
A CHANGING WORK ENVIRONMENT IN THE WAKE OF THE COVID-19 PANDEMIC? – OBSERVATIONS FROM MANAGERS IN A SWEDISH MINING COMPANY

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Abstract

Background: The Covid-19 pandemic has changed work life in many ways for many people; however, it is still an open question as to what changes will become permanent and what aspects of work life will return to that which was considered “normal” before the pandemic. **Objective:** In this study, the authors describe and analyse the effects of Covid-19 on managers in a large Swedish mining company. **Method:** This study is based on both quantitative and qualitative methods. Empirical material is used to explore the effects of the pandemic on the work environments of managers. Results are based on interviews in combination with a self-assessment process regarding how the managers allocated their work time during a work week. **Results:** The results describe the work activities of the studied managers supported with quotes from interview studies to illustrate to most central observations of how work has changed due to the Covid-19 pandemic. **Conclusion:** The results are summarized into six hypotheses: 1) the workday was densified due to remote meetings; 2) "double work" during meetings was the rule, rather than the exception; 3) meetings became more focused; 4) meetings became more accessible; 5) the manager became less operational; and 6) a new work culture was created. **Application:** This is an exploratory study of consequences and effects of Covid-19 pandemic summarized in six hypotheses that can be fruitful for further and future studies.

Keywords: Covid-19, Managers, Working from home, Mining, Sweden

Introduction

Few persons, if any, would disagree that the Covid-19 pandemic has had a large impact on the ways that many people work. For a substantial portion of workforces, in general, this impact has meant a shift to remote working or working from home. While pandemic measures that were put in place to combat the spread of infection certainly put a strain on many people, the changes have also challenged several assumptions about work, including how, where, and even when, we work.

Covid-19 pandemic-related events are recent, yet there is already some literature covering the *effects* of the pandemic and associated measures taken at workplaces. In this regard, we rely on two international compilations of research on the effects of the pandemic on work and the work environment; both compilations were commissioned by The *Swedish Agency for Work Environment Expertise (SAWEE)*.

The first research compilation, *Work environment and health in organizations in epidemics and pandemics caused by coronavirus* (SAWEE 2022a), is based on 95 research projects from around the world; 85 of the studies included handle the subject of employees in the healthcare sector and the unique problems that management of Covid-19-infected patients has entailed. Out of the remaining ten studies, all ten address issues outside of the healthcare sector, and four deal with remote working. A Chinese study (Song L et al, 2020) in the compilation compares mental illnesses between those of: 1) employees working in the office, 2) employees working from home, and 3) employees alternating work between office and home. The results of that study

show that the employees' work did not have a strong link to symptoms of ill-health, with the exception of those employees who alternated between the office and home having reported less somatization (diseases in which the physical symptoms cannot be explained using previously-available medical tests) than those who worked exclusively in the office. Three studies in the compilation addressed the subject of teachers who had been forced to teach remotely, and one study from Australia (Pather N. et al, 2020) showed that teachers wanted to keep some of the pandemic-related digital elements even after returning to on-site teaching.

The second research compilation, Distance working – A compilation of international research on work environment and health, life balance and productivity before and during the COVID-19 pandemic with special regard to women's and men's conditions (SAWEE 2022b), has a broader scope and reviews research literature in three areas: 1) work environment and health, 2) work-life balance and 3) productivity. The studies addressing working from home are divided into two groups: studies conducted before the pandemic (2005–2021) and studies conducted during the pandemic (2020–2021), with the difference between the two groups being that the former consists of the voluntary choice to work remotely and the latter remote work forced by the pandemic.

The results from the pre-pandemic period show that experiences of working from home were mostly positive (SAWEE 2022b), and remote work was perceived positively with increased autonomy and flexibility in time and space (Charalampous et al. 2019; Ferreira et al. 2021). Reduced contacts with colleagues and managers, as well as social isolation, were negative factors (Charalampous et al., 2019; Oakman et al. 2019). Interpersonal relationships and collegial support are, therefore, important prerequisites for remote work to go well. In these studies, no clear gender differences were found (Martin & MacDonell 2012; Charalampous et al. 2019; Oakman et al. 2020). Work-life balance seems to have been better when working from home (Kotera & Voine, 2020; Oakman et al. 2020), and productivity was often judged to be higher when working from home compared to working in the ordinary workplace (Martin & MacDonell 2012; Kotera & Voine 2020; Oakman et al. 2020).

During the pandemic, however, the picture was somewhat different (SAWEE 2022b). Working from home was still positive, but a prerequisite for autonomy was that the worker have access to the resources and skills needed for performing the work (Felstead & Reuschke 2021). In these studies, if the worker from home was required to fend for him- or herself then significant negative consequences could result in the forms of reduced mental well-being and efficiency (SAWEE 2022b). For families with younger children, both work-life balance and self-rated productivity were negatively affected by remote working (Allen et al. 2020; Xiao et al. 2021; van Zoonen et al. 2021; Ipsen et al. 2021). Some results indicated that stress decreased over time, but for families with younger children at home the results indicate a continued high-stress load (Yerkes et al. 2020; van Zoonen et al. 2021; Schieman et al. 2021; Aczel et al. 2021). For single people with younger children and without childcare, the situation became even more problematic, because the risk of infection also reduced private support networks (Otonkorpi-Lehtoranta 2021). Still, most studies point to increased productivity associated with working from home even during the pandemic (Ipsen et al. 2021; Felstead & Reuschke 2021; Sutarto et al. 2021); one reason for this result was that there were more hours worked, in total, when working from home rather than at the primary workplace (Charalampous et al. 2019; Felstead & Reuschke 2021; van Zoonen et al. 2021; Kirchner et al. 2021).

Reviewing the research compilations described above, we want to highlight two gaps. *First*, few of the studies address the work situations of managers. The few studies that do concern managers' work situations (Ferreira et al. 2021; Oakman et al. 2020; Kirchner et al. 2021) indicate that managers were overloaded by virtual meetings. Despite this fact, managers in these studies also perceived that contact with employees was not enough, and the managers also found it difficult to assess how staff were doing and determine individual employees' needs for help and support. *Second*, few such studies concern industrial work. True, much industrial work is physical, on-location, and cannot be done remotely; however, the work of industrial managers can still be done from home. Indeed, we know of several cases in Sweden where this was the situation. Likewise, even when completely remote work was not implemented in such situations, there were usually altered arrangements that limited contact with other people at the workplaces.

In any case, managerial work in industrial workplaces arises as an interesting topic of research and study in the pandemic context, in particular because successful management relies on social interaction (Ekvall & Arvonen 1994; Peters & Waterman 1982; Charalampous et al., 2019; Oakman et al. 2019). What is more, we find this topic to be underexplored, in general. While we may expect that some of the pandemic effects reported in other studies and contexts do exist regarding managers in industrial workplaces, we also find that there is little literature on how, concretely, work environments were altered in the wake of the pandemic. Our claim is that understanding these changes forms an important first step in better understanding the effects of pandemic measures on work.

These and similar thoughts came to us in the context of a research project that we conducted among managers in a Swedish mining company. The research was conducted during the pandemic and, while conducting interviews with 20 mining company managers, we learned of diverse ways the pandemic measures in place had affected the work of managers and their work environment. In particular, we noticed many positive experiences (of course, also coupled with negative effects); yet, this is not necessarily reflected in pre-existing research, and in particular not with reference to managers (Authors 1-6). Our original research did not focus on the pandemic, nor did it focus on the measures implemented at work to combat Covid-19; the investigation was focused on the social and organisational work environment. Yet, due to timing of the research, the topic of the pandemic and its related measures arose in every interview conducted. Importantly, the material that we gathered has provided us with several examples of concrete effects of pandemic workplace measures, both on the ways managers conduct their work as well as their work environments. We believe that reporting on these insights can help future research in this area, even though our current reporting is limited by having to analyse empirical material that was gathered for a different purpose.

In this paper, thus, we explore how the pandemic and its associated workplace measures have affected the work and work environments of managers in a large Swedish mining company. Within this and adapting to the limitations imposed as a “secondary analysis” of this kind, we generate several hypotheses about the effects of the pandemic measures in place on the work of managers in an industrial setting. These hypotheses, we hope, can be incorporated, in the future, into more systematic studies in the area. The present study, in other words, is exploratory in nature, aiming primarily to provide input for further and future research. One could raise objections to the approach of this study; however, given that both managerial work (and in particular, industrial managerial work) and the mining industry (and in particular managerial work therein) during the pandemic are underexplored in current, pre-existing literature, and there exists a lack of description of concrete effects on work stemming from pandemic measures, therein, the present study is justifiable and motivated. Still, the results of this study must be viewed with some caution.

In the following sections, we describe first how data was gathered in the original study and then next how we performed our “secondary analysis”. After that, we present the results of our analyses in the form of descriptions of concrete effects on work that have, as we observe, stemmed from the pandemic. We end by presenting six hypotheses for further study and research.

Material and Methods

The empirical material for this study comes from a larger research project titled “Organisational and social work environment for managers” that was conducted at a large Swedish mining company and with a focus on the social and organizational work environments of managers. In the present study, we revisit – through what we call a secondary analysis – relevant parts of the original empirical material, with the purpose of gaining more insight into the effects of the pandemic on managers’ work environments. The original research study used both qualitative and quantitative methods: 1) an online questionnaire was sent out to all of the company’s managers; 2) a second online questionnaire was sent out to the employees and their managers, within a subset of the managers; 3) the same subset of managers self-reported their work activities over the course of a week; 4) ten interviews were conducted within a sample of the subset of managers, to gain deeper insight into their average

work week; and 5) ten interviews were conducted with young (35 years-old and younger) managers, with regards to both their roles and work situations (See Larsson et al. 2021).

What makes the material gathered suitable for further study, and for the purpose of this article, is, on one hand, that the material was gathered during the pandemic (yet, the original study did not focus, specifically, on the pandemic) and, on the other hand, that the material concerns the work situations of managers. Thus, in the present study, we analyse the original material gathered, but with the purpose of investigating how the Covid-19 pandemic affected the work of the managers in the original study.

In revisiting the research material – that is, conducting a secondary analysis – we will be focusing on two contexts: first, the work activities of managers and second, the work environments of young managers. The following two subsections detail the data collection activities related to these contexts. The section is then concluded with a description of the secondary analysis- that is, our analyses of the empirical data for the purposes of this article.

Study 1: the work activities of managers

This part of the original research aimed to map the work activities of managers, focusing especially on which tasks they spent their time on. We developed a self-reporting tool in Microsoft Excel, in which managers reported what tasks they had spent time on during the day and how much time they spent on each task (Authors 1-6). The tasks followed the categories previously introduced by Henry Mintzberg in his work *The nature of managerial work* (Mintzberg 1973). The managers also reported on their health and workloads each day. The managers were instructed to report on their tasks over the course of a work week (some managers reported for longer periods and others for fewer days; the average number of reported-on days was 5.4). A total of 45 managers participated in this part of the original research project.

To validate the data collection tool regarding managers' work activities, ten in-depth interviews were conducted. The interviewed managers were selected as a random sample of the total of 53 managers participating in the overall (work activity) research; likewise, those 53 managers were a random sample of all managers in the company. The interviews also aimed to gain an in-depth picture of the managers' workdays; a 19-item interview guideline was used to give the interviews direction.

The interviews were conducted through Microsoft Teams (due to the pandemic). Most interviewees had completed their self-reporting portion of the research by the time of the interviews. The tool for self-reporting had a function for summarizing the reported period in graphs; the interview guideline included a segment in which the interviewee was asked to share their screen and talk about their summarized work week using the graphs.

Two of the authors of this article participated in all of these interviews, whereby one of the authors led the interviews following the interview guideline and the other author focused on follow-up and probing questions. On average, these interviews lasted 92 minutes; the audio was recorded and later transcribed. For the purposes of this article, the data collected through the work-activity self-reporting serves mainly to provide context; we base our secondary analysis primarily on the interview data.

Study 2: the work environments of young managers

The second part of the original research project consisted of interviews with ten younger managers (under the age of 35). The ten young managers were selected randomly. The only criterion for inclusion was that the manager was of an age of 35 years old or younger. The purpose of these interviews was to better understand how young managers experience their work environments. The interviews followed an interview guideline consisting of 34 questions that were divided into the following themes: 1) First meeting with the company; 2) Expectations of the managerial role, introduction, driving forces, and development; 3) Your leadership and the work environment in the employee group; 4) Support in the managerial role; 5) Own work environment and health; and 6) Future.

All but one of the authors of this paper participated in these interviews, and each interview was attended by two of the authors (in addition to the interviewee). The first author of this paper attended all of the interviews, while the others involved rotated and participated in two to three interviews each. The “rotating” researchers would focus on follow-up and probing questions, while the other conducted the interview in accordance with the interview guideline. All of these interviews were conducted through Microsoft Teams (due to the pandemic), audio from which were recorded and later transcribed.

The secondary analysis

In the present study, a secondary analysis has been conducted on elements of the overall material gathered during the main research project. This secondary analysis is based primarily on the interview material gathered: 20 interviews with managers of a large Swedish mining company and encompassing around 25 hours in total. The transcripts of these interviews were analysed using the qualitative data analysis software Nvivo.

We used a top-down content analysis approach, wherein we identified keywords relating to the Covid pandemic and working from home (e.g., “covid”, “pandemic”, “remote working”). This is close to the summative content analysis approach suggested by Hsieh and Shannon (2005). Nvivo then allows us to query the data material using these keywords, that is, allowing us to see in which contexts topics related to the pandemic and its effect are discussed. These statements were then put into summarizing codes. The results in the next section reflect these codes.

The two original interview studies focused on managers' work environments and workloads and not explicitly the Covid-19 pandemic. However, the effects of the pandemic came up in almost all of the interviews. As noted, we believe that there is important insight to be extracted here as a result. Thus, this current study is exploratory in nature; we use this approach to explore the material anew and generate questions for future, systematic studies.

This article is arranged such that preliminary the results of how managers spent their workday hours during a work week are presented. This first step is to contextualize subsequent results. We then report on the questions raised during the 20 interviews that were included in our research material. Finally, we summarize our results in the form of six hypotheses about how the work patterns examined were affected by the recently-concluded Covid-19 pandemic.

This research project has ethical approval from the Swedish Ethical Review Authority (Dnr: 2021-01392).

Results and discussion

Below we will first present the results from the mapping the work activities of the studied managers, and then we will use quotes from our interview studies to illustrate our most central observations of how work has changed due to Covid-19 pandemic.

Managers' work activities in a large Swedish mining company

Table 1 below shows which activities the studied managers, who were working for the same large Swedish mining company at the time of the data gathering, spent their work hours on. The total working time reported in the Excel tool was, on average, 38 hours, and the work activity that the managers spent most of their time on was “Scheduled meetings” (meetings planned in an agenda). Over a five-day period, such meetings totalled more than 50 percent of available work hours. The work activity that was carried out the least was “Spontaneous walks” (occurring either physically or digitally, whereby the manager spontaneously talks with an employee about how the employee is feeling and how the work is going), at 1.3 hours a week and corresponding to 3.6 percent of the total work time. These overall values also correspond to the averages of each manager's individual averages over a five-day period.

Table 1. Tasks and self-reported time spent during a five-day period for managers within a large mining company in Sweden. Working hours (hours) and share (percent) for different tasks.

	Number of hours per five-day period	Share of working time during the five-day period, percent
Administrative tasks	8.8	23.3
Telephone	1.4	3.8
Scheduled meetings	19.2	50.3
Spontaneous meetings	2.8	7.4
Spontaneous walks	1.3	3.6
Operational production support work	2.7	7.1
Travel/transfer time	1.8	4.5
Total reported time	38.0	100
Number	45	45

It is notable that scheduled meetings occupied such a high portion of the overall work time, while the telephone seems to have decreased in importance. Our research material lacks reference values from before the pandemic, however the results correspond well to the pre-existing studies that we have referenced in the introduction of this article, in that the time spent in meetings increased during the pandemic measures (Ferreira et al. 2021; Oakman et al. 2020; Kirchner et al. 2021). Spontaneous meetings and spontaneous walks together totalled just over 10 percent of time spent, which perhaps demonstrates that there were fewer opportunities for social interaction. In Sweden, the Covid-19 pandemic did not mean that workplaces were closed down to the same extent as was done in other countries. Instead, there were strong recommendations from the Public Health Agency of Sweden and the Government to stay home and work from home when possible. Even schools and childcare remained open throughout the pandemic period, assumed to facilitate working from home. Since our research investigation period coincided with the pandemic, it can be assumed that the high proportion of planned meetings, coupled with the low proportion of spontaneous meetings and walks, were direct results of the managers following the recommendations of the Swedish authorities to engage in part of their work from home.

Reflections on the effects of the COVID-19 pandemic on the managers' work

Below we have collected the most central observations under eleven headings and illustrated them with quotes from the interviewed managers.

Increased number of digital meetings

Almost all interviewees mentioned in one way or another that the number of digital meetings via Microsoft Teams had increased. While primarily motivated by the pandemic, there were other advantages to digital meetings, as well- such as digital meetings being easy to schedule. Some respondents claimed that online meetings were substituted for emails:

Yes, there have been noticeably more meetings now, with Teams. It's easy to schedule a meeting now. You don't need a venue to meet; you can do it anywhere. There may even be more meetings now instead of emails; you can now make shorter calls on Teams.

The number of physical meetings seemed to have decreased while there were, in actuality, more meetings taking place (rather than it being a simple equation of physical meetings being substituted with online meetings). Most respondents believed that the future would see an increased number of online meetings even when pandemic restrictions would disappear:

It has been a long time since the last time I was in the conference room. But I think I'll use Teams quite a bit in the future; even if we have a meeting down in the conference room, I think I might sit in my office

and participate via Teams, just because there are advantages - but it depends on what kind of meeting it is, as well, of course.

Perceived drawbacks of digital meetings

As the quote above illustrates, digital arrangements were preferred by some managers. While many managers agreed that the development was towards more online meetings, their experiences with online meetings differed. A common view, for example, was that physical meetings are better for several reasons, and that the human aspect was often missing in digital meetings. Motivations for preferring physical meetings differed, but among the motivations was the feeling that digital meetings were missing something. What was felt by the managers to be missing from digital meetings ranged from concrete elements, such as the ability to socialize afterwards, to the experience that online meetings can just be plain boring - as expressed, for example, in the two responses below:

If I am asked if I want a physical meeting rather than a digital meeting, I obviously choose physical meeting, meeting physically gives much more nuance to the meeting; you have a coffee afterwards, and you walk in the corridor and talk- it creates a much deeper relationship. When a digital meeting is finished, I just press the leave button and then it's over. So, that's the nuance I'm missing with digital meetings.

Now it's a lot of digital meetings, so we've learned to handle Teams in a different way. And there are more efficient meetings, as well. Then also, it can be a bit boring too to sit in on-line meetings like that

...

Changing work routines

The positive effects of the measures introduced during the pandemic did not concern only the dynamics of working from home or being at work. The pandemic measures also directly affected work, itself, including that anyone could, more or less, be easily contacted:

Then one was used to physical meetings, but, with the pandemic, basically everyone now has much better communication conditions, such that you can reach basically everyone within the company in this way, which has changed the work significantly...

The changed ways of working also led to meetings becoming more focused and efficient; meetings rarely veered off topic, for example. At the same time, however, this led to meetings consisting of “strictly business”:

I've probably never experienced, in this entire pandemic, someone calling and saying, "I had nothing to say". Without distance communication there is much more ... What to say? ... If I were to start discussing other things digitally, then I feel like time is being wasted, that we slip off topic. Those other conversation parts have a really important role, but it's very difficult to do it digitally.

Notably, the nature of online meetings also meant that many people worked with other tasks while attending a meeting, a fact that can be due to the meeting being either unimportant or passive, as these two responses show:

If we have big digital meetings, it makes things very passive. Then, you can have other, follow-up works to do at the same time; or, sometimes you can have small, side meetings with others.

I sit and approve purchases, or sign salary payments and timesheets, and things like that.

Increased efficiency and productivity

Online meetings are a necessary condition for most people to be enabled to work from home. In the present study, many employees still worked from their ordinary office; online meetings were introduced to decrease physical contact, while also making it possible for people who were working from home to still participate in meetings. However, many respondents also pointed out that working from home was more efficient. The quote below illustrates two dimensions of this efficiency: 1) being able to work while being more focused, due to not being disturbed, and 2) digital ways of working (online meetings, in this case) as being more efficient, in that such work methods “circumvent” otherwise time-consuming activities:

I've been working from home one day a week, but it has been good; I think I've been very effective when I've been working from home- you don't get disturbed by anyone. I think that a whole new world has

opened up, especially with digital meetings; you could see that when we recruited holiday substitutes- we had time to interview maybe ten to fifteen potential substitutes in one day, where previously we only had time for five interviews... precisely because now you do not have to meet up with anyone, etcetera. It was that simple.

The fact that the company studied is a mining company has actualized some specific effects of distance working necessitated by the pandemic. The studied mining company has production distribution to several locations and with large physical distances within each production unit; getting to one's workplace, or any other location, is associated with considerable undertaking in terms of time. These factors added to the notions of remote-working and online-meeting as positive for productivity:

Before covid, it was the case that you spent a portion of your workday getting to different premises within the company, but it is not so now. I think this will also change in the future; I don't think one will go all the way to the administration office for a meeting that you can attend digitally via Teams - then you might as well sit at home or in the office.

Realization of redundant meetings

Yet, the ease of arranging online meetings also means that one sits in many unnecessary meetings. Most respondents believed that the number of digital meetings could be reduced. Some respondents described a strategy for dealing with what they felt were unnecessary meetings- working with something else at the computer while the meeting is on in the background. Here, for example, three different interviewees shed light on the same issue:

And then you sit and listen to what is being said in the digital meeting while working in parallel with something else, because in that way it doesn't feel like you're wasting two hours of your work week sitting in a meeting where you're affected by only ten minutes of the meeting content.

Maybe it's time to discuss whether we have meeting routines that are actually ineffective and unwise (both before and after the pandemic).

Should we even be in this meeting, at all? Why am I invited?

The new normal

As noted, almost all respondents believed that the digital meetings would remain in the future, although not to the same extent, when the pandemic would be over. Despite the drawbacks, the effectiveness and time saved because of digital meetings is difficult to deny, as expressed in these two responses:

I think a large portion of the meetings will continue to be digital in the future. The effectiveness of digital meetings has been found. There is not so much travel time between meetings. I think we're going to have a hard time going back to the physical meetings, and it's going to be hard to combine them. A structure has now been found in the digital meetings that also makes it very meeting-tight, back-to-back.

I don't think we'll go back to how it has been before the pandemic. It's more cost-effective to have meetings via Teams. You avoid travel time and so on. But physical meetings are better than meetings via computer.

I don't think we will fully return to physical meetings, but there will probably be more meetings via the computer, if I'm going to guess.

At the same time, the opportunity to work from home was appreciated; combining the digital meetings with the ability to work from home may be important in the future:

I would like to keep the opportunity to work from home, because at home it is easy to "mute" and run to the toilet or pick up a cup of coffee. In the office, at work, you feel like a bad person if you run with your earbuds somewhere while in a digital meeting or point to "I'm in a digital meeting".

Work – life balance

Several positives associated with working from home were mentioned in the interviews. These positives included smoother family "logistics" and taking care of pets, as can be seen below in the following three responses:

The positive thing about the pandemic is that you can work a lot from home. So even though the kids have been sick, I've been able to work from home, sit in on meetings and stuff like that, and be able to combine that all.

One good thing that has come from this corona period is that we have started working from home, and that it really works. It's not something I want to do all the time, but if one needs some time now and then, for example perhaps if the preschool is closed, I have the option of working from home, as well.

If the dog is sick, then I work from home.

Re-evaluation of leadership tasks/assignment/role/priorities

An interesting observation is that the measures that have resulted from the pandemic have caused some managers to come to the realization that they do not have to be involved in all details:

I think maybe there would have been more operational production support work if it had been a normal workday situation, but now we have taken covid seriously and we were quite early in switching to running weekly distance meetings, for example with collective staff digitally. We have tried to follow [the Swedish government] recommendations and meet as little in person as possible, and, as a result, I have not been so operationally-oriented. And that's pretty good... or it's very good, I think.

Being physically present due to nature of work or solidarity

Yet, some managers claimed to have been mostly unaffected by the pandemic measures. This, again, recalls the specific nature of the mining industry; some things cannot be done from a distance:

The pandemic has not affected us very much. Since we are an operating business and our machines must run, our staff must be on site and working otherwise the business will stop. So, we have followed all of the same routines as before the pandemic, and have been physically on-site during this[pandemic time. I would say this is what it looks like normally, regardless of the pandemic or not.

In other areas, where production also needs to run continuously, the pandemic effects were clear even as production continued to run. In one example, operators became completely tied to their workplaces:

The process operators, they have been more or less isolated inside their control room. They have an expert knowledge we cannot do without; we can't run the production without them. And, if it happens that they get sick and we get a spread of infection, it can have devastating consequences for production- then you must call them, instead of going down and having that natural conversation.

It is also important to realize that, while managers could work from home, this was not the case for the employees they were managing. Some of the respondents pointed out that they needed to be at the workplace precisely because they felt it was required to be able to act as a manager, as these responses exhibit:

No, I've tried to be in the office so much. I have prepared a workplace where I can be at home, but I still think that we who are in a management position should be in place itself, we have production staff who must be on-site and it has been so throughout the pandemic. So, I've probably been on-site 80+ % of the time.

I don't think there will be a huge difference when the pandemic is over. I haven't worked from home many days. I didn't want to do that, either. It feels a bit silly if I'm going to sit at home while the others are at work.

Shift in organizational culture

There exists a recognition of the pandemic as having brought about a change in organizational work culture. While one respondent in our study held that everyone would return to the workplace after the pandemic to show solidarity and return to the old workplace culture, this position was also followed by a realization that not everyone has to be at the workplace. Another respondent noted how the pandemic had challenged notions of what work is important and where that work is conducted. Notable, for example are the statements below:

I think we're a little old-fashioned and we think that we have to show solidarity with those who can't be away from the workplace; as in, "yes, but we have the production to think about", and so on. So, I think,

at first, the company will probably want everyone to be at work. Then people slowly come to realize the fact that not everyone has to be at the workplace.

The old work culture that says "every minute outside the gate doesn't count" has been changed by the pandemic. With the pandemic, I think we have taken big steps towards relationship-oriented and trust-based leadership. Virtually all of the officials were sitting at home.

Lack of social interactions affecting wellbeing

Some people felt worse during the pandemic, as an effect of not seeing and meeting people. In general, workplace interactions decreased, as expressed below:

I've felt a little worse during the pandemic. I like people and being with my people -my bosses and my management team- and being close to them and looking them in the face. I haven't been able to do that. And, so, I've actually felt worse during the pandemic time.

The weekly meetings where people meet on Mondays have suffered now, due to the pandemic.

Limitations

In the interviews that we conducted we encountered a mostly positive view on remote work. This result is reflected in other studies, such as one by the Swedish Association of Graduate Engineers (2022); that study showed that Swedish engineers found working from home positive and that they experienced a better work-life balance while achieving good work results. Nine out of ten respondents in the Swedish Association of Graduate Engineers study said that they highly valued the opportunity to work remotely, and more than half of the engineers stated that they would not apply for a job with an employer that does not allow remote work.

However, as we see in our study, remote work is probably not the only determining factor of the results. Many effects are poised to result from remote work and similar measures, but with our hypotheses what we want to ask is: *Is it remote work itself, or the effects of remote work, that account for the positive experiences?* From a work and work-organisational design perspective, this is certainly an important question to answer. For example, is it the effects the emergence of a new work culture, or a different type of managerial role, that engenders the positive experiences?

We note also, from our study, that many of the interviewees' comments revolve around meetings. This raises the question, then, of how many of the effects of remote work actually result from changes in meeting cultures and structures.

We have previously noted the circumstances of the origins of this study and its research materials. Here we want to note two additional limitations that are important to help understand the results at hand. First, the work environment experiences of working from home are generally positive, but with one exception. In the aforementioned international research compilation (SAWEE 2022b), it emerged that working from home in combination with children was difficult to organize during the pandemic shutdown. Sweden deviates at this point from large parts of the world, in that Sweden did not close down schools and childcare during the pandemic; meaning, children were away from home for most of the workday in Sweden during the pandemic. This difference is likely to have produced some important effects. For example, before the pandemic, a parent would have to stay home with a sick child but without the ability to work. During the pandemic, people were able to stay home with sick children and still work. Thus, when we come across positive experiences in our data material, some of these positive experiences may be accounted for with reference also to how childcare was handled in Sweden during the pandemic.

Second, our study's research was conducted in a large Swedish mining company. We hold that viewing the company as a case offers important insight into an under-researched industry and area. The importance of this case is, for example, in providing access to descriptions of how remote work functioned in situations where a physical presence at the workplace was still required for the functioning of the operations. Many of the managers in our study's material did, indeed, work from home to some extent, even when the employees they were

managing did not. We hold this difference to be an important aspect of the study, as well. However, one must keep in mind that the studied mining company is quite unique (internationally, if not regionally) in its adopting of new technology; in this mining company, many underground work areas have internet access and often wireless internet access - we know this may not be the reality of many other mining operations.

The mining context is also important to keep in mind when discussing saving time. For some people, working at a mine means long periods of transportation or commute, for example, from the surface of the mine to one's place of work underground; sometimes transporting oneself to a meeting physically may, thus, incur significant increase in travel time. This aspect should also be factored in when considering the results of this study.

Conclusions

This study has explored effects of pandemic measures on the work and work environments of managers in a large Swedish mining company. We used data gathered for other purposes but that included descriptions on this topic; while this design limits us with respect to generalisation and our ability to investigate the topic in-depth, we hold that the concrete descriptions should be shared, as they offer insight that can be useful for future studies.

Hypotheses on effects of pandemic measures on work and the work environments of managers

In summary, we propose six hypotheses for how the pandemic measures have affected the work and work environments of managers in a mining company. Note that some of the hypotheses can be mutually exclusive.

Hypothesis 1. The workday is densified due to remote meetings

Pandemic measures lead to a densified workday; this is due to several changes. The number of meetings – while perhaps decreasing in time due to aspects of a social nature disappearing – increased, because the logistics surrounding the meetings were simplified (a physical location does not have to be booked, no travel to the meeting location is required, and there are virtually no turnaround times).

The effect of this change can be both positive and negative. A densified workday could lead to a shorter workday. On the other hand, if working hours remain the same, the effect is essentially work intensification. If not balanced with appropriate measures, this change could lead to ill health. As well, an increase in meetings, and especially without social dimensions, could lead to a frustration with meetings.

Hypothesis 2. "Double work" during meetings is the rule rather than the exception

If meetings come to claim more time from the manager's agenda while that manager is still left with the same tasks, then "double work" becomes the rule rather than the exception. By double work we refer to other work tasks being performed while attending a digital meeting. This situation is also increased when calling for or into a meeting becomes easier, as one does not have to impose the same limits on who is called to that meeting. Generally, more people attended meetings and on average those meetings were experienced to be less relevant. Instead of paying attention fully, managers instead used that time to answer emails and other tasks during the digital meetings.

This development should probably be avoided, as it will likely make the side tasks less effective. Furthermore, being somewhat attentive to a meeting while solving other tasks is likely to be taxing. Finally, if meetings are systematically used to accomplish other side tasks, then acting to decrease the number of meetings may not free more of the managers' time.

Hypothesis 3. Meetings become more focused

Our third hypothesis is a precondition for the first hypothesis but contradicts the second hypothesis. That is, the workday can become densified if less time is spent on social interaction and more time is spent on the task at hand. However, for meetings truly to be more focused requires that everyone pays close attention to the meeting, which is hard to do when doing "double work".

The outcome of this predicament can be both positive and negative. For example, people may appreciate that the meeting is strictly focused on the task at hand, especially if this means the meeting can be kept shorter. However, the social role of meetings should not be underestimated. Particularly when working remotely,

“natural” social interactions may not arise the same way that they would when working in the office; talking off-topic in digital meetings may, therefore, be an important substitute.

Hypothesis 4. Meetings become more accessible

If meetings remain less resource-intensive (i.e., requiring less planning and participation by nature of simply logging in to an online meeting platform), we can understand this as the meetings becoming more accessible. This means, for example, that managers are likely to be invited to meetings that they previously were not invited to. If a manager is invited to the “right” meetings, this should, in turn, give a better sense or understanding of one’s (e.g., organisational) context. Such a scenario could help a manager in their role as manager. Additionally, by viewing one’s contribution to a larger whole, such as through a broader range of meetings attended, one’s motivation in one’s work might be increased.

On the other hand, an increased “accessibility”, as described here, might also simply only lead to more meetings whereby such meetings are not really needed. This situation may lead to frustration and a workday that is needlessly filled with meetings.

At the same time, this “accessibility” development also means that one can participate in meetings on one’s own terms. For example, with physical meetings it is more difficult to enter and leave when the meeting is still ongoing; this is not the case with digital meetings. This factor means that managers are freer to enter and leave meetings as they are needed. This reality can have positive effects in reducing actual meeting time, but it also risks fragmenting the workday if the manager has to “jump” between many different meetings in one day. Finally, coming to realise that one can participate in meetings on one’s own terms might mean that managers come to question the relevance of other meetings.

Hypothesis 5. The manager becomes less operational

As an effect of working less at the physical workplace close to operations, the manager might come to realise that they do not need to have full control over or total insight into the workplace and that much of the day-to-day work will function without them. That realisation frees up the manager to focus more on strategic questions or, to larger extent, engage in behaviours associated with relationship- or change-based leadership.

In this study, an arrangement with remote work essentially forced managers to forgo certain management practices (i.e., tasks focusing on operational aspects of the workplace). Here, remote work triggered changes in behaviour, however continuing the effect is not dependent on the continued practice of remote work (which may be the case for the effects described in the other hypotheses, as well). In fact, certain effects – such as adopting a more relationship-oriented leadership style – may depend, at least in part, on the manager’s physical presence. Thus, remote work in this case is a trigger for change, rather than being the change itself.

However, good leadership requires insight and some sort of presence at the workplace. Where certain roles of being a manager may have previously been automatically fulfilled simply by being present at the workplace, such “automatic role fulfilment” is not as likely when the manager does not have the same physical presence. Thus, there must be an arrangement for ensuring that the manager can somehow still gain insight into the workplace, even with remote work.

Hypothesis 6. A new work culture

With new ways of managing, a new work culture will arise; this new work culture will, in turn, affect both managers and the employees they manage. With management being less physically present, for example, a culture that is more trusting and freer may grow at the workplace. Where remote work is possible, a larger acceptance can grow for doing work remotely. Being able to work from home can also foster a positive work-life balance; this culture will probably also be a condition for the long-term success of new work arrangements. Of course, there is also a balance to be maintained. Little physical managerial presence should not be translated to no presence and no leadership. Freer and trusting workplaces must be backed up with responsibility. And while being less tied to a physical place of work can facilitate a good work-life balance, the opposite effect is also a common outcome when work can follow one everywhere.

Finally, this is an exploratory study and with all the restrictions that such a nature of study entails; however, we saw an opportunity to extract new observations from material we had collected for other purposes. We have found some interesting, unintended consequences and effects of Covid-19 pandemic measures, and we have gathered these consequences and effects into six hypotheses that can be fruitful for further and future studies.

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