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Remote work in pandemic conditions — the result of research conducted among office workers

Praca zdalna w warunkach pandemii — wyniki badań przeprowadzonych wśród pracowników biurowych

Abstract

The article assesses the quality of an employee's work while performing remote work, which was introduced in connection with the pandemic of the new COVID-19 disease caused by the SARS-CoV-2 virus, which posed a threat to health and life. The research results were collected using a statistical method in the form of an Internet questionnaire. The assessment of this way of working was made on two time levels, when remote work was introduced on a massive scale and 1.5 years from then on. The survey was conducted periodically and was generally available to the units belonging to the study group for a period of three months. The survey questionnaire has been made available so that the largest number of people who meet the survey requirements have access to it. Internet portals and groups associating office workers were used.

Keywords:
remote work, COVID-19, internet poll

Streszczenie

W artykule dokonano oceny jakości pracy pracownika podczas wykonywania pracy zdalnej, która została wprowadzona w związku z pandemią nowej choroby COVID-19 wywołanej wirusem SARS-CoV-2, stanowiącej zagrożenie dla zdrowia i życia. Wyniki badań zebrano metodą statystyczną w postaci ankiety internetowej. Oceny tego sposobu pracy dokonano na dwóch poziomach czasowych, kiedy na masową skalę wprowadzono pracę zdalną i 1,5 roku od tego momentu. Ankieta była przeprowadzana cyklicznie i była ogólnie dostępna dla jednostek należących do badanej grupy przez okres trzech miesięcy. Kwestionariusz ankiety został udostępniony tak, aby jak największa liczba osób spełniających wymagania ankiety miała do niego dostęp. Wykorzystano portale internetowe oraz grupy zrzeszające pracowników biurowych.

Słowa kluczowe:
praca zdalna, COVID-19, ankieta internetowa

JEL: M54, M50

Introduction

At the dawn of the third decade of the 21st century, there have been a number of events of major historical significance on a global scale. One of them is the pandemic of the new COVID-19 disease caused by the SARS-CoV-2 virus, and its spread has affected many aspects of daily life for billions of people on all continents. One of the changes that affected humanity was the large-scale introduction of a remote work organization model. For the first time in history, so many changes

occurred in such a short period of time (over the course of weeks or even days) in a stable, yet slowly evolving work system.

The problem discussed in the article is not only of theoretical but also of practical research value — the conclusions drawn after the conducted analysis may serve employees and employers in the efficient organization of the new work model. Additionally, they can be helpful in finding and understanding reasons that affect the productivity and quality of tasks performed by people working from home.

Remote work and its origins

Back at the beginning of the 21st century, the basic manner of providing work for most of the society (both in Poland and in the world) was the stationary model of work. It consisted of performing professional duties at a location specified in the employment contract — the workplace or other location designated by the employer, usually with the possibility of direct contact with a supervisor. However, in the era of the information society and developing communication technologies, the approach to this traditional model has changed. However, despite the fact that telecommunications development made it possible to change this system in the last century, by 2020 only a small percentage of people fulfilled their duties off-site.

Research concerning taking advantage of remote work shows that in 2019, about 4.5% of all people employed in Poland took up work from home, which is 1.1% lower than in the European Union and much lower than in the case of the leading countries — the Netherlands and Finland, where the result is 14.1% (Pracodawcy RP, 2020).

Great changes often come in times of great crisis, which appeared at the beginning of 2020. There was a sudden socio-economic threat on a global scale — the rapidly spreading SARS-CoV-2 virus, which develops into the infectious COVID-19 disease. The disease was first diagnosed in November 2019 (Scher, 2020) in China's Hubei province. However, information about the high level of threat due to the new type of coronavirus was confirmed by China only in the last days of December. Within two months, widespread outbreaks have been recorded in the following countries: South Korea, Italy, Iran, as well as less numerous infections in other countries. On March 11, 2020, COVID-19 was already reported in 114 countries worldwide, and the World Health Organization (WHO) declared a disease pandemic (Chappell, 2020). The scale of the threat was so high that the pandemic had a direct impact on the lives of millions or even billions of people in a very short time. Steps were undertaken to prevent the spread of the disease and the deaths of others. Following countries introduced numerous restrictions that had an impact on various fields of life: starting with such simple solutions as ubiquitous recommendations for washing hands and disinfecting all surfaces, the obligation to wear medical masks in public spaces, up to solutions such as introducing curfews, a ban on travel or closing national borders for travellers. The aim was to limit the transmission, and thus the expansion of the virus as much as possible by reducing interpersonal contacts to a minimum.

The COVID-19 pandemic resulted in one of the most acute economic and social crises in history. As a result, in 2020, the global GDP decreased by 4.3% compared to 2019, and forecasts mentioned an even larger recession to be expected (Tomczyk, 2021). As a result of the so-called lockdowns[1], most sectors of the economy were closed. Their natural consequence was a striving to minimize losses and continue doing business, and thus relocating professional activity from offices to homes for as many employees as possible. Entrepreneurs as well as public institutions, were forced to very quickly, immediately change the organization of work, in many cases to a completely foreign model — the model of remote work.

Issues of remote work

The challenging epidemiological situation has forced a very fast pace of action in terms of introducing remote work. Decisions were made suddenly and no one had the chance to prepare for this situation in advance. Both legislators and employers have faced a huge challenge in the form of a revolution in a slowly developing, yet stable, labour market.

The concept of remote work used in the topic of this paper is relatively new and contrary to the concept of teleworking, it is not yet regulated by the Labour Code (work on the regulation is currently underway in the Parliamentary Committees of the Republic of Poland). So far, it has been used interchangeably with many other synonyms of telework (teleworking, work from home, mobile work, e-work). It was distinguished in its meaning in Polish law only in 2020. However, remote work evolved directly from the idea of telework (Zalega, 2009).

In March 2020, in Poland the "Act on special solutions related to the prevention, counteracting, and combating COVID-19, other infectious

diseases, and crisis situations caused by them" entered into force (Ustawa z dnia 2 marca 2020 r. o szczególnych rozwiązaniach…). It introduces all changes and principles for the functioning of companies, public administration bodies, new duties and the rights of all social groups residing in the Republic of Poland. This is the only normative act that regulates the concept of remote work and thus also introduces it as an applicable legal norm.

Art. 3 of the second chapter of the aforementioned Act reads:

"In order to counteract COVID-19, the employer may instruct the employee to perform the work specified in the employment contract, outside the place of its permanent performance (remote work), for a fixed period of time" (Ustawa z dnia 2 marca 2020 r. o szczególnych rozwiązaniach…).

This is the content of the original article before it was developed and detailed. It shows high briefness and lack of precision. This is a semi-imperative act, which gives the employer the opportunity to instruct employees to perform their duties outside the office (in this case, most often at home, the so-called home office), but the employee is not forced to make such a choice. Additional legislation that made it mandatory to close one's business for a limited period of time caused employers to take this option. Despite the fact that the employment contract of an employee does not necessarily provide for the possibility of remote work, this unique situation imposed this form of work organization without the need to make an agreement with the employee. The employer may also withdraw such an order at any time, restoring the original state (Ustawa z dnia 2 marca 2020 r. o szczególnych rozwiązaniach…). The scope of duties and performed activities specified in the contract remains unchanged.

Amendments to the Act developed and introduced additional criteria. Only the aspect of the location for performing duties and introducing the necessity to record the liabilities provided are modified. The time of performing work from a location other than the company's premises is imposed by the employer. It is not specified in the original contract, and the temporary method of organization resulted from independent factors and it is episodic (e.g. due to the current state of emergency, the state of epidemic, in this case meaning a threat to life and health caused by the pandemic). This constitutes not regularly performing work from home, but only an ad hoc situation for a specified period of time at the employer's request. In this respect, regulations are planned (data as of the first quarter of 2022), which intend to develop and partially replace the current provisions of the Labour Code regarding teleworking (Praca zdalna na stałe w kodeksie…, 2021). The remaining aspects regulating telework in the Labour Code at the moment are also applicable in a situation of introducing remote work by an Act. An employer may commission remote work if the employee has the possibilities (premises, technical) to perform it. It is to be carried out by means of information and communication technologies, referred to as "means of direct distance communication" (Ustawa z dnia 2 marca 2020 r. o szczególnych rozwiązaniach…). The employer is also obliged to provide the necessary equipment and materials needed for performing the duties.

The Act on remote work introduces the possibility of working from home not only for white-collar workers, but also may "concern performing part of manufacturing services or material services", as stated in point 5 of Art. 3 of the Act (Ustawa z dnia 2 marca 2020 r. o szczególnych rozwiązaniach…). However, this is an exceptional situation and usually teleworkers belong to a specific group of professions that can be described as information or free (FBI, 2020). Their work is often based on using technology, creative or design work, or in electronic form. Before the time of the pandemic, there were certain occupational groups that most often took advantage of this modern form of employment.

Works most often performed in the form of telework in Poland (Szymczak, 2006): economic analysis, marketing research, market research, copywriting, tax consulting, journalism, computer graphics, accounting, editorial work, scientific work, architectural designs, technical (engineering) designs, telemarketing, translations, developing apps and Internet systems, financial services, legal services, services in the sphere of Public Relations (PR).

Service providers engaged precisely in these types of activities most often switched to remote work in the first quarter of 2020. According to information provided by the Statistics Poland, at the end of the second quarter of 2020, in the sector dealing with broadly understood information and communication, almost 60% of all employees worked in the home office system, and in professional, scientific, and technical activities this value was almost 35%. The industry related to financial and insurance activities expressed a slightly lower value (Związek Przedsiębiorców i Pracodawców, n.d.).

Many global crises result in breakthroughs, and that was also the case. The prevailing situation resulted in a change in the manner of perceiving work and the way it is performed. The teleworking system has evolved at a very rapid pace. At the end of the first quarter of 2020, 11.0% of all employees worked remotely, while a year later it was already 14.2%. Some industries have approached this issue

with unprecedented commitment, for example the banking sector. Both Santander Bank and BNP Paribas Bank moved more than 80% of the employees to remote work and there is a good chance that the hybrid work model will be maintained to a large extent after the pandemic (Związek Przedsiębiorców i Pracodawców, n.d.).

Various sectors have also developed at a very fast pace, such as the system of delivering shopping and meals, as well as pursuing automation and self-service — an increase in the popularity of self-service parcel pick-up points (parcel pick-up stations) (Forsal.pl, 2020), self--service cash registers, and even automated stores. Companies also decided to focus on acquiring new customers and recipients of their services through online platforms (FBI, 2020). The economy and the labour market have begun to move into the digital world. This process did not come without confronting problems.

One of the challenges that arose during the mass introduction of remote work consists in ensuring the continuity of cyber security. For the IT industry it is a difficult task even under standard, stable conditions, and at such a scale, the suddenness of actions, and in a stressful situation, many additional dangers that have not been taken into account before come into play. CERT Polska (Computer Emergency Response Team) published statistics that indicate an increase in the number of incidents and phishing attacks in 2020, especially during the months concerning the beginning of the first two lockdowns (March, November) (Pracodawcy RP, 2020; Urząd Patentowy Rzyczypospolitej Polskiej, 2021). In terms of the solution to these problems, the focus was put on securing and recovering data and controlling the increased traffic on the Internet. Companies also trained employees in the field of cybersecurity. Unfortunately, this was not a large percentage of companies, it did not reach 30% of respondents (Pracodawcy RP, 2020; Urząd Patentowy Rzyczypospolitej Polskiej, 2021). However, it should be noted that the increase in attacks, even though visible, was not drastic and in most cases companies dealt with the problem by reaching for support and implementing proper actions.

Research methodology

In order to assess the impact of the remote work on employees' effectiveness a survey was conducted. The results were collected using quantitative empirical studies. They allow formulating conclusions that can be implemented in the practice of work organization to improve efficiency. In order to collect the necessary data, a diagnostic procedure in the form of an online survey was used. A survey constitutes a research technique that allows gathering information from a research group through answers in a questionnaire that is composed of a logical, coherent set (Apanowicz, 2002) so that it can serve a specific, previously determined purpose. It is used to record the respondents' answers, and thus to collect quantitative data for further analysis. In this case, the advantage of this method consists in the possibility of using it in a common way, thanks to the Internet. The survey was conducted periodically and was publicly available for individuals belonging to the study group for a period of three months. The places where the questionnaire was made available have been selected deliberately so that the largest possible group of people who met the requirements of the survey could access it. These were Internet portals and groups associating strictly office workers, including LinkedIn, Facebook, and Telegram. A requirement for participating in the study consisted in initiating remote work due to a lockdown introduced on a massive scale during the COVID-19 pandemic.

The measurement tool used to collect the data consisted in a measurement questionnaire. It consists of three parts:

1) Informative section — contains information concerning the purpose and content of the survey.
2) Metrics — collects data concerning the research structure of the group: gender, age, education, work position, work experience, employment sector, size of the organization. Its purpose is to create the sociological characteristics of the group subjected to the study.
3) The main part of the research — contains basic questions. It is divided into five sections. Each section contains questions on a separate aspect of remote work introduced during the COVID-19 pandemic.

Sections containing the main questions raise issues such as:

- Assessing the state of preparing the examined person for introducing remote work, previous experience regarding this form of work organization;
- Evaluating the effectiveness of remote work immediately after introducing remote work on a large scale, in comparison to the previous method of work (stationary work, telework included in the employment contract);
- Evaluating the preparation of the company and co-workers immediately after introducing remote work on a large scale;
- Assessing the current state of the company's preparation for remote work — state as of

1.5 years after initially introducing remote work on a large scale;
- Evaluating remote work as a form of work organization in current and future terms.

The questions were deliberately selected so that the issues raised in them concern every employee who had to face the transition to a new manner of organizing work. They concern social and housing conditions, organizing the workplace, benefits from the new state of affairs, the quality of communication, the manner in which the company is prepared, and the motivational factors adapted to the situation introduced by supervisors. The survey was formulated on the basis of questionnaires used in the system of periodic annual evaluation. It resembles it in terms of form, but also in terms of the content of the questions asked.

The list of possible answers is closed, and has a dysfunctional nature — it allows choosing only one of many answers. When formulating questions and answers concerning the level of skills, a nominal and a balanced 5-degree scale was used to show the level of progress or regression in a given aspects of work.

The collected data was presented with the use of graphic charts, and then analysed and described in terms of the studied problem.

The following hypotheses are presented in this paper:

1. Employees over the age of 50 will find it more difficult to adapt to the sudden need to change the form of work to remote work.
2. Remote work has significantly contributed to improving the independence and the ability of an employee to organize working time.
3. Performing work remotely may result in deteriorating communication between employees due to the lack of direct contact.
4. The popularization of remote work contributed to increasing the preparation of organizational units regarding the possibility of performing work in this form (a — lockdown, b — currently).
5. The limited forms of employee motivation resulted in a significant decrease in employee motivation, which translated into a decrease in their efficiency.

Analysis and interpretation of the results of the conducted study

The research goal set in the paper is associated with the need to obtain data with specific characteristics regarding changing the work organization. Due to this, it is necessary to initially profile the participants in the study. Professionally active people performing work that can be performed remotely were invited to participate in the survey.

The first section of the survey — a metric — was used to collect data necessary to present the socio-demographic structure of the research group.

Table 1 presents the structure of the research group in terms of gender. The group of 180 respondents consists of 102 women and 78 men. Women constitute the majority of the research group (57%), while men constitute 43% of the respondents.

Table 1
The structure of the respondents' answers to the question about their gender

Gender	Number of respondents	Percentage share
Female	102	57
Male	78	43

Source: own study.

Table 2 presents the ages of the respondents. The respondents selected the option that indicates their belonging to a given age group. The age ranges chosen by the authors show an upward trend, up to the maximum age of 31–35 years. This age range was selected by most respondents (36%). The values of following ranges show a downward trend — each subsequent range received fewer answers than the previous one. The second largest group consists in people aged 26–30 (23%), and the third group is 36–40 (15%). The remaining groups did not exceed 10% of all survey participants.

Table 2
The structure of the respondents' answers to the question concerning their age

Age group	Number of respondents	Percentage share
18–25	12	7
26–30	41	23
31–35	65	36
36–40	27	15
41–45	16	9
51–55	11	6
56–60	8	4
60+	–	–

Source: own study.

Table 3 presents the distribution of the level of education among the study's participants — 131 respondents possess higher education, constituting the largest group, amounting to 73% of all respondents; 46 respondents (26%) indicated secondary education. Only three respondents, 2% of the total, possess vocational education.

The survey was addressed to people performing work that can be carried out remotely. Professions allowing for this form of work usually require high competences and qualifications, and thus often the required higher education.

Table 3

The structure of respondents' answers to the question concerning their level of education

Education	Number of respondents	Percentage share
Vocational	3	2
Secondary	46	25
Higher	131	73

Source: own study.

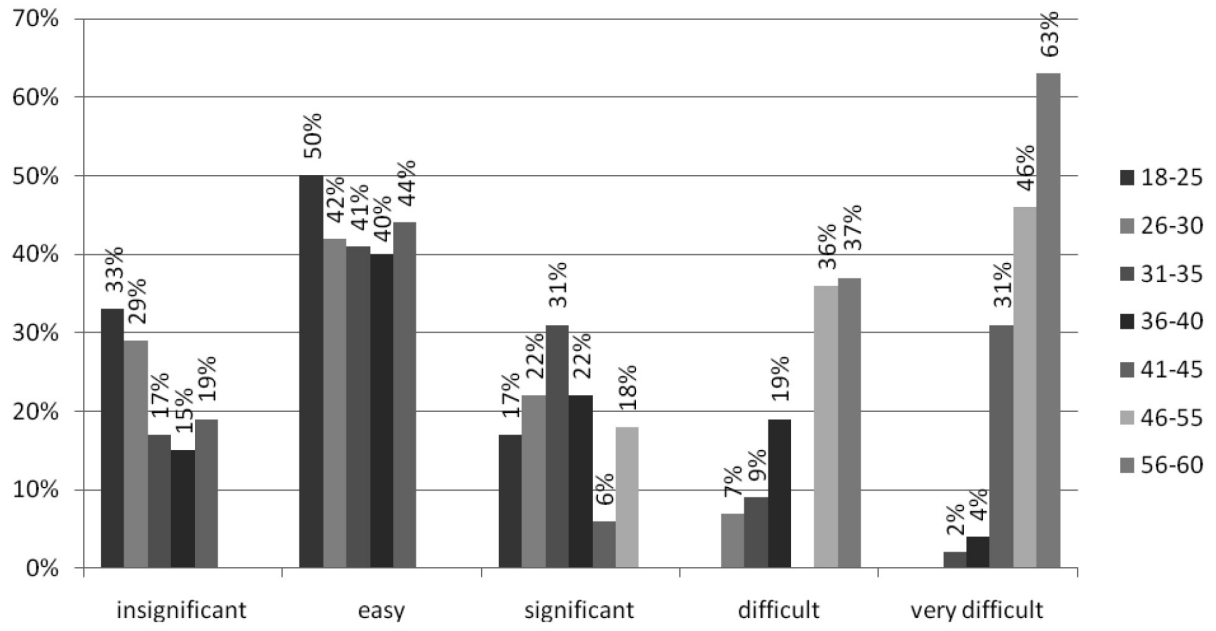
The biggest difficulty in terms of adjusting to performing work in a new form was reported by the age group of 56–60 years of age, where 63% of them indicated it as very difficult and 37% as difficult. Next was the 51–55 age group (46% — very difficult, 36% — difficult).

Slight difficulties in switching to remote work have become the domain of relatively young people, as indicated by the distribution of responses provided by respondents, where they dominate in the age group of 18 to 45 years of age. In other cases, there were no significant deviations due to the relatively even distribution of responses across age groups.

The study showed that the higher the age of a given group of people, the relatively greater difficulties this change caused them. This is due to the fact that young people (especially generations that grew up in the presence of new technologies and the Internet) largely possess features and skills that facilitate adapting to new conditions and efficiently using new technologies. As already mentioned, the majority of respondents consist in people under the age of 40, who have not encountered such a large obstacle in the form of an age and technological barrier when changing the form of work. The exact relation between these aspects can be seen in Figure 1. The fact that many people from higher age groups were not included among the participants of the study is reflected precisely in this issue. This confirms the hypothesis that the employees' age has an impact on adapting to this form of work organization in a sudden manner. This allows concluding that the process of

Figure 1

Distribution of assessments concerning the difficulty of adapting to remote work in individual age groups



Source: own study.

adapting to the new reality was not equally easy for everyone, but the general view shows proper readiness of employees to work in a new form.

When working remotely, the employee is often left alone in performing tasks and solving problems that may concern a wide variety of issues — planning activities, consultations, technical aspects, and hardware requirements.

In this case, once again the vast majority of respondents (81%) assessed their development in terms of independence positively; 53% of people indicated progress, and 28% indicated significant progress; 18% considered that they did not notice a change concerning the independence of performing work. There was a regression for only 1% of the respondents — as shown in Table 4.

Table 4

Structure of respondents' responses concerning changes in the independence of performing their duties

Change in independence concerning the performance duties	Number of respondents	Percentage share
Significant progress	51	28
Progress	95	53
No change	32	18
Regression	2	1
Significant regression	–	–

Source: own study.

Many accusations against remote work/telework concern the issue of communication with co-workers, which may translate into the effectiveness of work performed. Source literature often includes a concern, seeing how the transfer of communication to the Internet/multimedia sphere will contribute to deteriorating cooperation and relations between employees.

When it comes to the ability to communicate with co-workers, the majority of respondents (58%) considered that it had improved to some extent, 47% indicated progress, and 11% noticed significant progress. As many as 28% did not notice any changes in communication with other employees. For 13% there was a regression, and for 1% a significant regression in this field. The distribution of this data is presented in Table 5.

Figure 2 shows a comparison of assessments concerning the organization's ability to introduce remote work for people working in the private and public sectors. Respondents working in the state sector assessed the readiness of the organization

Table 5

Structure of respondents' responses concerning changes in the ability to communicate with co-workers

The change in the ability to communicate with co-workers	Number of respondents	Percentage share
Significant progress	19	10
Progress	86	48
No change	50	28
Regression	23	13
Significant regression	2	1

Source: own study.

as insufficient (47%); 33% indicated only sufficient preparation, 14% good, and 6% very good.

The vast majority of private sector employees (62%) indicated a sufficient level of preparedness, 23% good, 11% very good. Only 4% rated their job readiness as insufficient.

The assessment of the ability of enterprises to operate in the remote work system at the time of introducing the obligation to implement it, taking into account the division into sectors, allows determining the advantage of the private sector over the public sector. The possibility of greater flexibility for the private sector has enabled it to adapt to the new reality more quickly and thus to make it easier for workers to adapt and work remotely. Also in this case, the hypothesis presented in the paper is confirmed by the research results.

People who determined the impact of the environment on their work as negative, more often provided answers describing their effectiveness as lower — more often indicated a decrease in the effectiveness of implementing tasks and a higher frequency of performing gross errors. An opposite tendency is expressed by employees who described the impact of the environment as positive. In terms of assessing communication, the situation is similar (Table 6).

This confirms the hypothesis that social conditions and infrastructure have a direct, real impact on the remote worker and a given person's efficiency.

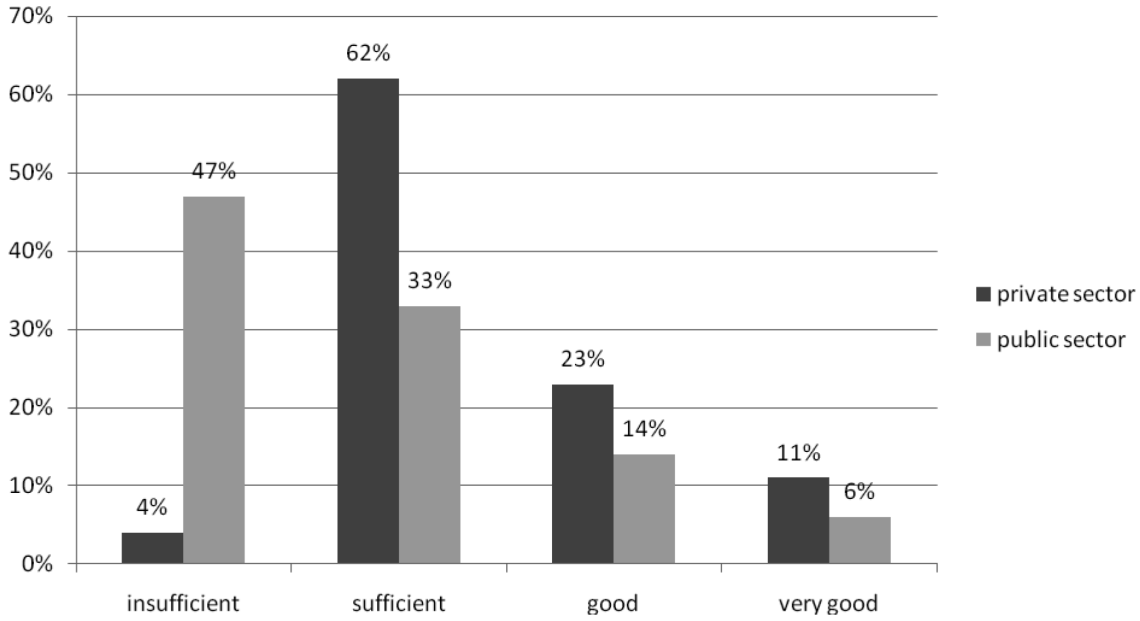
The respondents also assessed the overall ability of the company to carry out remote work. Due to the necessity to change the working mode, enterprises were mostly assessed as sufficiently prepared (52%); 20% of the respondents indicated it as good, and 9% as very good; 19% of responded assessed it as insufficient.

Table 6
Structure of provided answers indicating regression in various fields in relation to the impact of the environment

Impact	Effectiveness of task implementation		Number of errors made		Communication	
	Number of respondents	Percentage share	Number of respondents	Percentage share	Number of respondents	Percentage share
Positive impact	3	7	6	10	1	4
Negative impact	28	70	37	65	19	83
No impact	9	23	14	25	3	13

Source: own study.

Figure 2
Distribution of assessments concerning the ability of enterprises to work remotely for individual sectors at the moment when it is necessary to implement it



Source: own study.

Table 7
Structure of provided answers concerning changes in motivation to perform duties

Change in motivation to perform duties	Number of respondents	Percentage share
Significant progress	4	2
Progress	11	6
No change	43	24
Regression	101	56
Significant regression	21	12

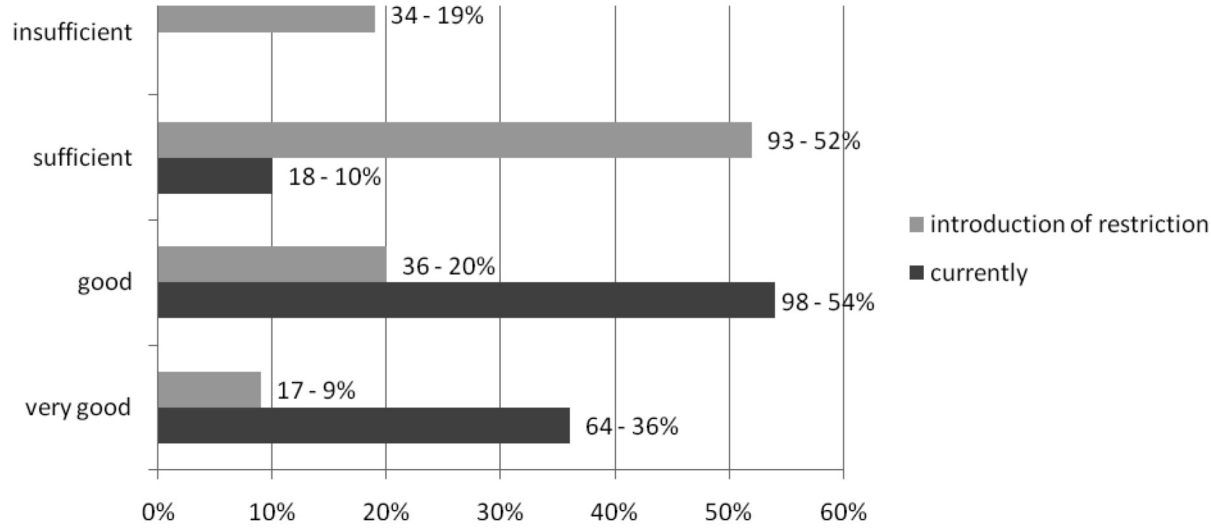
Source: own study.

The data acquired from the respondents, shown in Figure 3, highlight a significant improvement in the company's ability to work remotely. At the moment, 54% of the respondents assess the ability as good, 36% as very good, and the remaining group of 10% indicated it as sufficient.

Motivation to work constitutes a very important aspect that depends on many factors and directly affects its effectiveness.

In terms of the motivation to perform duties by persons working remotely, the majority of respondents indicated its decrease — 56% indicated a regression, and 12% a significant regression in this matter, as shown in Table 7. Motivation to perform duties remained at the

Figure 3
Respondents' assessment concerning the organization's ability to carry out remote work

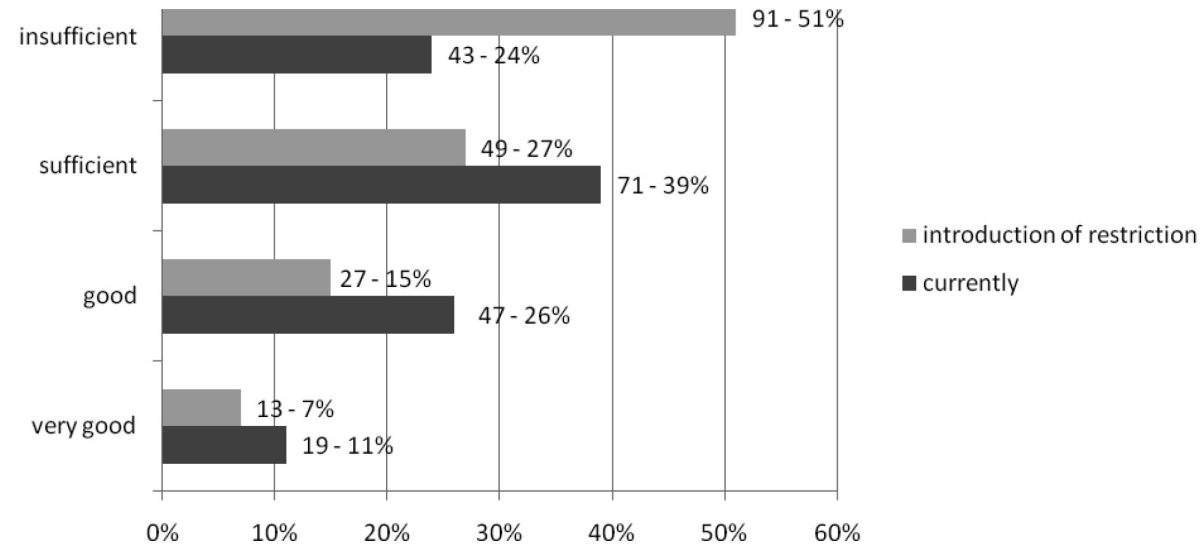


Source: own study.

same level for 43 respondents (24%), only 6% of respondents felt a higher level of motivation to work, and 2% recorded a significant progression of motivation.

Motivational factors constitute a highly significant aspect of productivity, and at the same time a large number of them was based on bonuses used and applied in a stationary manner. After introducing the lockdown, employees lost the possibility to benefit from many positive aspects of their employment in a given company. More than half of the people participating in the study say that the motivational factors at the time of changing the mode of work turned out to be

Figure 4
Assessment of the respondents concerning the motivational factors offered by employers



Source: own study.

insufficient (Figure 4). They were sufficient according to 27% of the respondents, good for 15%, and very good only for 7%. Currently, the situation has slightly improved; 39% of the respondents assess the motivational factors offered by employers as sufficient, 26% as good, and 11% as very good. However, despite the passage of time, 24% of respondents still believe that they are insufficient.

Table 8 presents the real attitude of employees towards the new form of employment; 1.5 years after introducing the changes, each respondent is aware of the privileges and difficulties resulting from this state of affairs, so the answer is based on these experiences. Almost all respondents (94%) expressed their approval for maintaining the possibility of working remotely the pandemic ends, 2% of respondents object to it, while 4% have no opinion on the matter. This represents the dimension of the overall assessment of this topic and the willingness to continue with the current form of work.

Table 8
Structure of respondents' responses to maintaining the possibility of remote work after the pandemic

Answer	Number of respondents	Percentage share
Yes	169	94
No	4	2
No opinion	7	4

Source: own study.

Verification of statistical hypotheses

The verification of statistical hypotheses has been carried out using the test of one mean value of the normal distribution. Tests for the mean consist in a group of statistical tests used to infer the average value in the population from which the random sample comes (Agarwal, 2006).

We denote the null and alternative hypotheses as follows:

- H_0: $\mu = \mu_0$.
  It assumes that the unknown mean in the population μ is equal to the hypothetical mean μ_0
- H_1: $\mu \neq \mu_0$ or H_1: $\mu > \mu_0$ or H_1: $\mu < \mu_0$.
  It is a contradiction of H_0, it occurs in three versions depending on the formulation of the studied problem.

The hypothesis is tested by test statistics, which constitutes a function of the results of a random sample. The form of the test function (so-called statistics) depends on three conditions: distribution of the feature in the population, knowledge of the value of the standard deviation in the population, and sample size (Thomas, 2014).

Table 9 presents hypothesis testing. On the basis of the statistical verification of the hypotheses, the following was determined:

1. Employees over the age of 50 express more difficulties in adapting to the sudden need to change the form of work to remote work.
2. Remote work has significantly contributed to improving the independence and the ability of a given employee to organize working time.
3. Performing work in remote form may result in deteriorating communication between employees due to the lack of direct contact.
4. The popularization of remote work (a — lockdown) did not contribute to increasing the

Table 9
A list of verification of the hypotheses

Hypothesis	H_0	H_1	Mean sample value	Standard deviation value	Sample size	Test μ	Hypothesis confirmation/rejection
Hypothesis 1	$\mu = 0$	$\mu > 0$	1.421053	8.7063	180	2.19	Hypothesis confirmed
Hypothesis 2	$\mu = 0$	$\mu > 0$	1.083333	54.3783	180	0.27	Hypothesis confirmed
Hypothesis 3	$\mu = 0$	$\mu < 0$	0.538889	43.3105	180	0.17	Hypothesis rejected
Hypothesis 4a	$\mu = 3$	$\mu < 3$	3.200000	95.7114	180	0.03	Hypothesis rejected
Hypothesis 4b	$\mu = 3$	$\mu > 3$	4.255556	193.4692	180	0.09	Hypothesis confirmed
Hypothesis 5	$\mu = 0$	$\mu < 0$	–0.966670	68.3645	180	–0.19	Hypothesis confirmed

Source: own study.

preparation of organizational units in terms of the possibility to perform work in this form. The popularization of remote work (b — currently) has contributed to increasing the preparedness of organizational units concerning the possibility of performing work in this form.

5. The limited forms of employee motivation resulted in a significant decrease in employee motivation, which translated into a decrease in their efficiency.

Summary

The subject of the article consists in assessing the efficiency of an employee during remote work, which was introduced as a result of the COVID-19 pandemic. Its purpose was to research the impact of factors that constitute an indispensable part of this manner of work organization on a given employee's efficiency, and thus to assess this efficiency during remote work. The second goal consisted in a comparative assessment of this system of work on two time planes: at the time of introducing remote work on a mass scale as well as 1.5 years from that time — at the time of conducting the survey. Even though it was impossible to obtain collective data concerning the performance of employees from a given company, the goal was achieved by applying the selection test method and conducting a self-assessment among employees. Behavioural and personality competences have been assessed. Selecting the assessed criteria consisted in collecting universal competences that have a direct impact on efficiency, and at the same time concern all white collar workers who worked remotely.

The goal was achieved by conducting empirical research in the form of an online survey — 180 people who worked remotely during the COVID-19 pandemic participated in the study. The obtained empirical evidence in the form of data underwent processing in a graphic and descriptive manner, and then thoroughly analysed in terms of statistics and quantity. In the course of this, the previously presented hypotheses were verified.

One of the formulated hypotheses was rejected. Deterioration in communication between employees due to the lack of direct contact has not been determined. Thanks to numerous communication channels tailored to different needs, the quality of communication underwent significant improvement.

Out of the remaining hypotheses, 4 were confirmed and the following conclusions were formulated:

- The difficulty of an employee adapting to a new form of work organization, consisting in remote work, increases with the employee's age.
- As a result of introducing remote work on a mass scale, the soft skills of employees related to independence and the time organization have improved.
- The popularization of remote work has contributed to better coordination and developing organizational units — the ability to introduce remote work has now significantly increased, in relation to the first lockdown.
- The limited forms of motivating employees resulted in a significant decrease in employee motivation, which translated into a decrease in their efficiency.

The research shows the actual attitude of employees towards the new form of employment. 1.5 years after introducing changes, each respondent is aware of the privileges and difficulties resulting from this state of affairs, 94% of respondents are in favour of maintaining remote work after the pandemic ends.

This article addresses a new problem that constitutes a consequence of the current global situation. The insights gained may serve employers and organizational units in noticing the reasons for the reduced employee efficiency and in finding a solution to the problem. The paper also reveals the needs of employees and shortcomings in preparing enterprises for the new reality. The drawn conclusions constitute a part of a new chapter in the concept of human resources management, dealing with universal remote work.

Seeing how the subject under discussion touches on a relatively new global situation, this article may constitute a starting point for further in-depth research on the corresponding subject.

Notes/Przypisy

[1] There is no relevant equivalent of this English term in the Polish language. Lockdown stands for a mass isolation of society, shutting down the economy in as many branches as possible in order to prevent the transmission of the virus.

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