
Efficiency of Human Capital During and After the Pandemic in the Context of Online Work and Education

Submitted 23/01/23, 1st revision 07/02/23, 2nd revision 25/02/23, accepted 30/03/23

Agnieszka Król¹, Marzena Kacprzak², Piotr Mikosik³,
Zbigniew Ciekanowski⁴

Abstract:

Purpose: The aim of this article is to demonstrate the significance of remote work and learning as tools that reflect the effectiveness of human capital.

Design/Methodology/Approach: The research aimed to assess the effectiveness of remote work and learning compared to traditional methods. A survey was conducted in 2022 among a group of 499 students from the Warsaw School of Management. The survey included students from all fields of study. The empirical research was pilot in nature and provides a basis for continuing research in this area, drawing conclusions and formulating recommendations for both employers and the academic community.

Findings: The generated conclusions will enable a thorough analysis of key problems in the context of improving solutions and practices implemented in remote work and learning processes as key determinants of the growth of human capital effectiveness in contemporary enterprises.

Practical implications: The article identifies the actions, threats, and challenges facing employers in the area of utilizing and increasing the effectiveness of human capital, which is a strategic factor of contemporary enterprises, particularly evident in crisis situations that increasingly affect organizations worldwide for various reasons (pandemics, wars, etc.).

Originality/Value: The authors present remote work and learning as modern and effective tools for increasing the effectiveness of human capital in contemporary enterprises, requiring many actions and far-reaching changes that bring undeniable benefits in the work environment. Until the pandemic and in the face of the war in Ukraine, remote work and learning were not used on such a large scale. According to the authors, they have become commonly used tools, which requires further research.

Keywords: Pandemic, human capital, efficiency, work, remote learning, education, creativity.

JEL codes: J24, M12.

Paper type: Research article.

¹Warsaw Management University, Poland, ORCID: ORCID: 0000-0002-5686-7578, e-mail: agnieszka.krol@mans.org.pl;

²Institute of Economics and Finance, Warsaw University of Life Sciences-SGGW, Poland, ORCID: 0000-0002-0680-8241, e-mail: marzena_kacprzak@sggw.edu.pl;

³Same as in 1, ORCID: ORCID 0000-0003-0056-7990, e-mail: piotr.mikosik@mans.org.pl;

⁴Faculty of Economics, John Paul II University of Applied Sciences in Biala Podlaska, Poland, ORCID: 0000-0002-0549-894X, e-mail: zbigniew@ciekanowski.pl;

1. Introduction

The specificity of human capital boils down to the fact that it is both the most important and the most unpredictable resource of an organization. Its "sensitivity" becomes particularly important in various situations, especially crisis situations, as is currently the case during the pandemic. Both employees and employers have been subjected to an exceptional test.

Overnight, it turned out that most of the previous strategies, methods, techniques, and tools for management, work, or learning require a completely different perspective that considers the need to introduce changes in various areas of both private and professional life.

However, human capital is considered the most important for good reason, and its value is increasingly appreciated. Who else but an employee with unique, unparalleled knowledge, skills, predispositions, and experience can find their way in any, even the most unpredictable situation? And so, it was during the COVID-19 pandemic. Thanks to their employees, organizations quickly began to reach for increasingly innovative methods and solutions to adapt to the new reality quickly and effectively.

However, the effectiveness of human capital in the context of new challenges in the areas of work and learning, considering the factors that favour or hinder it, proved to be quite critical.

In this text, the authors focus mainly on the issue of remote work and learning as dominant tools in the pandemic and post-pandemic reality. Through the use of a diagnostic survey and a questionnaire directed at students of various fields of study, an attempt was made to assess the effectiveness of remote work and learning compared to traditional methods.

2. The Essence of Human Capital

Let us begin our discussion by clarifying the difference between the concepts of capital and resource. Compared to the concept of resource, capital has a more dynamic character that contributes to the generation of additional value and brings benefits. This also applies to human capital. If we only possess it without utilizing or multiplying it in a state of "rest," it will remain a human resource that we possess.

Due to the "popularity" of the above-mentioned terminology in the literature of the subject, we can find many different definitions of human capital, both in a broader and narrower sense, indicating various dimensions and aspects of it (Klonowska-Matynia, 2022; Kucharčíková, 2011; Angrist, Djankov, Goldberg, and Patrinos, 2019).

The reason for the diversity of definitions lies in the significant number of component factors of human capital, which significantly affects the difficulty of unifying and systematizing the terminology in this area and creating a universal definition. Sample definitions of human capital according to selected authors and various approaches to the problem are presented in Table 1.

Table 1. *Human capital - a review of definitions*

Autor	Definition
A. Sajkiewicz (Herman, Szablewski 1999)	"Human capital consists of people who are permanently associated with the company and its mission, characterized by the ability to cooperate, creative attitudes, and qualifications. They constitute the engine and heart of the company, without which further development becomes impossible."
H. Król, A. Ludwiczynski (Król, Ludwiczynski 2006)	„[...] [...] the totality of specific characteristics and properties embodied in employees, which have a certain value and constitute a source of future income for both the employee - the owner of human capital - and the organization, which benefits from this capital under certain conditions."
W. Florczak (Welfe 2007)	"Human capital includes all psycho-physical characteristics of an individual, such as innate abilities, knowledge resources, educational level, professional skills and experience, health status, cultural level, socio-economic activity, worldview, etc., which directly or indirectly affect work productivity and are inseparably linked to the human being as a carrier of these values."
M. Adamska (2004)	Human capital is a set of attributes inherent in people, such as knowledge, skills, psychological characteristics, health, and behaviors possessing a certain value that can be a source of future income, both for the employee and the organization."
D. Begg (1992)	"Human capital is the embodied knowledge and skills within people."
Z. Dach (2007)	"It refers to the resources of knowledge, skills, health, and vitality contained in a person. This includes all the investments (financial, material, and time) that each person incurs in connection with acquiring education, professional qualifications and skills, as well as production capabilities, as well as investments in their own health and leisure."
Edvinsson, Malone (2001)	"The combined knowledge, skills, innovation, and ability of individual employees in a company to efficiently perform tasks."

Source: *Own studies/research.*

Summarizing it can be observed that human capital encompasses both acquired and innate characteristics, including personality traits, skills, abilities, qualifications, attitudes, experiences, as well as health and worldview. In some definitions, the emphasis on the value of human capital in the context of building organizational value is also apparent. At this point, it is worth quoting the words of Alfred P. Sloan, the American entrepreneur and long-time president of General Motors (Bateman, Snell, 1999, p. 276), who states that "Take my assets, but leave me my organization,

and in five years, I will have everything back." Through the concept of organization, the author refers to the value and significance of human capital.

It should be noted that human capital is what determines the effectiveness of utilizing all available organizational resources, and therefore efforts should be focused on systematically increasing its efficiency.

3. Efficiency of Human Capital in the Context of Education and Work

The concept of efficiency is a complex issue that can be difficult to understand and explain due to definitional discrepancies and many synonyms, especially in the English language, such as efficacy, effectiveness, efficiency, and performance (Pyszka, 2015, p. 14). According to the Polish Language Dictionary PWN (2023), the word efficient means - giving good results, efficient, significant, real. Filipowicz (2008) explains that "Efficient action is one that is effective, i.e., it involves doing the right things with respect to the adopted goals, and efficient, i.e., these things are done in the right way."

Peter Drucker (1995) also wrote about efficiency many years ago, emphasizing its close relationship with the development of employees and the organization in which they are employed. Efficiency is thus expressed in the degree of self-realization and the ability to survive. The efficiency of human capital affects the efficiency of the entire organization.

Work and education are key elements that reflect the efficiency of human capital. Through systematic learning, an employee can perform their duties and tasks better and more efficiently, develop competencies or acquire new ones, implement newer solutions and improvements, improve techniques for further learning and work, or effectively adapt to new, sometimes unfavourable conditions.

Let us now discuss the issues of work and education efficiency, where the added value will be the quantity and/or quality of work done within a given time. The efficiency of work and education will be related to systematic changes aimed at "improving" the actions taken.

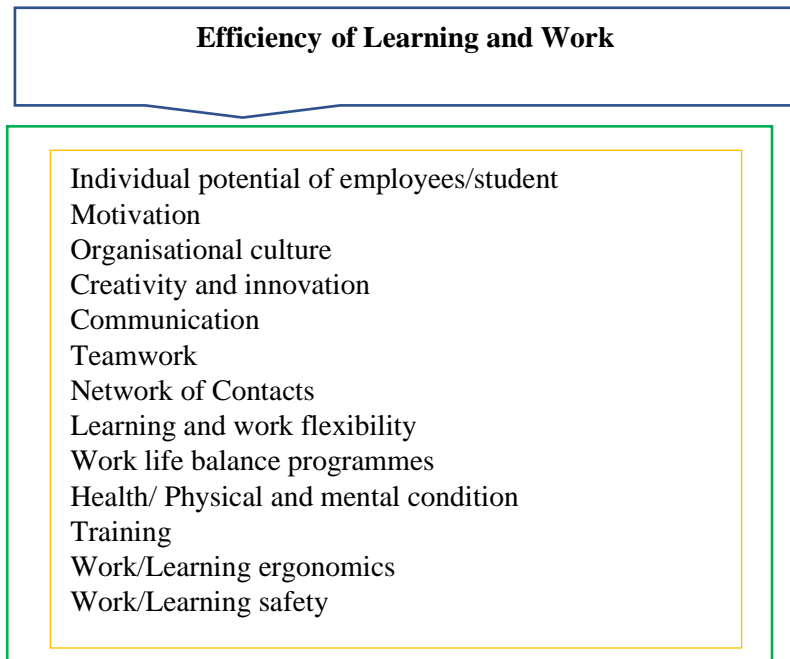
Bernais and Igram (2005) indicate that the determinants of work efficiency are:

- economic conditions (tax and financial policies),
- the education system,
- culture,
- technology and techniques,
- the labour market,
- political conditions, legislation on law,
- the employee's individual potential (human capital - qualifications, skills, motivation, health status, competencies),

- teamwork (organization, goals, tasks, structure, level of autonomy),
- the enterprise (efficient management, OSH system, applied technology and techniques, production structure and organization, and workplace properties workplace organization, conditions, safety, place in the organizational structure, work forms).

The aforementioned authors considered their reflections on the factors determining work efficiency in various contexts - in terms of external factors of the organizational environment such as, economic conditions, education system, national culture, job market, political conditions, legislation in the field of law or access to technical items and technology, as well as in terms of the company itself, teamwork conditions and the individual potential of employed workers (Table 1).

Table 1. *Factors determining the efficiency of learning and work*



Source: Own elaboration.

In a dynamically changing world that is accompanied by ubiquitous rapid development, including the growing and equally quickly outdated resources of knowledge, work and learning are closely linked, especially in the context of the need for lifelong learning.

Therefore, work and learning are determined by a series of external and internal factors that affect their effectiveness, even in crisis situations. In Figure 1 above, the authors of this article present a set of factors influencing the level of effectiveness of work and learning.

The potential of employees/students, their individual predispositions, personality traits, motivations, and talents, both innate and acquired, are crucial for the effectiveness of work and learning.

Experience, as well as skills such as time management, stress management, assertiveness, responsibility, self-discipline, and ambition, also play a significant role. Motivation, both self-motivation and motivational tools used by superiors, employers, teachers, or trainers, has a considerable impact on the effectiveness of learning and work. All our actions will yield the best results if we see their purpose and sense, and simply want to learn or work, as we will then strive to give our best, perform tasks beyond what is required of us, and thus pursue professionalism.

Another important factor influencing the level of effectiveness of work and learning will be the organizational culture. As Armstrong (2000, p. 149) wrote, organizational culture "...constitutes an established pattern of values, norms, beliefs, attitudes, and assumptions that shape people's behaviour and ways of accomplishing tasks. Values relate to what is considered important in the behaviour of people and organizations. Norms are unwritten rules of behaviour."

Therefore, the culture of a given organization, such as leadership style, motivation, evaluation and development systems for employees, communication systems, or the degree of innovation and risk-taking attitude, will significantly affect the effectiveness of human capital. To this end, organizations should focus primarily on improving systems for engaging employees based on motivation, evaluation, and development. Another significant determinant of human capital effectiveness will be the attitude towards innovation and creativity.

This applies to the entire organization as well as its individual members. It is primarily about promoting pro-innovation attitudes and behaviours, appreciating ideas and initiatives taken by employees, activating their actions, allocating financial resources for implementing innovative solutions, and being willing to take risks and learn from mistakes. Creativity is a trait that can be developed and cultivated among employees, or conversely, "stifled", depending on the approach of the management and the adopted strategy of the organization.

A smooth communication system also has a significant impact on effectiveness. It is essential that information reaches recipients in an understandable and timely manner, which can prevent misunderstandings, save time, and prevent delays in task completion. The better the task is explained, the better it will be performed. The better defined the benefits and goals of participation are, the more willingly the employee will participate in it.

In today's times teamwork takes on particular significance. The principle of „two heads are better than one” seems to work quite well daily, allowing for a perspective on tasks or problems from various angles and generating common ideas and

solutions. Of course, the effectiveness of teamwork will also be influenced by many important factors, primarily whether the team members can find a common language and goal and whether a manager or leader is necessary to effectively guide people.

Currently, both professional and personal contacts are of particular importance in the job market, as these two areas increasingly overlap. A wide network of contacts allows for the exchange of ideas, the acquisition of useful information, the discovery of innovative solutions, and the acquisition of new clients and contractors. As shown by organizational practice, too much control over employees is not very effective daily.

Increasingly, employers are inclined to implement flexible working hours and forms, recognizing their advantages. The significant increase in the importance of flexible working hours and forms can also be seen during the pandemic. This is also a helpful solution for maintaining a balance between personal and professional life, preventing burnout, and improving the physical and mental condition of employees. Health also has a significant impact on work and learning efficiency. It is evident that a rested person with good well-being who has no difficulty reconciling personal and professional life will work "better."

Therefore, more and more organizations invest in and implement Work-Life Balance programs. However, training has the most significant impact on the effectiveness of learning and work. Thanks to them, we have the opportunity for systematic development, improvement, or acquisition of new skills and knowledge that will help us "streamline" our current and future actions, implement new ideas, apply new techniques and tools, better adapt to changing environmental conditions, or take on new challenges (Pauli, 2014; Ociecek, 2018; Czerniachowicz, 2010).

Of course, it is important to remember that the effectiveness of training is also influenced by various factors, starting from the motivation and approach of the trainee, through the trainer's skills, identification of needs and goals, proper selection of methods, tools, content, place, and time of training.

When considering the effectiveness of human capital, one cannot overlook issues related to ergonomics of learning and work and their safety. Contrary to popular belief, the work environment has a significant impact on the tasks we perform. We spend several hours a day at work, so it is important for it to be equipped comfortably, minimizing our fatigue and reducing unnecessary activities - time wasting, for example, running from room to room to print or photocopy something. Comfortable ambient temperature, reduction of any noise, or proper room lighting are also important.

More and more companies, such as the internet giant GOOGLE, care about the ergonomics of workstations, investing in creating spaces that encourage the creativity and innovation of employees.

4. Remote Learning and Work in Times of Crisis

Remote learning and work in crisis situations have undoubtedly gained significance during the pandemic and as a result of the war in Ukraine. Until now, they have not been used on such a large scale as they are now. Certainly, some companies, especially corporations, had already introduced the possibility of flexible working hours and forms, but they were not available to all employees and positions.

Previously, for example, the Polish Labour Code contained rather "rudimentary" regulations regarding telework. From April 2023, they were amended (Act of December 1, 2022, amending the Labour Code), introducing a series of detailed regulations concerning, among other things, the definitional understanding of remote work, principles of its execution, remote work under an employment contract, on-demand remote work, employer obligations towards remote workers, and principles of remote work control.

Changes in the Labour Code provide excellent confirmation of the growing importance and significance of remote work in contemporary enterprises. Similar developments have been observed in the field of education, where e-learning was known, but traditional training significantly dominated. The pandemic has somewhat forced a change in this approach. Often, employees had to switch to remote work from one day to the next, often without prior experience, and the same applied to students, trainees, and employee training.

For many, the sudden transfer of work or education to the virtual world was a shock, requiring primarily digital skills and involving many new challenges. It should be noted, however, that the uniqueness of human capital lies in the ability to quickly adapt to changing conditions, and this was also the case with the emergence of the pandemic.

Since the beginning of the pandemic, many institutions and entities have conducted research on remote work and education. Several recurring themes and conclusions can be identified in these studies. They primarily focus on the advantages and disadvantages of remote learning, as well as recommendations for future remote education. For example, the report entitled "Remote Education During the Pandemic" (Buchner and Wierzbicka, 2020) identifies the following issues with remote learning:

- Time-consumption for 90% of the respondents, with 59% indicating it as a key problem,
- Stress and fatigue for 81% of the respondents, with 37% indicating it as a key problem,
- Problems with organizing space and time during learning for 60%, with 21% indicating it as a key problem.

On the other hand, another report prepared by PwC (2020) entitled "The Impact of Remote Learning on Teachers, Students, and their Parents" emphasizes that both teachers and students prefer traditional learning. Although the pandemic has helped them appreciate the benefits of remote learning and they would like to continue using this form of education in the future, it would not be to the same extent as before. The drawbacks identified were limited leisure time, negative impact on mood, and contact with friends. On the other hand, the improvement in family relationships and better academic results were mentioned as advantages.

Undoubtedly, remote work and study pose a real threat to the mental and physical well-being of workers/students. New challenges in the area of work and education, such as time-consuming tasks, stress, fatigue, difficulty in balancing household duties with work, prolonged sitting in front of a computer often in an uncomfortable position, limited mobility, and interpersonal contacts, all hinder the effectiveness of learning and work.

However, the individual potential of each person plays a significant role here. The individual efficiency of a worker/student depends mainly on personality and predispositions, including intelligence level, creativity, and innovation, motivation, self-discipline, responsibility, experience, and related adaptive skills. Of course, external factors such as work comfort and availability of work tools should also not be overlooked.

5. Efficiency of Remote Work and Learning - Empirical Research Results

The main goal of the research was to gather opinions on the effectiveness of remote work and learning and to attempt to compare the effectiveness of online work and learning. The authors formulated the following research problems for the purpose of this research process:

1. How are online work and classes perceived compared to traditional work and classes?
2. What are the expectations of the respondents regarding the mode of work and classes after the pandemic?
3. What are the differences in perceived effectiveness between online work and classes?

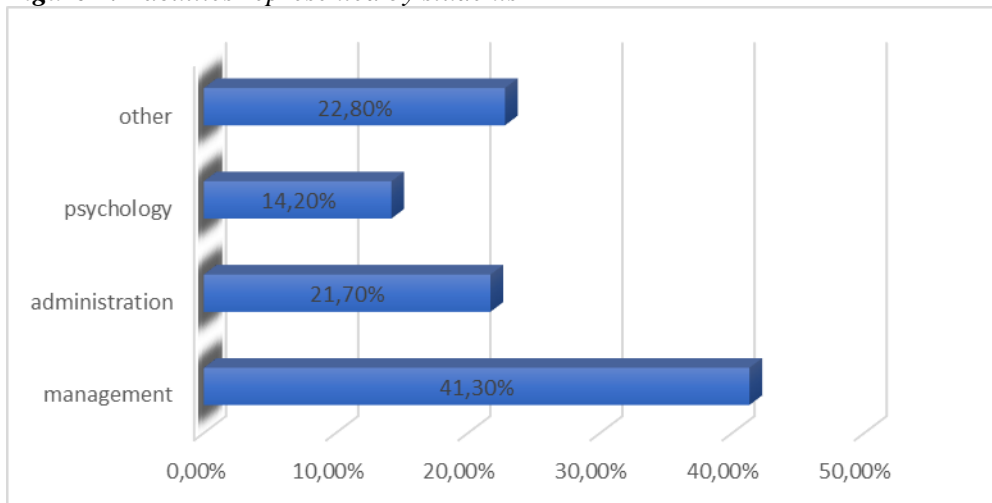
In connection with the above assumptions, two research hypotheses were adopted for verification:

1. Remote work and learning are less effective than traditional work and learning.
2. It is easier to adapt to the specifics of online work in a professional environment than in an academic environment.

The constructed survey questionnaire consisted of 23 questions of a closed, semi-open, and open nature. The empirical research conducted was of a pilot nature and serves as a premise for continuing research in this area, drawing conclusions, and formulating recommendations for both employers and the academic community.

The survey was conducted in 2022 on a group of 499 students from Warsaw Management University in P. Students from all study fields participated in the survey - management I and II degree, computer science, management and production engineering, administration, national security, finance and accounting, pedagogy, psychology, and law - Figure 1. The largest group consisted of management students (41.3%), administration (21.7%), and psychology (14.2%).

Figure 1. Faculties represented by students



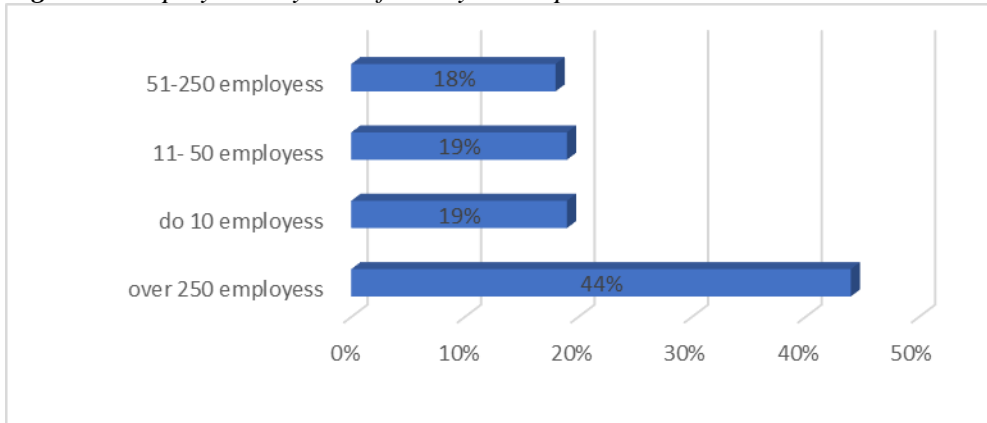
Source: Authors' own research.

During the survey, 80% of respondents were employed. The majority of those surveyed worked in large enterprises employing over 250 employees (44%), followed by employees of small firms with 10 or fewer employees and those with 11-50 employees (19% each), as shown in Figure 2.

The smallest percentage of respondents were employees of medium-sized enterprises employing 51-250 employees (18%). As for the positions held by the respondents, 62% held specialist positions, 17% were part of the management staff, 7% were self-employed, and 14% held other positions.

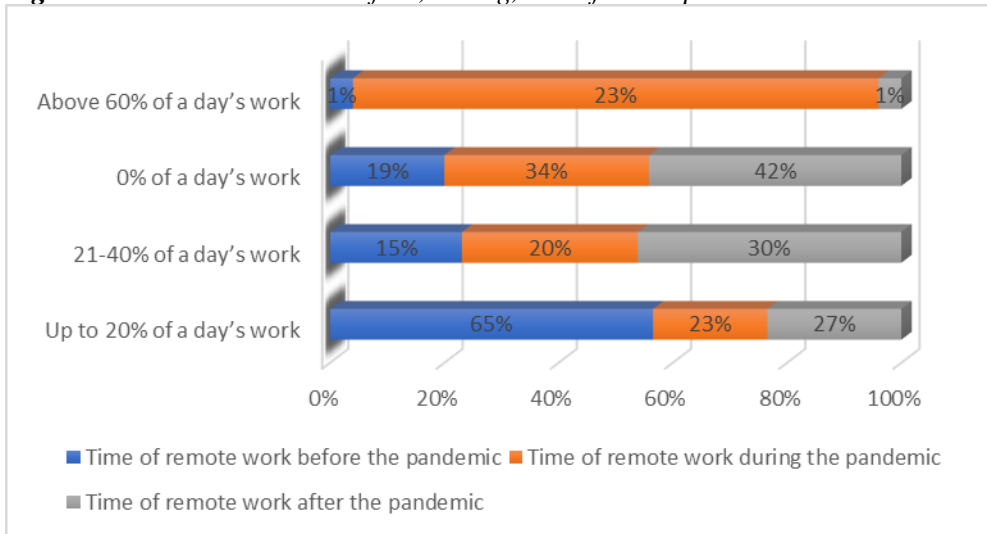
The survey confirms a significant shift in the way people work during the pandemic. Prior to the pandemic, 65% of respondents declared that the time spent online did not exceed 20% of their workday, while 15% of respondents worked in the range of 21-40% of their workday (Figure 3). In total, 80% of respondents did not work remotely for more than 40% of their time.

Figure 2. Employment by size of surveyed companies



Source: Author's own research.

Figure 3. Remote work time before, during, and after the pandemic



Source: Authors' own research.

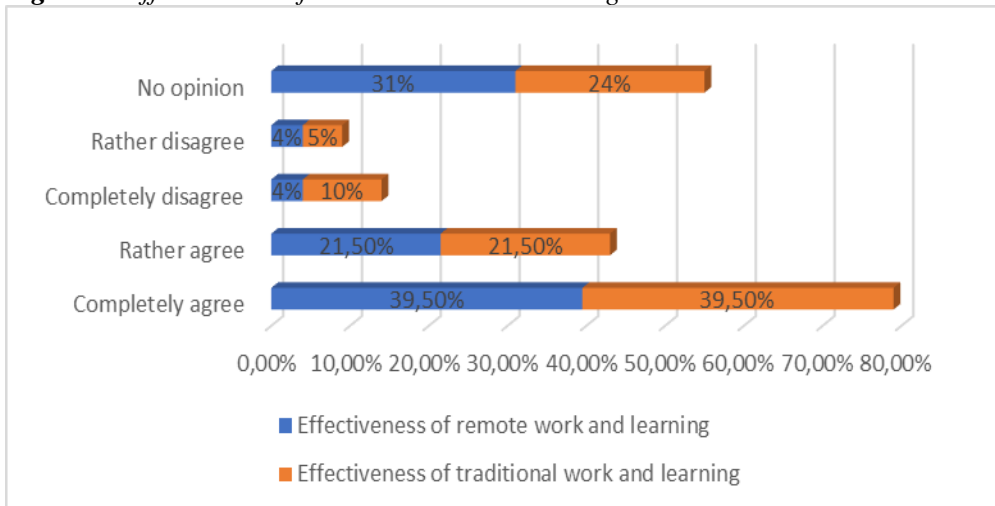
Meanwhile, during the pandemic, this indicator fell by almost half and amounted to 43% of people declaring that their working time is no longer than 40% of the workday. At the same time, before the pandemic, the percentage of respondents who worked online for more than 60% of their working time was less than 1%, and during the pandemic, it increased to 23%. As for the positions held, 62% held specialist positions, 17% were in managerial positions, and 21% ran their own business.

Due to the easily predictable outcome in this area, respondents' opinions on the time spent on online learning were not surveyed. In accordance with legal requirements, almost throughout the pandemic, classes at universities were conducted remotely,

while before the pandemic, with few exceptions, practically 100% of classes were conducted on-site.

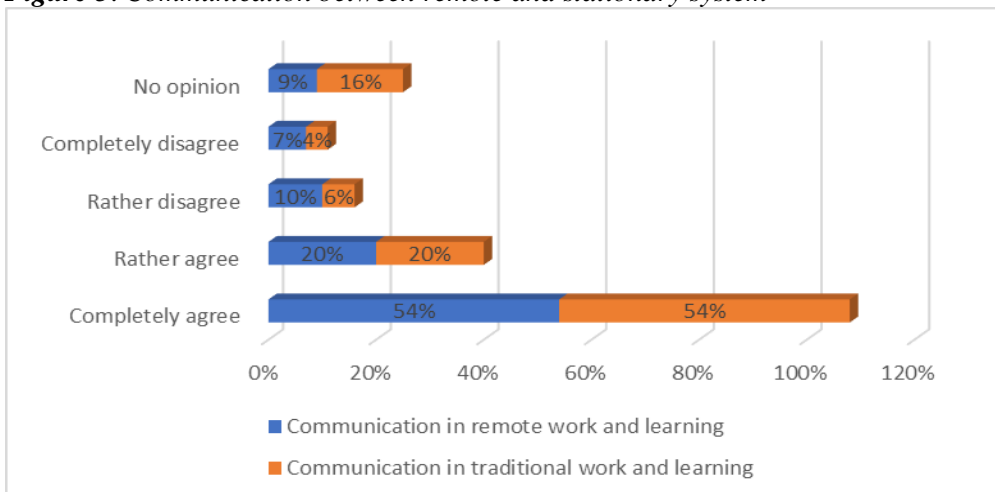
Quite surprisingly for the researchers was the respondents' opinion on the effectiveness of online teaching and work, which is presented in Figure 4. In both cases, nearly 40% of respondents expressed complete conviction about the identical effectiveness of remote work and learning, and slightly over 20% expressed moderate conviction about this opinion. This adds up to more than 60% satisfied with the effectiveness of the online mode.

Figure 4. Effectiveness of remote work and learning



Source: Authors' own research.

Figure 5. Communication between remote and stationary system



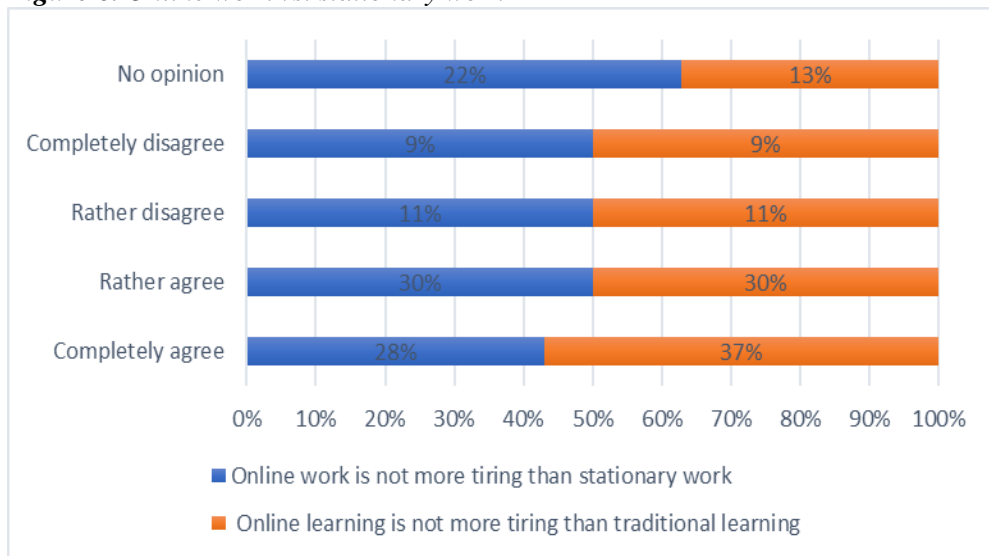
Source: Author's own research.

Regarding the comparison of communication between a stationary and remote system, both in the workplace and in education, there is full agreement that conveying information and instructions is equally effective in both modes (Figure 5).

In the study, regarding the statement that online work is not more "tiring" for me than stationary work, 25% of respondents fully agreed, and 30% rather agreed, which gives more than half of positive indications.

Regarding online learning, 37% of respondents fully agreed with this statement, and 30% rather agreed, which gives a total of over 60% of respondents. Only 9% of respondents fully disagreed with the above statements, both in relation to remote work and remote learning.

Figure 6. Online work vs. stationary work

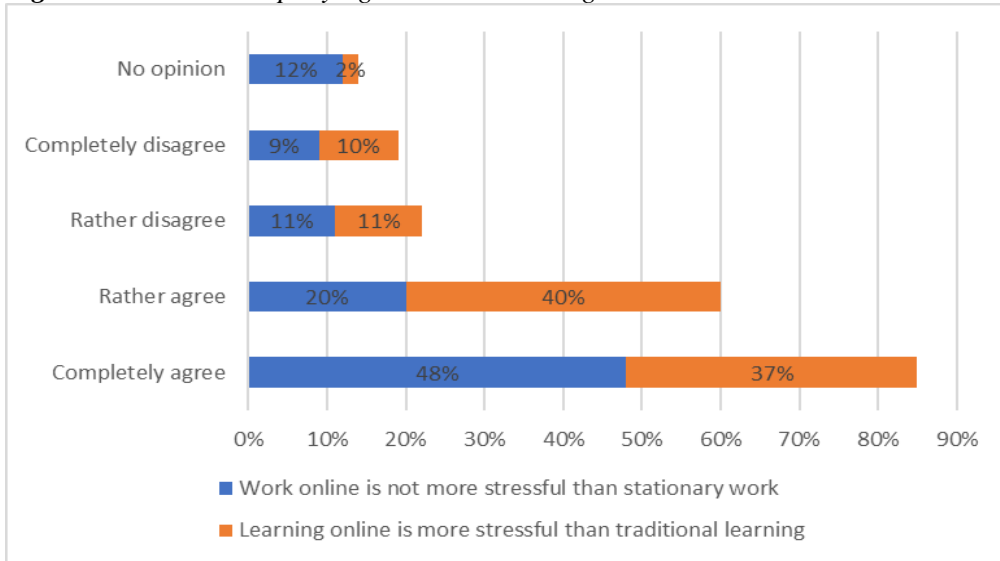


Source: Authors' own research.

Similar tendencies in respondents' answers could also be observed when assessing stress: 68% of those surveyed rated online work as no more stressful than stationary work (completely or somewhat agreeing with this statement), while 77% of students also did not confirm the opinion that stationary learning is no more stressful, as shown in Figure 7.

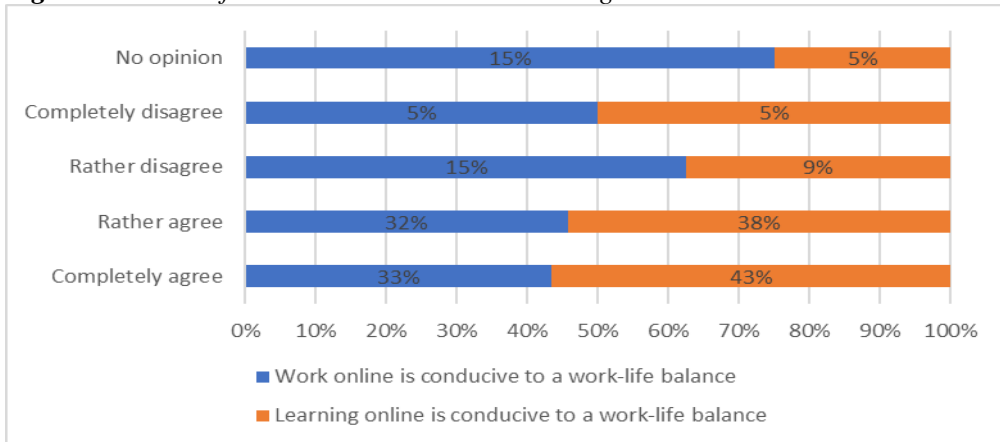
Over 60% of respondents declared that online work facilitates balancing personal and professional life, and over 80% of respondents hold the same opinion regarding online learning. Only 5% of respondents completely disagree with this, as shown in detail in Figure 8.

Figure 7. Stress accompanying work and learning



Source: Authors' own research.

Figure 8. Work-Life Balance in Work and Learning



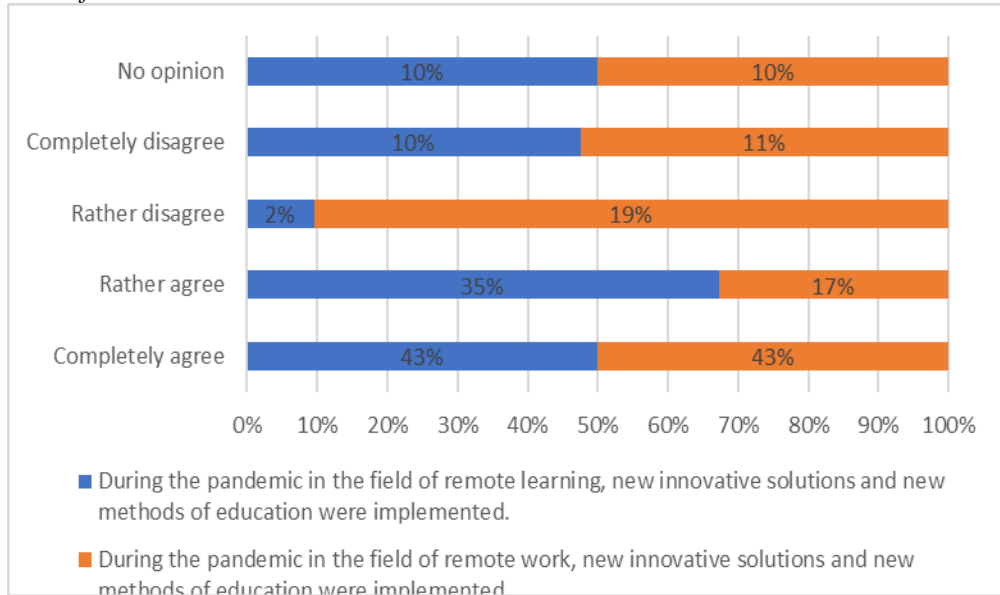
Source: Authors' own research.

In response to the question regarding the implementation of new, innovative solutions during the pandemic in the areas of remote work and education, 78% of respondents indicated that the University has implemented new teaching methods, while 60% of those surveyed also noted similar solutions being introduced in the area of work methods in the companies where they are employed (Figure 9).

The results of the assessment of the impact of remote mode on the creativity of respondents were slightly different in the case of work and education: 39% of those surveyed stated that online work develops creative skills more than stationary work.

This view was also held by 54% of those surveyed in the field of education (Figure 10).

Figure 9. Implementation of new, innovative solutions during the pandemic in the area of remote work and education



Source: Authors' own research.

An important issue in online work and learning is the proper level of motivation among employees or students. The specificity of work and learning in a virtual environment therefore requires the introduction of new motivational methods and tools.

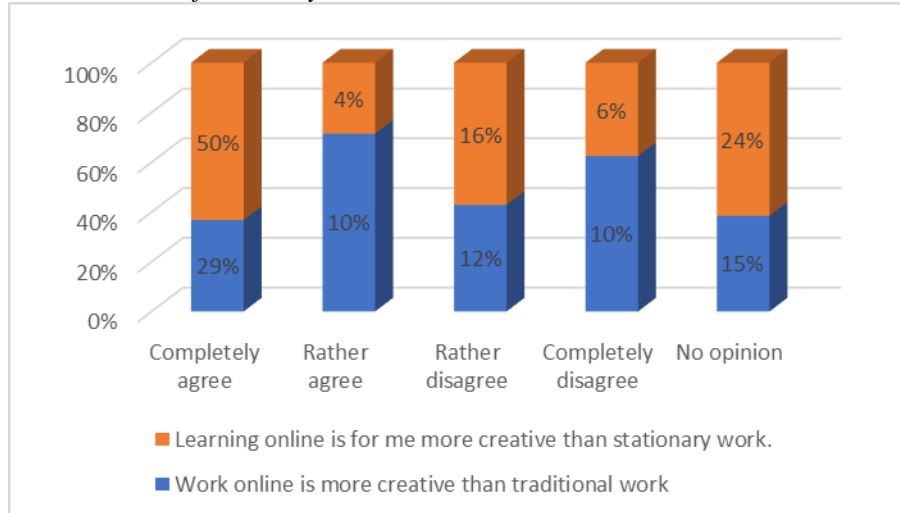
More than half of the respondents (52%) indicated that the University has developed new methods of motivation. Meanwhile, 42% believed that new methods of motivation have been implemented in their professional environments, 19% did not perceive significant changes in the way motivation is carried out at the University, and 21% did not perceive significant changes in their work.

In the area of remote learning, respondents pointed to the significant role of the MS Teams platform and the ability to build teams there. It was also emphasized that there is a much greater emphasis on independent task execution, flexibility regarding the time of their completion, and bonuses for activity in classes.

According to the respondents, these elements had a special motivating significance in learning. In turn, in the work environment, respondents indicated access to a larger number of online training courses, additional bonuses for efficiency, shorter

working time, and work flexibility facilitating balancing work and personal life as particularly valuable and motivationally significant.

Figure 10. Utilization of creativity in work and education



Source: Authors' own research.

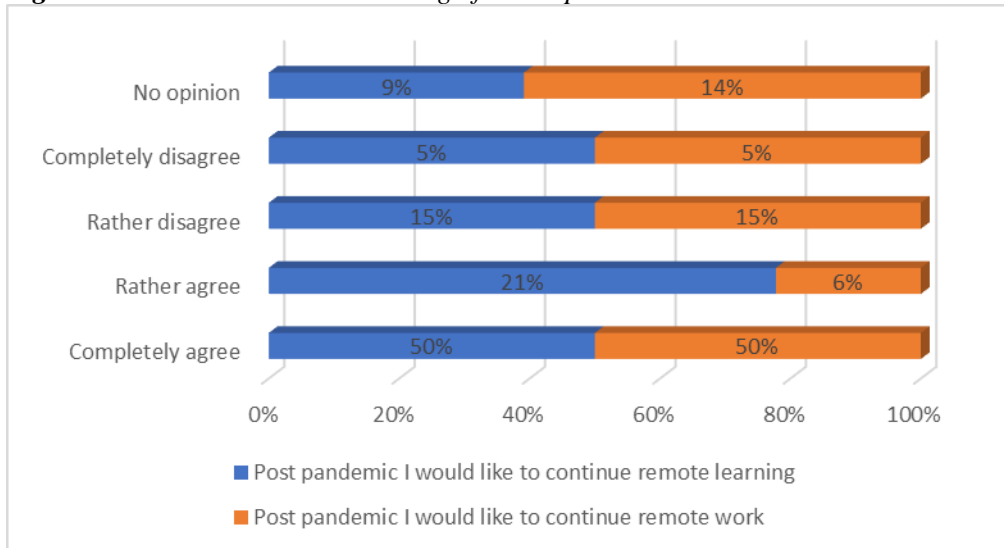
Undoubtedly, the online mode requires employees/students to have self-organizational skills at a much higher level than in the case of stationary work and learning, which entails greater "freedom" of action but also greater responsibility. The research results seem to confirm this.

The vast majority of respondents acknowledged the positive impact of the online mode on their self-organizational skills. In the case of work, self-organizational skills increased for 60% of the respondents, while in the case of learning, this was the case for 70%.

The experiences of the respondents regarding remote work and learning gathered during the year of the pandemic indicate the fact of acceptance and adaptation to the new reality. 56% of the respondents would like to maintain the remote work mode after the end of the pandemic, and 71% of them also opt for maintaining online classes. Only about 20% of the respondents would prefer to return to the traditional mode of both learning and work (Figure 11).

Remote work and learning have been one of the most important solutions for the economy in the fight against the pandemic. Each company and university has tried and continues to meet the challenges associated with this form of work and learning (Remote Work 2.0). Survey respondents clearly stated that their home environment is conducive to both work (68%) and online learning (79%), which may also be confirmed by their readiness to continue working and learning remotely in the future.

Figure 11. Remote work and learning after the pandemic



Source: Authors' own research.

In turn, when asked about the key benefits of online work and learning, respondents primarily pointed out the fact of being able to work from home (45%), flexible working hours (28%), and the possibility of getting enough sleep (10%), resulting, for example, from not having to spend time commuting to and from work.

6. Conclusions

The pilot study conducted has allowed for the achievement of the set goals. It provided a basis for collecting opinions on the perception of online work and learning and the possibility of comparing the effectiveness of remote work and learning with traditional forms. At the same time, it allowed for the unambiguous refutation of hypothesis number 1 about the lower effectiveness of remote learning and work than stationary. 60% of the respondents considered remote learning and work mode to be no worse than the stationary mode. The possibility of communication between parties in both companies and universities was highly rated.

In both areas, it was found that the online mode is neither more tiring nor more stressful than the stationary mode, and it is much easier to reconcile personal life with student and professional life thanks to it. The vast majority of respondents pointed to the development of innovative solutions and motivation methods thanks to the online mode.

Creativity also improved, especially in the field of education. Remote work and learning also promoted self-organization skills development. According to the respondents, the remote work and learning mode also made it easier to achieve professional goals at work and to pass exams at universities.

The vast majority of respondents would like a significantly larger part of work and learning time to be carried out remotely in the future than before the pandemic, preferably in a hybrid system. However, hypothesis number 2, which states that it is easier to adapt to the specifics of online in the work environment than in the academic environment, cannot be unambiguously confirmed or rejected based on the empirical material gathered.

The issue of the effectiveness of remote work and learning remains open and requires further research in this area. The return to post-pandemic reality and the need to operate in crisis situations have certainly not led to a significant decrease in the importance and interest in remote work and learning, quite the opposite.

Both employers and employees, as well as universities and students, are more willing to use this type of solution. This is visible, among others, in the new amendments to labour law in individual countries, including Poland, aimed at regulating the rules of remote work as best as possible.

Remote work and learning are important tools for increasing the effectiveness of human capital in companies in a turbulent and uncertain environment. Working and learning in a virtual environment becomes everyday life and a real challenge. There is a need for further research in this area.

References:

- Adamska, M. 2004. *Leksykon zarządzania*. Difin, Warszawa, 193.
- Angrist, N., Djankov, S., Goldberg, P.K., Patrinos, H.A. 2019. *Measuring Human Capital. Education Global Practice & Development Economics Office of the Chief Economist*. World Bank Group.
- Armstrong, M. 2000. *Zarządzanie zasobami ludzkimi*. Oficyna Ekonomiczna, Kraków, 149.
- Begg, D. 1992. *Makroekonomia*. PWE, Warszawa, 334.
- Bateman, T.S., Snell, S. 1999. *Management: building competitive advantage*. McGraw – HILL Publishing Company, 276.
- Bernais, J., Igram, J. 2005. *Controlling personalny i koszty pracy*. Katowice: Wydawnictwo Akademii Ekonomicznej, s. 107.
- Buchner, A., Wierzbicka, M. 2020. *Edukacja zdalna w czasie pandemii, Raport*, 37. https://centrumcyfrowe.pl/wp-content/uploads/sites/16/2020/11/Raport_Edukacja-zdalna-w-czasie-pandemii.-Edycja-II.pdf
- Czerniachowicz, B. 2010. *Rola szkoleń w rozwoju kapitału ludzkiego w przedsiębiorstwie*. *Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania*, Nr 17, 183-194.
- Dach, Z. 2007. *Mikroekonomia dla studiów licencjackich*. Wydawnictwo Naukowe SYNABA, Kraków, 39.
- Drucker, P. 1995. *Menedżer skuteczny*. Biblioteka Nowoczesności, AE, Kraków.
- Edvinsson, L., Malone, M.S. 2001. *Kapitał intelektualny*. Warszawa: Wydawnictwo Naukowe PWN, s. 17.
- Filipowicz, G. 2008. *Rozwój organizacji przez rozwój efektywności pracowników*. Oficyna Wolters Kluwer Polska Sp. z o.o., Warszawa.

- Florczak, W. 2007. Kapitał ludzki a rozwój gospodarczy. In: W. Welfe (red.), *Gospodarka oparta na wiedzy*. Warszawa: PWE, s. 113; idem, Mikro- i makroekonomiczne korzyści związane z kapitałem ludzkim. *Ekonomista* 2007/5, 651.
- Klonowska-Matynia, M. 2022. Human Capital as a Source of Energy for Rural Areas' Socio-Economic Development—Empirical Evidence for Rural Areas in Poland. *Energies* 15, no. 21: 8281. <https://doi.org/10.3390/en15218281>.
- Król, H., Ludwicyński, A. (red.) 2006. Zarządzanie zasobami ludzkimi. Tworzenie kapitału ludzkiego organizacji. Wydawnictwo Naukowe PWN, Warszawa, 97.
- Księga rekomendacji oraz perspektywy. 2020. Praca zdalna 2.0 – analiza rozwiązań legislacyjnych, ekonomicznych i społecznych związanych z zastosowaniem pracy zdalnej jako odpowiedzi na sytuację epidemiologiczną COVID-19. Pracodawcy Rzeczypospolitej Polskiej.
- Kucharčíková, A. 2011. Human Capital – Definitions and Approaches. *Human Resources Management & Ergonomics*, Volume 2/2011, pp. 60-61.
- Kubiak, K. 2017. Rola szkoleń w procesie zarządzania przedsiębiorstwem. *Journal of Modern Management Process*, 1(2)/2017.
- Ocieczek, S. 2018. Szkolenia nieobowiązkowe pracowników a postrzeganie bezpieczeństwa pracy. *Zeszyty Naukowe Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie*, t. 37, 1/2018, 103-104. <https://doi.org/10.25944/znmwse.2018.01.103111>.
- Pauli, U. 2014. Rola szkoleń pracowników w rozwoju małych i średnich przedsiębiorstw. Uniwersytet Ekonomiczny w Krakowie, Kraków.
- PwC. 2020. Badanie wpływu zdalnego nauczania na nauczycieli, uczniów i ich rodziców, Raport z badania kwestionariuszowego, lipiec, 5, 22-23. <https://www.wroclaw.pl/extra/files/dokumenty/33154/SP%2084%20-%20raport%20z%20badania%20zdalnego%20nauczania.pdf>.
- Pyszka, A. 2015. Istota efektywności. Definicje i wymiary. *Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, nr 230, Katowice, 14.
- Sajkiewicz, A. 1999. Człowiek – kreator wartości przedsiębiorstwa. In: *Zarządzanie wartością firmy*, (red.) A. Herman, A. Szablewski. Poltext, Warszawa, 79.
- Słownik Języka Polskiego. <https://sjp.pwn.pl/szukaj/efektywno%C5%9B%C4%87.html>.