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DETERMINANTS OF THE ATTRACTIVENESS OF TELEWORK BEFORE THE OUTBREAK OF THE COVID-19 PANDEMIC

DETERMINANTY ATRAKCYJNOŚCI WYKONYWANIA TELEPRACY W PRZEDDZIEŃ WYBUCHU PANDEMII COVID-19

Summary: Telework, also known as remote work, is now an increasingly popular work system in Poland and around the world. However, the reasons for undertaking remote work by individual teleworkers may be different. The article contains a literature review in terms of both the explication of the concept of teleworking and the motives for undertaking it. The results of the author's study were also presented, the aim of which was to identify the most important factors influencing the interest in teleworking among students. It was shown that the main motivating factors to work remotely are flexible working hours, the ability to work anywhere in the world and independent work organization. The study was a pilot study carried out just before the COVID-19 pandemic, which forced the introduction of remote work in many organizations that had not used teleworking so far. The intention of the author is to conduct a similar study every one to two years in order to compare the main motives for undertaking remote work before and during the pandemic, or just after its completion.

Keywords: telework, remote work, determinants of undertaking telework, COVID-19.

Streszczenie: Telepraca, określana też jako praca zdalna, jest obecnie coraz częściej wybieranym systemem pracy nie tylko w Polsce, ale i na całym świecie. Różne mogą być jednak powody podejmowania pracy zdalnej przez poszczególnych telepracowników. W artykule zawarto przegląd literatury w zakresie zarówno eksplikacji pojęcia telepracy, jak i motywów jej podejmowania. Zaprezentowano także wyniki autorskiego badania, którego celem było określe-

nie czynników determinujących zainteresowanie telepracą wśród studentów uczelni wyższych. Wykazano, że główne czynniki motywujące do pracy w trybie zdalnym to elastyczny czas pracy, możliwość pracy w dowolnym miejscu na całym świecie i samodzielna organizacja pracy. Badanie miało charakter pilotażowy. Zostało ono przeprowadzone tuż przed wybuchem pandemii COVID-19, która wymusiła wprowadzenie trybu pracy zdalnej w wielu organizacjach, które dotychczas nie korzystały z telepracy. Zamiarem autorki jest przeprowadzenie analogicznego badania w odstępie od jednego do dwóch lat w celu porównania głównych motywów podjęcia pracy zdalnej przed rozpoczęciem pandemii oraz w jej trakcie bądź tuż po jej zakończeniu.

Słowa kluczowe: telepraca, praca zdalna, determinanty podejmowania telepracy, pandemia COVID-19.

1. Introduction

The aim of the article is to identify the main factors influencing the interest of students – as future or current employees – in telework. The main motives for undertaking remote work have been described many times in scientific literature, both in Poland and abroad. This subject was taken up by, among others, Kurland and Bailey (1999, p. 57), Kiełtyka and Smoląg (2001, p. 120), Mann and Holdsworth (2003, pp. 197, 198), Illegems and Verbeke (2004, p. 323), and Janiec, Czerniak, Kreft, and Piontek, (2006, p. 56). They focused on identifying both the positive and negative features of teleworking from the teleworker's point of view. There are also many publications describing the benefits and risks of remote work for the teleworker and for society as a whole (Kurland and Bailey 1999, p. 56; Taskin and Edwards 2007, p. 197; Greenberg, Nilssen 2008, p. 9; Greer and Payne 2014, p. 88).

The research presented in this article deepens the current state of knowledge on teleworking in two main aspects. First of all, university students were selected as the research group, many of whom have not yet started any work. Thanks to this, it was possible to compare the views on remote work of people already working with the views of students without work experience.

Another important aspect is related to the timing of the survey, made just before the introduction of a number of social restrictions and recommendations related to remote work, related to the rapid spread of the COVID-19 pandemic at the beginning of 2020. In the literature on the subject, the term VUCA is increasingly used, defining the conditions of the functioning of an individual in the modern world. VUCA is an acronym for the following words: volatility, uncertainty, complexity, and ambiguity. The COVID-19 pandemic is an unprecedented situation, increasing the importance of individual elements of VUCA (Dolot, 2020, p. 37). COVID-19 has contributed to the introduction of major changes in the way most societies function around the world, including Poland. These changes mainly concerned the way work is performed. The COVID-19 pandemic has necessitated the introduction of teleworking in most enterprises and institutions, including those in which, under 'normal' conditions, the concept of distance working would be immediately criticized (e.g.in primary schools).

Thus, the study described in this article – as a pilot study – will be important in the future to identify differences in employees' views on the attractiveness of teleworking both before the introduction of social and economic restrictions and after their removal.

2. Explication of the concept of telework

The term *telework* has been used in management theory since 1972, when J. Shiff was the first to use the term teleworking in his article in The Washington Post (Ślęzak, 2012, p. 220). However, the findings of J. Nilles are of key importance in conducting research on teleworking. In 1973, he defined the concepts of teleworking and telecommuting as two different ways of providing remote work.

According to Nilles, teleworking is any form of replacing business trips with information technology (computers, telecommunications equipment, etc.). Thanks to the use of information technology, it is possible to transfer work to employees instead of the previous movement of employees to work (Nilles, 2003, p. 36). Thus, teleworking can be performed practically everywhere (as well as in the company's headquarters), as long as the employee is able to remove the need for business trips thanks to the use of information and communication technologies (ICT). Telecommuting is a narrower term than teleworking. It means periodic work outside the company's premises (or a stationary branch of the company) for at least one day a week. An employee using the form of telecommuting may work, among others, at home, in a call center or directly at the client's (Nilles, 2003, p. 21).

Since 1973, teleworking has been the subject of research by numerous researchers. Describing the concept of teleworking, they focused primarily on the place of work, the use of information and communication technologies in the process of performing official duties, and the work schedule of the person providing the work (Garett and Danzinger, 2007, p. 28). Selected definitions of telework are presented in the table below (Table 1).

According to some of the definitions, teleworking is work performed remotely (away) from the traditional workplace with the use of telecommunication tools and may involve electronic information processing. It does not have to be performed on a full-time basis, however, it is important that the "distance" of work time is significant (Gray, Hodson, and Gordon, 1993, p. 2).

Not all researchers treat the use of information and communication technologies as an important aspect when considering a given form of performance of official duties as teleworking. Sometimes it is completely ignored. Some researchers focused in their definitions only on the issue of the lack of travel to the usual workplace (Mannering and Mokhtarian, 1995, p. 49; Duxbury, Higgins, and Neufeld, 1998, p. 221).

According to Janiec et al. (2006, p. 17), teleworking is intellectual work that is provided outside the traditional workplace, and its results are communicated using ICT. This definition clarifies teleworking as intellectual work, and the use of ICT

Table 1. Selected definitions of the term teleworking

Telework is…	Authors
…work performed away from the traditional workplace for a significant amount of time with the use of telecommunication tools.	Gray, Hodson, and Gordon (1993, p. 2)
…work performed at home or in a place close to home, without commuting to a conventional office during standard working hours.	Mannering and Mokhtarian (1995, p. 49)
…work organization that allows employees to regularly carry out work at home or elsewhere, instead of commuting to the office.	Duxbury, Higgins, and Neufeld (1998, p. 221)
…intellectual work provided outside the traditional workplace, the results of which are transferred using ICT.	Janiec Czerniak, Kreft, and Piontek (2006, p. 17)
…replacing an employee's travel from home to office and from office to home with information processing technology (e.g. computers, telecommunications). It is related to mobility and can be used to create bonds between employees from different places around the globe and their work.	Greenberg and Nilssen (2008, p. 5)
…providing work outside the employer's organizational unit, most often at the employee's home, using ICT solutions. Remote work is synonymous with telework.	Grycuk (2013, p. 18)
…providing work outside the place where the results of work are needed or which would be a traditional place of work in the past, using information technology.	Hynes (2014, p. 581)
…work performed regularly outside the workplace, with the use of electronic means of communication within the meaning of the provision of electronic services.	Ustawa z 26 czerwca 1974 r. – Kodeks Pracy (Dz.U.2019.0.1040, art. 67^5 § 1)
…work regularly performed outside the workplace with the use of electronic means of communication (both during the performance of the task and in order to deliver the results of work to the supervisor), the nature of which does not exclude the performance of official tasks directly in the workplace.	Author's definition

Source: own study based on the indicated literature.

is used only in the context of delivering work results to the employer, excluding the use of ICT solutions during work and during communication with the supervisor before the end of the task.

Grycuk (2013, p. 18) in his definition of teleworking emphasizes both the role of the employee's geographical distance from the employer's organizational unit and the use of ICT solutions at work. He also draws attention to the synonymity of the terms teleworking and remote work. The use of information technology is also an important element of the definition of teleworking by Hynes (2014, p. 581).

However, instead of the employee's distance from the employer's organizational unit, this focuses on the employee's distance from the place where the work results are needed or which would be the traditional place of work in the past.

According to Polish legislation, teleworking is work performed regularly outside the workplace, with the use of electronic communication means within the meaning of the provision of electronic services (Ustawa z dnia 23 czerwca 1974, Article 675 § 1).

Based on the interpretations presented above, an original definition of teleworking was created by the author. According to it, teleworking is regular work performed outside the workplace with the use of electronic communication means (both during the performance of the task and in order to deliver the results to the supervisor), the nature of which does not exclude the performance of official tasks directly in the workplace. On the basis of the literature review on the subject matter described, it seems very important to add the last element of the definition: teleworking is work , the nature of which does not exclude performing official tasks directly in the workplace. There are many types of work that are performed outside the traditional seat (or office) of a given company using electronic means of communication, but which are not referred to as teleworking. An example is the work of a plumber employed under a contract, who receives orders remotely from the superiors and performs them directly at the customer's home. However, due to the fact that the work performed by a given plumber could not be performed at the premises of the company employing him/her, it cannot be described as teleworking.

After reviewing the literature, especially the current market trends related to the research subject, the term teleworking will be used interchangeably with the term remote work in this article. The author recognizes that these concepts are synonymous.

3. Determinants of undertaking remote work

Teleworking is associated with numerous benefits as well as challenges for the employer, the employee and society (Taskin and Edwards, 2007, p. 197; Greer and Payne, 2014, p. 88). This article will discuss the benefits of remote work from the employee's point of view, which can also be treated as factors motivating him/her to start teleworking. The most frequently mentioned factors of this type in the literature include (Kurland and Bailey, 1999, p. 57; Kiełtyka and Smoląg, 2001, p. 120; Mann and Holdsworth, 2003, p. 197,198; Illegems and Verbeke, 2004, p. 323):
• saving time and money due to the elimination of business trips;
• the possibility of living in a place far away from the company's base;
• greater flexibility of work;
• less stress and more comfortable working conditions;
• the possibility of reconciling childcare with work;
• greater job satisfaction.

Over the years researchers have concentrated on researching various reasons that encourage people to work remotely. In the 1970s the most frequently analysed factor was the elimination of access. In particular, studies focused on the costs and time of travel and the occurrence of stressful situations during daily commuting (Bailey and Kurland, 2002, p. 387). The choice of these factors to be analysed was not accidental, it was related to the oil crisis that began in the 1970s and quickly spread to most industrialized countries (mainly the USA). One of the consequences of that crisis was the emergence of concerns about the insufficient amount of petrol and the impossibility of commuting to work. Teleworking seemed then to be the ideal form of reducing both fuel consumption and the stress and time associated with commuting.

Some of the research conducted in the early 1980s showed that the lack of the need to commute to work was not the most important factor motivating to start working remotely (Salomon, 1985, p. 232). It was found that humans, as mobile beings, will seek new travel opportunities also when they are able to perform their job duties at home. In the following years, however, studies with different results appeared. For example, Mann and Holdsworth (2003, p. 197), determined the reduction in daily commuting as a factor determining the willingness to work remotely.

In the 1990s, researchers' attention focused on the aspect of reconciling work with family responsibilities, in particular: with childcare. Duxbury et al. (1998, pp. 223-224), Mokhtarian et al. (1998, pp. 1115-1116), as well as Sullivan and Lewis (2001, pp. 131-132) believe that teleworking facilitates combining the performance of official tasks with family responsibilities. This factor was studied mainly among women with small children. However, as emphasized by Mannering and Mokhtarian (1995, p. 71), in the period in question the number of men and women working remotely depended largely on the traditional division of roles, according to which the man earned money to support the family and the woman took care of the house. Most likely for this reason the number of women working remotely was much smaller than the number of men.

The issue of reconciling family life and work has also been very often addressed in the 21st century, focusing on the currently fashionable concept of balance. Thus researchers studied work-life balance in the context of teleworking and personal life balance (Hilbrecht, Shaw, Johnson, and Andrey, 2008; Ruppel, Gong, and Tworoger, 2013), as well as work-family balance in terms of the mutual influence of remote work and family life (Saltzstein, Ting, and Saltzstein, 2001, pp. 460-467; Lee and Hong, 2011, pp. 875-879).

In relation to the balance between personal life and work, the researchers also analysed whether teleworking actually resulted in a lower level of stress (related, among others, to the lack of daily commuting to work and the lack of direct contact with the supervisor) and higher job satisfaction among teleworkers. Some studies indicated an increase in job satisfaction (Kiełtyka and Smoląg, 2001, p. 120; Baard and Thomas, 2010, p. 6), which may result, among others, from independent nature of work organized by a remote employee. However, the aspect of lower stress levels

among teleworkers is debatable. Research by Mann and Holdsworth (2003, pp. 197--199) shows that teleworking actually reduces the stress associated with commuting, but at the same time increases the stress resulting from the social isolation of the teleworker.

Another factor influencing the interest in undertaking teleworking is the willingness to make work flexible enough to be combined with the realization of one's own life goals. This flexible form of performing official duties as a factor influencing the interest in undertaking teleworking was reinforced by the rapid development of internet technology in the 21st century, as a result of which new professions were created, mainly in the form of teleworking, such as website copywriter, website moderator, etc. Willingness to provide flexible work has already become visible in people from the Y generation, for whom it is often important to start work which is related to their field of interest (Smolbik-Jęczmień, 2013, p. 91), and this gained strength with the readiness to work represented by members of the Z generation, who are more oriented towards technology, even more so than those from the Y generation who are keen on achieving work-life balance.

However, the most important determinant of undertaking remote work on a global scale has become the fear of losing life and health in the face of the COVID-19 pandemic, which in the first few months of 2020 spread across virtually the entire world. Most countries recommended that their citizens limit people-to-people contacts. These recommendations concerned not only personal but also business contacts. The Polish Ministry of Family, Labour and Social Policy published on its website the following information: *where possible, instruct employees to perform remote work* (MRPiPS 2020). The result of such recommendations was the mass introduction of remote operation as in most economies around the world.

4. Research results

The study was conducted among students of the Częstochowa University of Technology in the period from January 24, 2020 to February 7, 2020. The aim of the study was to determine the factors determining the interest in teleworking among university students. The study was a pilot study. The author's intention is to conduct a similar study 1 to 2 years from the pilot study to determine the change in the approach of a selected research group to the teleworking system as a result of the social, economic and economic changes. Comparing the results of the current and future studies is to be particularly important in the context of the COVID-19 pandemic, which intensified in early 2020, just after the pilot study.

Three research hypotheses were formulated:

H1: The field of study significantly influences the interest of students in taking up remote work.

H2: Having experience in remote work increases the willingness to undertake it in the future.

H3: Flexible working time determines the respondents' interest in teleworking.

The survey took the form of an anonymous questionnaire available on the website www.interankiety.pl. The link to the survey was provided to students through the lecturers. To prevent the risk of having the survey filled in several times by the same person, the option of checking cookies was enabled: if the survey was filled in again from a given device (computer or smartphone), only the first copy of the survey was counted. In addition, lecturers were asked to provide the link to the survey to specific groups. Therefore, it was not feassible for one group of students to receive a link to the survey from several lecturers on different dates, which could increase the possibility of completing the questionnaire several times using several different devices.

The survey questionnaire consisted of 11 intuitive questions. Eight of them were closed questions of a single choice. Three questions allowed the respondent to choose several answers, including adding his/her own. The questionnaire was prepared in two languages: Polish and English (due to the group of foreign students). In this article, questions from the survey are presented only in Polish.

The examined features were non-measurable. The programs used for the analysis and graphical presentation of the results were Excel and Statistica. The results are assumed to be statistically significant at $p < 0.05$.

A total of 887 students ($n = 887$) took part in the survey, namely 332 women (37% of all respondents) and 555 men (63%). The vast majority of the respondents, i.e. 89%, were aged 19 to 29. People over 29 accounted for 11%; 487 full-time students (55% of the total) and 400 part-time students (45%) participated in the study.

The respondents represented a total of 25 fields of study, 8 of which were social sciences (discipline: management and quality sciences), and 17 were engineering and technical fields. The field of social sciences was represented by a total of 387 students, and 486 of those in engineering and technology.

In order to make a more visual analysis, the individual directions entered by them respondents were put into seven main groups (Table 2).

The first six groups of fields of study (Table 2) correspond to those fields of study offered by individual faculties of the Częstochowa University of Technology. The seventh group was defined as "Other" and contains the names of the fields of study that could not be clearly classified into one of the other groups. Due to the inability to qualify the respondents from the group "Other" to a specific group of studies, as well as due to the small size of the group "Other" in relation to the total number of respondents (14 people versus $n = 887$), the first six subjects will be analysed in individual fields of study groups presented in the table.

The willingness to work remotely was indicated by 66% of all respondents (586 people), while 34% did not show interest in remote work. In terms of social and engineering and technical studies, 64% (247 persons) and 68% (329) showed interest in teleworking, respectively. The difference is not that significant, however, attention should be paid to the large variety of fields of study in engineering and

Table 2. Groups of study fields of the respondents

Group of fields of study	Fields of study within a given group
Management	Finance and Accounting, Logistics, Management, Health and Safety, Design and Project Management, Business English
Computer science and mathematics	IT, Mechatronics, Mathematics, Mechanics and machine construction, Welding
Faculty of Electrical Engineering	Automatics and Robotics, Electrical Engineering, Electronics and Telecommunications
Directions related to production engineering and material technology	Metallurgy, Materials Engineering, Management and Production Engineering, Technical Physics, Safety and Hygiene Engineering
Directions related to civil engineering	Construction, Construction using BIM technology
Directions related to environmental protection	Biotechnology, Biomedical Engineering, Environmental Engineering, Environmental Protection
Others	This group includes students who could not be clearly assigned to the particular faculties available at the Częstochowa University of Technology (e.g. who did not specify their discipline)

Source: own study.

technical sciences available at the Częstochowa University of Technology. Due to this diversity, it seems more reasonable to make an analysis based on the given groups of fields of study.

The interest in teleworking shown by students within particular groups of fields of study is presented below (Figure 1).

The greatest interest in teleworking was shown by IT and mathematics students: 78% said they wanted to work remotely. Those representing management-related fields of study came second: 64% of them were interested in undertaking teleworking. In the group of fields of study of the Faculty of Electrical Engineering, such a desire was expressed by 60% of students, 58% of students from the group of fields related to civil engineering, 54% of students of fields related to environmental protection and 52% of people studying fields related to production engineering and materials technology would like to start working remotely.

In order to verify H1, Spearman's rank order correlation was used. The correlation coefficient was 0.165165 with $p < 0.05$, which means a very weak correlation between the choice of fields of study and the interest in taking up remote work by students. Thus H1 was negatively verified. The field of study did not significantly affect students' interest in taking up remote work.

Another hypothesis considered was H2: Having experience in remote work increases the willingness to undertake it in the future, 20% of respondents (179 students) have experience in remote work, while 80% have not worked
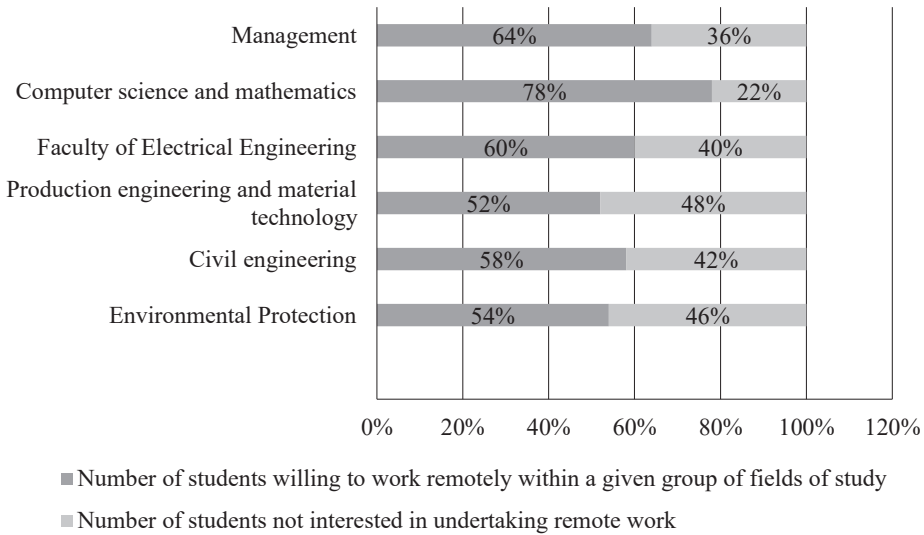
Fig. 1. Interest in teleworking within particular groups of fields of study

Source: own study.

remotely yet (708 students). Below (Figure 2) the number of students interested in taking up remote work in connection with their previous experience with teleworking is presented.
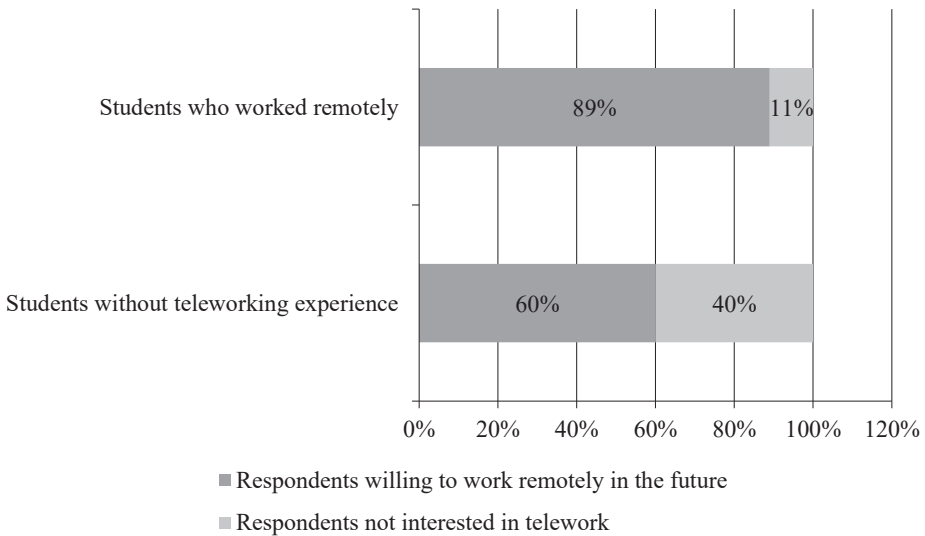

Fig. 2. Students' previous experience in remote work and their interest in teleworking in the future

Source: own study.

The survey showed that 89% of students who worked remotely in the past intended to use telework in the future. Among students with no experience in remote work, only 60% were willing to do so.

The chi-square test was used to verify H2. The test showed a relationship between the previous experiences with telework and the willingness to undertake it in the future (chi2 = 51.82335; fi = 0.24171). The data were statistically significant ($p < 0.05$). Thus H2 was positively verified: having experience in remote work increases the willingness to undertake it in the future.

The study also focused on identifying the most important factors influencing the willingness to take up remote work by respondents. The respondents could choose the three most important features of remote work for them from the following group of factors: flexible working time, the ability to work anywhere in the world, independent work organization, the ability to cooperate with valued companies in your industry, the ability to combine childcare with work, no direct contact with the boss. The proposed answers deliberately did not mention the lack of commuting, because based on the literature review and the author's own experience, it was considered one of the most important attributes of teleworking for a teleworker, requiring no additional assessment. In any case, the people taking part in the survey could also enter their own beneficial features of teleworking. Only 14 students used this option, of which only 2 people entered the lack of commuting. A selection of the most beneficial features of remote work for students is presented below (Figure 3).
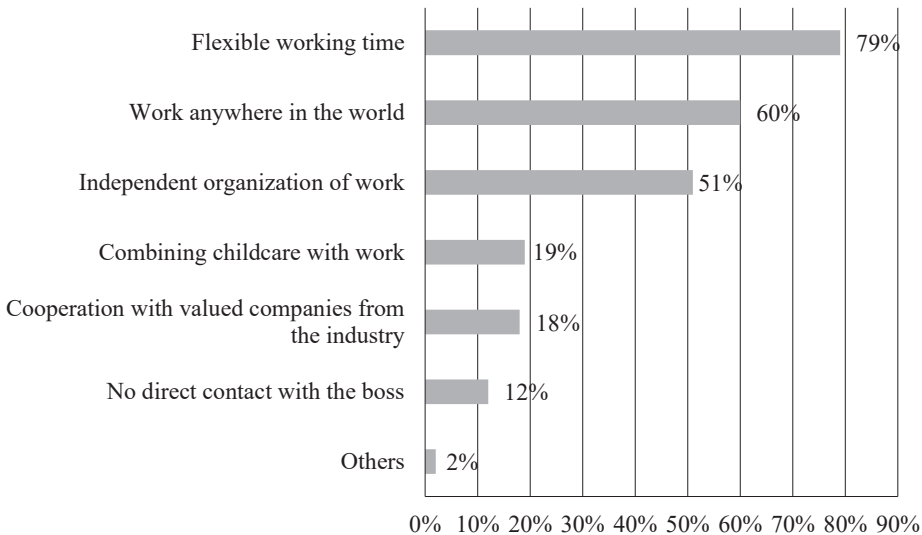

Fig. 3. The most popular beneficial features of teleworking by students

Source: own study.

The most frequently indicated positive feature of teleworking was flexible working time chosen by 79% of the respondents, while 60% indicated the possibility to work anywhere in the world as one of the most beneficial features of remote work, and 51% indicated independent work organization. For 19% of respondents, the possibility of combining childcare with work was very important, and for 18%, cooperation with respected companies from the industry. Finally, 12% of those questioned considered that one of the most important features of teleworking is the lack of direct contact with the boss.

The list of the most important features of teleworking is similar in the group of students who have already worked remotely, and in the group of students without experience with teleworking (Figure 4).
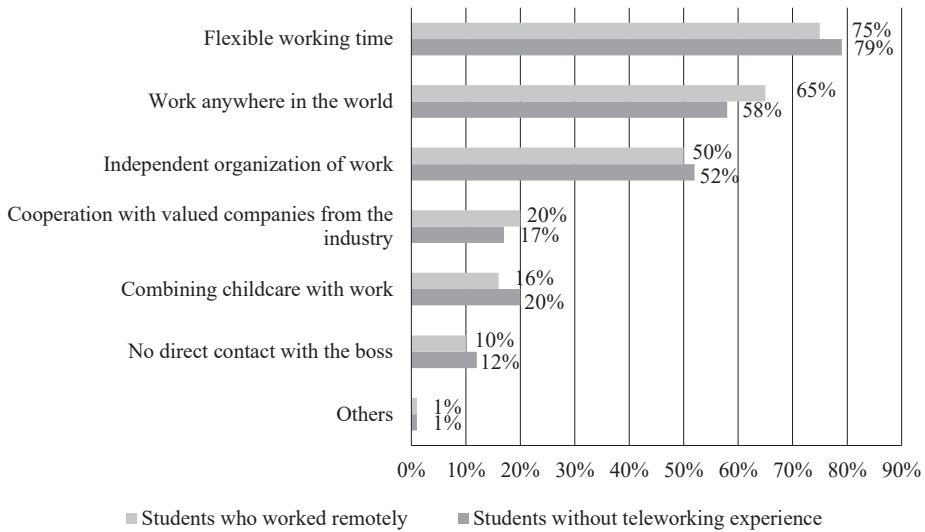

Fig. 4. The most important positive features of telework depending on the professional experience of students

Source: own study.

The first three places in the ranking were occupied by: flexible working hours (chosen by 75% and 79% of the indicated groups of students, respectively), work anywhere in the world (65% and 52%) and independent work organization (50% and 52%). Subsequently, people with experience in remote work chose cooperation with respected companies from the industry (20%), combining childcare with work (16%) and no direct contact with the boss (10%). For students who have not yet worked remotely, they assessed the reconciliation of childcare with work higher than cooperation with respected companies from the industry (20% compared to 17%, respectively). They also indicated the lack of direct contact with the boss as the least important of the mentioned features.

Flexible working time is considered the most beneficial feature of teleworking both in the group of students who were interested in starting remote work and in the group of people who were not willing to do so. In the first group, 82% indicated flexible working time as a desirable feature, in the second – 72%. A detailed list of the positive features of teleworking, depending on the interest in taking up remote work, is presented below (Figure 5).
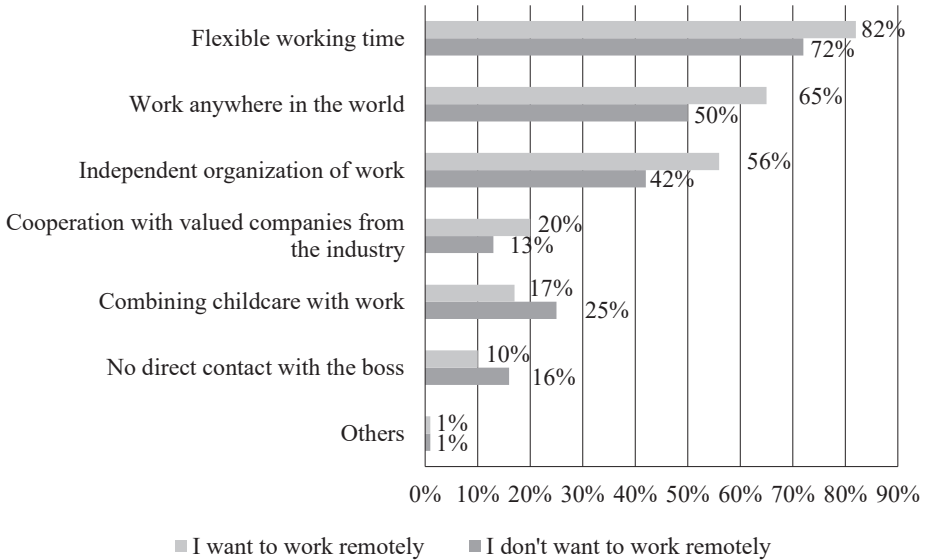

Figure 5. Beneficial features of telework and the willingness to undertake it

Source: own study.

Table 3. Mean tests for individual desired features of telework

No.	Feature of telework	Mean
1.	Flexible working time	1.1843
2.	Work anywhere in the world	1.3549
3.	Independent organization of work	1.4403
4.	Cooperation with valued companies from the industry	1.8020
5.	Combining childcare with work	1.8328
6.	No direct contact with the boss	1.9010

Source: own study.

In order to verify H3: Flexible working time determines students' interest in teleworking, the focus was on the group of students interested in undertaking telework (586 in total). The testing was done in Statistica. The choice of a given

feature by a student interested in undertaking remote work was marked as "1", and no as "2". Mean tests were performed for independent samples, examining the value of the mean between flexible working time and other features (Table 3).

Due to the selection of a given feature with "1", it was assumed that the lower the mean, the greater the number of students interested in a given feature of teleworking. The test showed that the lowest mean was obtained for the "flexible working time" feature: 1.1843. The results are statistically significant as $p < 0.05$. Thus the H3 hypothesis: Flexible working time determines students' interest in teleworking was positively verified.

5. Conclusion

Remote work has been a very desirable form of work for many people for over 50 years. It is estimated that the interest in teleworking in the coming years will show a growing tendency. it is predicted that in 2028 the percentage of people working remotely full-time will reach the level of 33%, and over 70% of all sectors of the economy will be partly made up of teleworkers (Upwork 2019).

The strong interest in remote work was confirmed by both the literature review presented in this article and the study itself. The survey results indicate a high level of the respondents' inclination to start teleworking. There were no significant differences in this respect between students of particular fields of study.

At the same time, it turned out that an important factor in shaping the respondents' interest in teleworking is their previous experience of working remotely. People who had previously worked remotely showed a greater willingness to telework in the future.

The characteristics of teleworking which had the strongest influence on the respondents' interest in teleworking were also determined. The most important feature was flexible working hours. Other features included the ability to perform professional tasks anywhere in the world and independent work organization.

However, the COVID-19 pandemic which overnight forced a large number of employees to work remotely, turned out to be the greatest motivator to start working remotely. This type of necessity for employees – including those interested only in stationary work – to benefit from teleworking may radically change the way it is perceived by society, and for this reason the research presented in this article should be treated as a pilot. One to two years after the pilot survey was completed, another study on the attractiveness of teleworking and the factors determining its commencement is planned. The conclusions drawn from the comparison of both studies could be very important for both management theory and management practice.

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