The impact of homeworking on work efficiency

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Abstract. The topic of homeworking has become very actual during the pandemic of covid-19. This pandemic showed the unpreparedness of companies for this modern way of working. At the same time, however, it contributed to rapid reaction and the introduction of homeworking into normal work processes. The aim of this paper is to find out to what extent and in which economic sectors the introduction of telecommuting has proved feasible. What benefits does it bring to employees and employers. And then to evaluate to what extent homeworking has an impact on the efficiency of employee performance. The analysis was based on data from the Czech Statistical Office's statistical survey as well as a survey conducted by the Ministry of Labour and Social Affairs. The data will be classified and evaluated using classification analysis. The results of this analysis have shown that the covid-19 pandemic has contributed to a faster uptake of home working even in organisations that did not use this way of working before. It also showed that the majority of employees interviewed would welcome a "hybrid" employment model in the future, where they would work from home 2-3 days a week and work in the office the remaining days. An evaluation of employee effectiveness yielded the finding that most managers were satisfied with the work-from-home arrangements in their organization. Based on this work, the use of homeworking can be recommended to some extent at some sectors in the future.

Keywords: homeworking, work from home, work outside the workplace, employee efficiency, work performance

1 Introduction

The concept of home office or working from home is currently a very actual and discussed topic. The use of this way of working has been largely driven by the COVID-19 disease pandemic. As a result of government regulations, companies have often been forced to reduce or suspend their operations. The Czech Republic and its neighbouring countries are currently struggling with the economic problems caused by the Covid-19 pandemic [1]. The business environment is determined by various obstacles the business owners have to deal with in the course of their work [2]. The COVID-19 pandemic has affected every aspect of consumer behaviour their expenses, investments, and financial reserves and social wellbeing [3].

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Everyone was forced to adapt quickly to the situation. Although remote working is now a very hot topic, it is not a new or unexplored topic. Experts began to look more intensively at the subject as early as 1973 in the wake of the oil shock, when daily commuting became problematic. It was then that [4] came up with the idea that employees should not drive to work, but that work should follow them. Thus, the first "modern" motive for introducing distant working was to eliminate the costs associated with commuting [5]. However, in the following years, the motives for distant working changed. Other motives included, for example, the terrorist attacks on the World Trade Center on September 11, 2001, which caused people to worry about large concentrations of people in one place. With the rapid development of information technology, and therefore the improved availability of distant working, the importance of a better work-life balance for employees has begun to be emphasised. The covid-19 pandemic has again popularised teleworking but has not brought anything new to the field. All the reasons for homeworking were already there in the past [6, 7].

Some of the advantages and disadvantages are easily measurable, e.g., savings on the employer's side, while others are difficult to quantify. These depend on the employer-employee relationship and mutual trust. The advantages and disadvantages of working outside the employer's workplace have been discussed in detail. Publications also provide a search of research conducted on this topic in developed countries in the past decade [8].

The current analyses, therefore, contain themes that were already relevant before the pandemic, but now have become relevant to a much broader spectrum of workers. According to the results of previously conducted surveys, only approximately 4-8% of employees in the Czech Republic used homework before the covid-19 pandemic [8]. An important difference that the pandemic has brought about change in the perception of working from home.

The covid-19 pandemic was, however, perceived and offered as a benefit by the Home Office [9]. This benefit was used by companies to attract new or retain their permanent employees. Pandemic turned it into a necessity with regard to protecting the health of employees. Thus, telework has become relevant even for employees who do not want it. Based on the experience that companies have had over this, albeit short, period. It can be assumed that teleworking will become an opportunity for them to optimise the costs associated with running office buildings. [10] have conducted research that suggests workers and employers should avoid working from home if possible, even if it has a positive effect on the pandemic. It might seem that the company will save money with this form of work, but the reality is that the company's costs may even increase. This is due to the fact that most companies have chosen to work from home only partially, so the costs of running offices remain the same or at best slightly reduced. Legislation stipulates that the company must reimburse workers for the costs incurred by this form of work.

2 Literature research

The aim of this paper is to investigate the impact of the covid-19 pandemic on the spread of distant working in different economic sectors. An important aspect, especially for employers, is the employee's job performance when teleworking and whether employees' performance declines or whether they are more efficient when working from home. Therefore, I will also focus on evaluating the productivity of employees working from home. In view of the stated objective of this paper, the following research questions are set:
Research Question 1: To what extent and in what economic sectors did employers allow Home Office during the pandemic. What has been the main reason why distant working has not been used more extensively?

Research Question 2: How do employees and managers evaluate the functioning and conditions for working from home?

The issue of distant working has been dealt with by many authors and researchers for a long time, although in the Czech Republic this topic has only become topical with the pandemic of covid-19. [11] who in their work "Flexible forms of work - homeworking in the Czech Republic and selected European countries" investigated the current state of application of one of the flexible forms of work. The performance of work outside the employer's workplace. In their work they present the main findings of the analysis of the application of this form of work, including its definition, identification of possible barriers to its advantages and disadvantages. The elaboration of this study was based on the use of secondary analysis of domestic and foreign information and data sources. Expert studies and outputs of national and international research projects carried out by the Research Institute of Labour and Social Affairs. Other research institutions whose focus is on the issue of flexible forms of work. Relevant statistical methods were used for a more detailed analysis and search for factors that may influence the use of home offices in the Czech Republic. According to the results of the [12] sample survey, 83% of employees perform their work at the employer's location, 2% usually work at home, 4% combine their work at different locations and 11% of employees have their work location forced by the nature and scope of their work. The results of the sample survey "New forms of employment" [12] show that most employees who have experience of homeworking work in small and micro enterprises. While large companies often offer an employee benefit in the form of homeworking. Only a small percentage of employees end up using this benefit. Small and micro businesses offer it less, but it is used to a greater extent. Enabling off-site work brings a range of impacts for employees and employers. According to [13], the impacts of off-site work for employers vary mainly by firm size or number of employees. For employers, the cost savings associated with running a workplace are usually a clear advantage, with small and micro enterprises with up to 10 employees being the most likely to mention this aspect in the guided interviews. For larger enterprises, working from home is particularly interesting as an employee benefit. For employees, time flexibility and reduced commuting are crucial. Yet time flexibility is not only emphasised by certain groups of employees for whom this is to be expected, but also for other employees who simply "want to be masters of their time" [13].

[14] examine the current state and future evolution of the workplace in the context of the covid-19 pandemic. They analyzed documents, publications, and surveys from multiple sources to learn more about employee experiences and the advantages and disadvantages of distant working. Documents from highly reputable sources such as Forbes, Gartner, McKinsey, Gallup, WHO, Boston Consulting Group, KPMG, PwC, EY, Deloitte and other publications produced between March 2020 and July 2020 were analysed. The methodology used therefore allows for a combination of all of these as the grounded theory allows for the collection of data from a wide range of sources. Czech Statistical Office provides data for analyzing process [15]. The data collected from the reports was categorised, validated and adjusted at all stages of the analysis. The data analysis showed how the workplace can be changed, re-vamped and five strategic categories were identified as part of this process:

1) To break free from the past.
2) Workplace redesign.
3) Technology.
4) Digital strategies.
5) Telework and a new sense of the workplace.
Ad a) While in the past organizations have only theorized about new forms of work, covid-19 has forced them to move to entirely new ways of working [16]. Therefore, companies need to identify the most important processes within their organization, geographic and functional structure. New processes for the digital world need to be built, educated and prepared for the organisation so that there is no distinction between face-to-face and remote working. It will be necessary to review the economic policies of organisations in the area of remuneration and motivation. Future jobs will not be the same as those of the past, leading to the need to rethink performance measurement, and thus the evaluation will not necessarily be about the actual performance index, but about the employee's ability to overcome uncertainties and adapt to the ever-changing way of doing business.

Ad b) Offices and workspaces have so far been created without any real consideration of the underlying objectives or needs of staff. This too is something that Covid-19 has changed. Companies need to design spaces that can support all forms of interaction that take place on-site or remotely. A company that focuses for telecommuting will not require a large amount of office space as it could be replaced by home offices. Currently, we have eagerly been seizing the opportunity of online shopping. Buying goods via the internet is much more comfortable than hours wasted roaming through the shopping centre. After the economic crisis triggered by the onset of the Covid-19 pandemic, the online world penetrated all spheres of our lives [10].

Ad c) Technology helps in a collaborative work environment by enabling agile interactions in the workplace. Regardless of employees' past technological expertise, the pandemic presented an opportunity to improve the use of these tools. As demonstrated, the technology component played a critical role in telework and became a major survival factor that companies faced during the pandemic. For intra-company communication, it is advisable to use the social network Yammer, which is a suitable online social network for implementation in a small company [17].

Ad d) This category sees the acceleration of digital transformation as a trigger mechanism for telework and workplace transformation. And it also reveals important gaps within the IT infrastructure.

Ad e) Although most companies have been reticent to allow employees to work remotely, this pandemic has forced a worldwide experiment where many more people have had to work from home. What is remarkable is the speed and efficiency with which companies have adopted forms of digital collaboration, where in most cases the results have exceeded their expectations. One of the important factors for successful management is the knowledge of the competitive environment in which the business operates and the ability to adequately respond to changes [18].

Some of the benefits this has brought to employees and organisations include a reduction in transportation time and associated environmental impact, improved productivity and better time management, work-family balance coupled with the potential for greater happiness, an increased sense of protection and security in the face of potential pandemic impacts, the opportunity to attract talent without geographical boundaries, the introduction of new processes in line with remote working, strengthening company culture and reduced real estate costs [19]. When considering a future workplace, it is important to consider that remote working has clear benefits for people's wellbeing and workplace change. For future developments, for example, they conclude that allowing employees to work from a home office as a benefit to the company and employees in a less geographically constrained location. People will therefore live where they want, sometimes at a lower cost of living or close to their loved ones, which in turn turns the workplace into a more attractive place to work. The results show the existence of strategic categories that are important for reimagining the workplace after covid-19 and for the process of changing it. These principles
can be summarised as changing the physical space of the workplace, work flexibility, family reconciliation and health security [20, 3]. The study of these principles, based on data analysis, can open to different avenues of research, and may enable the creation of models that are directly related to employee satisfaction. Thus, it can be concluded that teleworking and the new ways of working that have emerged in the pandemic may even allow for greater workplace change than expected in the pre-pandemic situation. The workplace can be considered a friendly, familiar environment because it is set up in its own home. However, this does not negate negative feelings such as fear, uncertainty in case you must be at home for a longer period of time.

Factors influencing corporate social responsibility depend on basic competencies to influence corporate social responsibility. Nowadays, human society is entering the era of digital economy with shortening product cycles and expanding scope of competition leads to increased competitive pressure [21].

For future developments, for example, they concluded that allowing employees to work from a home office as an advantage for the company and employees in less geographically constrained locations. People will therefore live where they want, sometimes at a lower cost of living or close to their loved ones, which in turn turns the workplace into a more attractive place to work. [22] say, that development of industrial environment and changes in technologies always brings negative influence on companies and employees, because of the fundamental skills and abilities.

3 Data and methods

It will be used document analysis to process the data. It will be proceeded in two steps. First, it will be found out which companies, in terms of size and industry distribution, allow their employees to work from home. It will be used data from the Czech Statistical Office, Use of Information and Communication Technologies in the Business Sector - 2021, Use of Teleworking. These data were based on the results of the annual statistical survey of the Czech Statistical Office on the use of information and communication technologies in the business sector in the Czech Republic. The reporting units were business entities with 10 or more employees in all sectoral sections except Agriculture, Mining and quarrying, Money and insurance and sections including Education, health and cultural activities. The sample was designed to ensure sufficiently representative results. The majority of the data were related to the first half of 2021. It will be then processed these data in Excel and will be used classification analysis to split the enterprises by size and by economic sector.

In the next step, it will be processed data based on the evaluation of the functioning of telework from the perspective of employers and employees. I will draw data from a survey conducted by the Evaluation Department, Section of European Funds and International Cooperation, Ministry of Labour and Social Affairs of the Czech Republic (September 2021). This survey was based solely on a questionnaire survey conducted in June and July 2021. Respondents were exclusively from the public and non-profit sectors. The following entities were contacted for the survey: organizational units of the state (hereinafter referred to as OSS), Territorial self-government units (hereinafter referred to as USC) and Private non-profit sector (hereinafter referred to as NGO). It will be processed these data in Excel. In this section, the number of respondents (the so-called "N") will be indicated for all processed graphs. The ambition of this elaboration will be to presented in an aggregated and structured way the information obtained from the respondents about their experiences related to working from home.
4 Results

For the first part, the data from the CSO were used, based on the results of the annual statistical survey of the CSO on the use of information and communication technologies in the business sector in the Czech Republic. The structure of respondents is shown in Figures 1 and 2.

Fig. 1. Structure of the result set by size of firms (number of employees) in %.
Source: own elaboration based on CZSO statistics.

Fig. 2. Structure of the final population by sector.
Source: own elaboration based on CZSO statistics.

Main findings

In the period before the pandemic or during the loosened government measures, at least 54% of businesses sometimes allowed people to work from home. These options varied depending on the size of the businesses. While almost half of small firms (48%) and three-quarters of medium-sized firms (74%) were so, for large firms up to 91% could work from home. In terms of sector, firms in the information technology sector were the most likely to have their employees home office, followed by the audio-visual sector and travel agencies and bureaux. Some administrative workers in manufacturing also stayed at home (see Figure 4).
In contrast, 60% of companies allowed their employees to work from home during the pandemic. The home office option, however, varied significantly depending on the size of the company. At that time, 96% of large companies with more than 250 employees, 84 percent of medium-sized companies, and 53 percent of small companies with 10 to 49 employees allowed home offices. In terms of industry, the ranking did not change. A comparison of businesses allowing employees to work from home is shown in Figure 3.

**Fig. 3.** Companies in the Czech Republic allowing employees to work from home (in percent).
Source: own elaboration based on CZSO statistics.

The difference, however, is in the end how many employees can actually work from home. During the pandemic, 12% of employees worked from home. According to the CSO data, teleworking was most common in large companies with 5 or more employees (21%). Teleworking was used most by the following sectors: telecommunications (69% of all employees in this sector), followed by employees in the media sector (59%), and employees in the IT sector (53%).

**Fig. 4.** Businesses that allowed employees to homeworking during the pandemic.
Source: own elaboration based on CZSO statistics.
In the second part were used data from a questionnaire survey conducted by the Evaluation Department, Section of European Funds and International Cooperation, Ministry of Labour and Social Affairs of the Czech Republic (September 2021). The distribution of respondents is shown in Figure 5 and Figure 6.

**Fig. 5.** Respondents by type of organisation.
Source: own elaboration based on the survey of the MLSA.

**Fig. 6.** Respondents by size of organisation.
Source: own elaboration based on the survey of the MLSA.

For comparison with the private sector, it has compiled an overview, based on a questionnaire survey of the MOLSA, of the situation of the possibility of working from home in the public sector in the period before the pandemic or during the loosened government measures and during the covid-19 pandemic.

The data evaluated was from the perspective of the employees. It shows that 49% of employees in the public sector and NGOs were allowed to work in the pre-pandemic period. These varieties depend on size and type of organization. The highest proportion in HO opportunities was allowed to employees in small organizations with up to 10 employees at 70% followed by large organizations with over 250 employees (65%). There was a major shift in the pandemic-19 related measures and a total of 87% of employees were allowed HO.
The largest shift in the possibility of HO was in medium-sized organisations of 51-250 employees, where 79% of employees were able to work from home during the covid-19 pandemic, up from an initial possibility of 26% before the pandemic. The distribution and differences are shown in Figure 7. In terms of the type of organisation, here the option to work from home is largely influenced by the work agenda that can be carried out from home. The questionnaire surveys show that 83% of OSS employees could work from home during the off-measure period, followed by 67% of NGO employees and, in contrast, only 32% of USC employees. These numbers increased during the pandemic-19 related measures. In the OSS, 99% of employees could stay at home, compared to 85% in the NGOs and 81% in the CSC. This was, however, an emergency situation which, after the end of the government measures back to the original numbers. The reasons for not being able to work from home are shown in Figure 8.

**Fig. 7.** The possibility of working from home in different types of organisations (in percent).
Source: own elaboration based on the survey of the MLSA.

**Fig. 8.** Reasons why more employees do not use the HO option.
Source: own elaboration based on the survey of the MLSA.

Another result, which is the aim of this work, is the evaluation of the data obtained by the questionnaire survey of the Ministry of Labour and Social Affairs from the perspective
of the evaluation of the functioning of working from home. First, it was evaluated the situation from the perspective of the managers. The vast majority of them are satisfied with the functioning of homeworking in their organisation. With the exception of the USC, only a minimal number of respondents are dissatisfied. In the case of the USC, this figure is 9% of managers. Overall, therefore, across sectors, over 94% of managers were satisfied or rather satisfied (see Figure 9).

![Figure 9](image)

**Fig. 9.** Satisfaction of managers with the functioning of HO in their organisation.
Source: Own elaboration based on the MoLSA survey.

The results also showed a comparison of the performance of employees at the workplace and at HO (from the managers' perspective). The results show that the performance of employees working from home is comparable to working at the workplace (56% of respondents), with a further 11% of respondents perceiving employees working at HO as more efficient and only 8% perceiving employees working from home as less efficient. The remaining 25% of managers consider employee performance to be so individual that they are unable to assess it in aggregate (see Figure 10).

![Figure 10](image)

**Fig. 10.** Comparison of employee performance in the workplace and HO (in percent).
Source: own elaboration based on the survey of the MLSA.

From the employees' point of view, the questionnaire investigated how the respondents perceived working from home in terms of various criteria (efficiency, concentration, motivation, organisation of work in time, effectiveness of cooperation with colleagues, reliability of technology). Compared to working at the workplace, respondents rated the
organisation of work time as the best, which was rated as significantly or rather better by almost 60% of respondents, with almost half of the respondents saying that they concentrated better and were more efficient at home. Respondents considered communication with colleagues to be the worst, with over 30% of respondents describing it as rather or significantly worse (see Figure 11).

The previous results are followed by the findings on how working from home affects employees' time management. A total of 60% of respondents said that working from home takes a comparable amount of time to working from the office, 20% of employees say that working from home takes less time, but these are mostly the ones who said they are more productive at HO. Conversely, about 10% of respondents need more time to complete their duties (see Figure 12).

Based on the evaluation of the data available to me, I can answer the research questions. Question 1: To what extent and in what economic sectors did employers allow home offices during the pandemic? What was the main reason why telecommuting is not used more? Even before the pandemic, 54% of businesses in the country allowed employees to work from home. We find significant differences depending on the sector of economic activity. Employees of companies in the information technology sector were the most likely to work from home, while the smallest share was in the catering and hospitality sector or in the construction industry, i.e. in professions that cannot be performed from home. In the period of the covid-19 pandemic,
the share of firms allowing home working increased further to 60%. The composition of economic activities remains the same, for the reasons mentioned above.

In contrast, based on the MoLSA's survey of public and non-profit sector respondents, only 49% of respondents were allowed to work in HO before the pandemic, but this number increased significantly above the private sector average during the covid-19 pandemic. Specifically, to 87%. This difference is due to the work agenda allowing more work from home. A largely unsatisfactory workload is also the main reason why organisations do not make use of HO options, a view expressed by over 60% of employees in the MOLSA survey. Another major barrier is the lack of IT facilities, with over 45% of respondents agreeing.

Question 2: How do employees and managers rate the functioning and conditions for working from home? According to the answers received from managers, it can be concluded that in most cases the management is satisfied with the overall functioning of telework in the organisation. Only 15% of managers expressed the view that employees are less efficient at home. In contrast, 10% of respondents said that employee performance is higher at home than at the workplace. However, the majority of managers (40%) were inclined to the option that employees are equally effective at home and at the workplace. Related to this are the brief conclusions regarding the most common control of work done from home. The survey showed that for most managers it is sufficient to monitor whether the tasks assigned are completed within the deadlines. From the employees' point of view, it is beneficial for them to work from home, especially with regard to the organisation of work overtime. This was identified as an advantage by almost 60% of employee respondents. Another almost half of the respondents said that they concentrate better and are more efficient at home.

5 Conclusions

The aim of paper was to find out the changes in the use of homeworking in the period before and during the covid-19 pandemic. And I also wanted to know the answer to the question of how homeworking works.

It was largely able to find the answers to these questions, although it is necessary to consider the structure of the respondents in both surveys. Based on this data, it was concluded that the covid-19 pandemic has contributed to a faster onset of enabling more companies and organizations to work from home. Given global developments, the expansion of the ability to work from home would have occurred gradually anyway. For companies, working from home means savings in operating costs. Although most employees do not want to use HO 100% there is the possibility of shared office space and therefore less need for large office buildings. Employees benefit from working from home, especially with regard to time management and also the time savings in commuting to work. But on the other hand, they lack social contacts when working from home for longer periods of time. For this reason, most employees would welcome a hybrid model where they would work from home about 2-3 days a week. As regards the functioning of teleworking and employee performance, here the surveys showed quite clear satisfaction of both managers and employees.

The stronger the core competence, the higher the corporate social responsibility will be, which means that the core competence can greatly improve the corporate social responsibility.

Based on these findings, it is likely that the use of HO will expand in the future, not only as an important employee benefit. Organisations will also start to consider more flexible office arrangements. Nevertheless, the results showed differences in the enabling of home working across different types of employers. These differences are due to the very nature of the work itself and the extent to which it can be done from home at all.
Even so, it can be assumed that the lessons learned during the covid-19 pandemic will permanently change the culture in many organisations, and the increased level of home working will persist to some extent after the pandemic crisis is over.

References

5. P. Mokhtarian, If telecommunication is such a good substitute for travel, why does congestion continue to get worse? *Transportation Letters*, 1(1), 1-17 (2013)


