of your colleague and just have a quick exchange. It's more easy. And if you're working from home, the biggest difference is that you always have to set up meetings or always have to ask your colleague - Do you have time? And I think also the scope of questions that you ask from home is much less than if you're in the office. So I know from myself that I'm asking more questions when we're talking more about the topics and projects in person than in the Home Office. So there actually is a really big difference." – Employee 1	Influence on development opportunities	SDT – Competence
	Necessary skills	
	Manager expectations and feedback	
	Knowledge-exchange	

"I mean, for a start, we are still a young team. So, in this respect, you start to get to know the team members. And the remote setting doesn't help to accelerate this process, of course. But on the other hand, it's still working fine. So, as I said, we meet once a week and there have also been situations where I have been in the office, not as normal on a Tuesday, but on another day, and there were just one or two colleagues from the whole team there. So it's the same for others. But in general, it's more difficult of course. I still feel integrated in the team so I think that's not a problem. I mean anyway, everybody in the team is working on quite diverse topics. So it's not that all team members are working on the same kind of topic and we have to interact on a daily or hourly base. So that's not the case in our team. So, in this respect, from the working aspect, it's fine. So the kind of other aspects of team building, therefore, it's important to be there at least once a day per week." – Employee 2	Communication with colleagues/manager	SDT – Relatedness/ Belongingness
	Connectedness to colleagues/manager	
	Manager support	
	Team cohesion	
	Relation to the overall organization	
"Identification with the company often happens on the campus. You see the buildings, you see the canteen, you see the other employees that you usually wouldn't see at home, you see the CEO or the Merck family in person as human beings. You only get to see this here. This identification with the company is much stronger if you come to the site every now and then at least." – Manager	Information noise and overload	Areas of improvement
	Connection to the overall organization	
	Manager mentoring	
	Manager communication	
	Exchange with colleagues/ stakeholders	
	Transparency of possible flexible work arrangements	
	Transparency of availability/work	
	Additional equipment and support	

"I am taking a 5-minute break every hour just to refresh my mind. I had a training during my mentoring program in a personal one-on-one. And basically, what I have been recommended was to have a recalibration of my mind every 2 hours or so. I'm using this 5-minute or two-minute recalibration phase just to step away from the stuff that I was doing. This could be that I'm standing up, walking around in the room, getting a coffee, just going outside for two minutes or so." – Employee 3	Individual & team meeting infrastructure	Implemented strategies/techniques
	Personal gatherings	
	Micro-breaks (recalibration/ reflection)	
	Planning breaks	
	Having more calls/ seeking connections	
	Interesting task	
	Setting daily deadlines	
	Developing routines	
	Minimizing distractions	
	Blocking time slots	
	To-do lists	
"So, if I was [younger], I definitely would be more in Darmstadt than now in my situation for sure, because I personally believe that it will influence the development depending on how often you are at the place or in the Home Office. So if you want to make a career and if you want to make bigger steps and the development, I think one day in the workplace, and then four days in the Home Office is not the right ratio then." – Employee 2	n/a (category was merely generated to highlight several specific characteristics and observations of interview participants)	Important aspects

Source: Self-prepared table.

Appendix 3

Figure 2: Code-Matrix-Browser

Source: Self-prepared figure based on MAXQDA.