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VIRTUAL LABOR MIGRATION: CURRENT TRENDS AND DEVELOPMENT PROSPECTS

ABSTRACT

The purpose of the study is to determine the possible consequences of a sharp increase in the number of virtual labor migrants for the national economy and outline the main threats to information security in connection with the involvement of "hybrid workers". Based on the analysis of open sources, the working conditions of "hybrid workers" are outlined, as well as the possibilities of their cooperation with employers. The influence of regulatory and legal regulation of the work of freelancers on the modernization of their activities is highlighted. The main trends in the development of virtual labor migration in the conditions of increasing speed and volume of information transmission via the INTERNET network have been determined. The mostly temporary nature of labor relations causes a relatively low level of wages for virtual labor migrants, but it is a powerful means of countering the spread of unemployment. Virtual labor migrants, as a rule, are not limited in their work by obligations to a specific employer. Their business interests may also conflict with the national interests of the country where they permanently reside. This nature of work carries the threat of unauthorized dissemination of certain data, as well as the performance of certain tasks by foreign employers, which threaten the economic interests of the country of residence of "digital nomads" or its individual enterprises. This carries a potential threat to the business interests of both individual states and certain transnational corporations, which will require strengthening measures in the field of information security of production.

Keywords: virtual labor migration, "hybrid workers", remote work, freelancers, information and communication environment

JEL Classification: O15, R23

INTRODUCTION

Under virtual labor migration or telemigration, in the expert environment, it is customary to understand remote work or the provision of services that are carried out in a cross-border format (R. Baldwin & Forslid, 2020). The emergence and spread of virtual migration can be interpreted as a new variant of mobility transformations, generated by the development of digital technologies, which form the demand for remote work.

The modern development of information and communication technologies allowed the high-speed transfer of relatively large volumes of information. The increase in the volume and speed of information transmission opened up communication in the form of online conferences, streaming, and information exchange through video hosting, and streaming services, as well as its processing using "cloud" technologies.

The breakthrough that led to the emergence of new means of organizing work was the ability to transmit video in real-time. The possibility of making video calls made it possible to organize work outside the office premises. And during the COVID-19 pandemic, it has become vital for many employers and employees to continue working together.

In the conditions of the pandemic, the remote performance of tasks by employers using personal computers has acquired a mass character and has formed a phenomenon in the organization of the production process.

In this regard, virtual labor migration with the fulfillment of orders of employers without moving to office premises and working, as a rule, at home, has become quite popular. Its popularity was initially due to the fact that employers did not need to spend on

renting office space, and employees got the opportunity to plan their time for work and rest more freely (Nikolaiets, 2021). Freelancers were not tied to a certain office space, they could travel freely and at the same time earn some money by collecting certain information or formulating analytical conclusions based on the analysis of the available range of sources.

The combination of work and rest in the ratio that is most optimal for the employee allowed freelancers whose skills and abilities allowed to perform qualified work to significantly expand opportunities for self-realization. And for some developing countries, this way of self-realization of young people became a real breakthrough, since the vast majority of young people did not have the means to find a job outside their own country. And for them, remote labor migration became one of the few ways of earning.

The gradual increase in the scale of virtual labor migration with an increase in the number of so-called "hybrid workers" requires a comprehensive analysis of this phenomenon and assessments of the prospects for its further development. In addition, it is important for employers to assess the limitations that the use of virtual labor migrants imposes on the organization of work.

LITERATURE REVIEW

The scientific understanding of the modern phenomenon of virtual labor migration is a relatively new phenomenon of scientific research, which determines the existence of different approaches to the assessment of this phenomenon. The activities of "digital nomads" were studied by scientists who studied the development of digital technologies of information transmission and processing, analyzed the legal aspects of the possible employment of foreign labor migrants, and evaluated their competitive advantages and disadvantages compared to the use of artificial intelligence.

O. Kovács-Ondrejko, R. Strack, and J. Baier tried to understand the work of remote workers in the context of the labor market response to the challenges caused by the COVID-19 pandemic (Kovács-Ondrejko et al., 2021). M. Altenried and M. Bojadzije made an attempt to determine the impact of manifestations of racism on the growth of virtual labor migration. They highlighted this phenomenon as a result of modern processes in the field of job search (Altenried & Bojadzije, 2017). Lorraine Charles, Shuting Xia, and Adam P. Coutts tried to explain the emergence of the phenomenon of virtual labor migration with the development of digital means of communication (Charles et al., 2022). Some researchers have studied the organization of assistance to digital nomads in their search for work, emphasizing the importance of establishing control over their movements (Aneesh, 2008; Okai, 2021; Witteborn, 2022; Xiang 2014; Martin, 2016). The issue of control was also the focus of attention of the International Organization for Migration (Ukrinform, 2021).

A. Uhova made an attempt to analyze the phenomenon of "digital migration", emphasizing that digital technologies and infrastructure have changed existing workplaces and created new ones, and these changes occur with spatial and temporal transformations that affect labor mobility (Uhova, 2019). In the study of K.M. Nikolayets, the phenomenon of virtual labor migration is understood as a phenomenon in the organization of the production process through certain labor relations (Nikolaiets, 2021). In the study of K.M. Nikolayets, the phenomenon of virtual labor migration is understood as a phenomenon in the organization of the production process through certain labor relations (Nikolaiets, 2021; Nikolaiets, 2022).

In the study of K.M. Nikolayets, the phenomenon of virtual labor migration is understood as a phenomenon in the organization of the production process through certain labor relations (Nikolaiets, 2021). The study by Nikolaets, K., Shkuro-padska, D., Ozhelevska, T., Shtunder, I., Khrustalova, V. shows the impact of regional armed conflict on the development of virtual labor migration in modern conditions (Nikolaets et al., 2023).

The article by Shestack Y., Biliavska Y., Osetskyi V., Mykytenko N., and Umantsiv Y. examines the changes occurring in the era of digital data, which allows tracking new trends and models in business management and employment processes (Shestack et al., 2023). The complex issues related to the formation of virtual employment due to the development of hybrid firms are disclosed in the article by Osiyevskyy, O., Shevchenko, L., Marchenko, O., Umantsiv, Y. (Osiyevskyy et al., 2022).

Accordingly, the topic of the development of virtual labor migration needs to be understood through the prism of possible challenges in the organization of the production process and the preservation of the secrecy of economic information in the near future.

AIMS AND OBJECTIVES

The purpose of the study is to determine the possible consequences of a sharp increase in the number of virtual labor migrants for the national economy and outline the main threats to information security in connection with the involvement of "hybrid workers". The task of the research: to determine the quantitative and qualitative characteristics of the development of external labor migration, to outline the prospects for the formation of threats to the national economy in connection with the spread of the labor of "digital nomads", to formulate the main directions of the use of the labor of external labor migrants.

METHODS

The research is based on the results of using the statistical method, which allows to estimate the general scale of virtual labor migration, and the sociological method, which allows to determine the attitudes of virtual labor migrants and analyze the trends of the development of the market of online workers. In addition, a prognostic method was used, which made it possible to form an idea about the possible options for the performance of tasks by "virtual labor migrants" and the organization of their employment. The comparative method of scientific research made it possible to compare the number of employees who work remotely and to determine the dominant trends in the number of such employees in the world.

The sources of the research were the results of sociological surveys with the priority of surveys conducted by the face-to-face method, as well as estimates of indicative indicators of virtual labor migration, obtained by comparing cooperation agreements with organizations working in the field of IT and remittances, provided that the place of residence employee is unchanged. Estimates of the effectiveness of remote workers were based on data on the search for workers of certain qualifications who could work at home, as well as on the statements of employers who expressed hope for fruitful cooperation with remote workers for the development of their own business.

RESULTS

Accelerated development of digital technologies for the formation, processing, and transmission of information in the 21st century inevitably affects the development of the labor market, which is forced to respond to new opportunities for the organization of the production process. Digitization has embraced a variety of professions, from on-demand logistics services such as Deliveroo to highly skilled software developers working remotely. In this way, they monetize data transactions generated through social media channels and live streaming services. For some employees, remote work has become a common form of work, as digital entrepreneurship plays an increasingly important role in economic and social progress in today's world. However, remote workers are unevenly distributed across the globe with asymmetric work arrangements. Most of them are relatively young people, most of whom have high qualifications. An obstacle to remote work in some countries is insufficient development of the INTERNET network or a relatively low data transfer speed. In some cases, problems are also related to the lack of modern hardware or software.

A significant impetus for the development of virtual labor migration was the COVID-19 pandemic, which led to a rethinking of the nature of work, and the workplace and accelerated the transition to the provision of services by state and non-state organizations to virtual and digital platforms. In the conditions of the pandemic, such a new phenomenon as casual work has become widespread. For employers who needed to perform certain tasks on an irregular basis, one-time or multiple job orders for workers became a solution to a difficult situation when they did not want to hire someone for a job that did not need to be performed constantly. In the labor market, there is a need for experienced workers who have the opportunity to urgently start work in the field of IT technologies and do not require certain conditions for living or moving from country to country. This need allowed young people to work while simultaneously changing their place of residence.

The phenomenon has become widespread when an employer places a certain order on a virtual platform, which can be fulfilled by an employee from any country in the world if he has sufficient qualifications. Applications for such work and registration of relevant accounts by employees allow not only to estimate their number but also to form an idea of minimum earnings. Most often, random work involved searching for certain information or processing it to analyze the dynamics of indicators that were of interest to the employer. Often, the order was the creation of programs for calculations with certain permanent algorithms (for example, calculations of water or electricity consumption), as well as programs for recognizing faces or certain images, which were used as means of accessing certain information.

When receiving tasks, employees, as a rule, clearly understood the amount and form of payment and most often did not worry about paying taxes. The latter was associated with the difficulty of tracking all receipts to bank cards, the transfer

of funds for which employers were paid for work performed. The situation turned out to be somewhat different in the case when the work required the organization of a relatively large group of workers. In this case, they were most often combined into a working group during video conferences, and payment was made on the basis of agreements on the provision of information services.

Remote work has become an important tool that has contributed to sustainable development. It significantly reduced the costs of moving workers to the workplace and limited their needs for food outside of their permanent residence. Also, temporary or casual employment significantly reduced the social burden of business. The advantage of virtual migration for employers is that it allows them to bypass burdensome regulatory requirements for attracting foreign workers to the country, as well as restrictions on their number (Altenried & Bojadzije, 2017). Remote work has become quite attractive for workers in Latin America, Africa, and Eastern Europe (Figure 1). In the European Union, data exchange and modeling of prospective development form an idea about the prospects of managing migration processes with the determination of the number of workers who can perform remote work (Witteborn, 2022).

In the modern period, the work of special INTERNET platforms that post tasks for freelancers is becoming more and more profitable. However, such work has its own specifics, which determine the prospects for cooperation with online platforms in the future.

Placing tasks in open access provides an opportunity for everyone who wants to try their hand, but receiving the task directly depends on the qualifications of the employee. Sometimes there are cases when a relatively large amount of work, the performance of which, for example, by one qualified employee, would cost more than such performance by a group of relatively less qualified employees. In addition, the appearance and development of chatbots are already a competition for less qualified employees, who before that earned writing short informative messages to the order of employers, or regularly participated in the deletion of messages or comments under them, undesirable for certain employers.

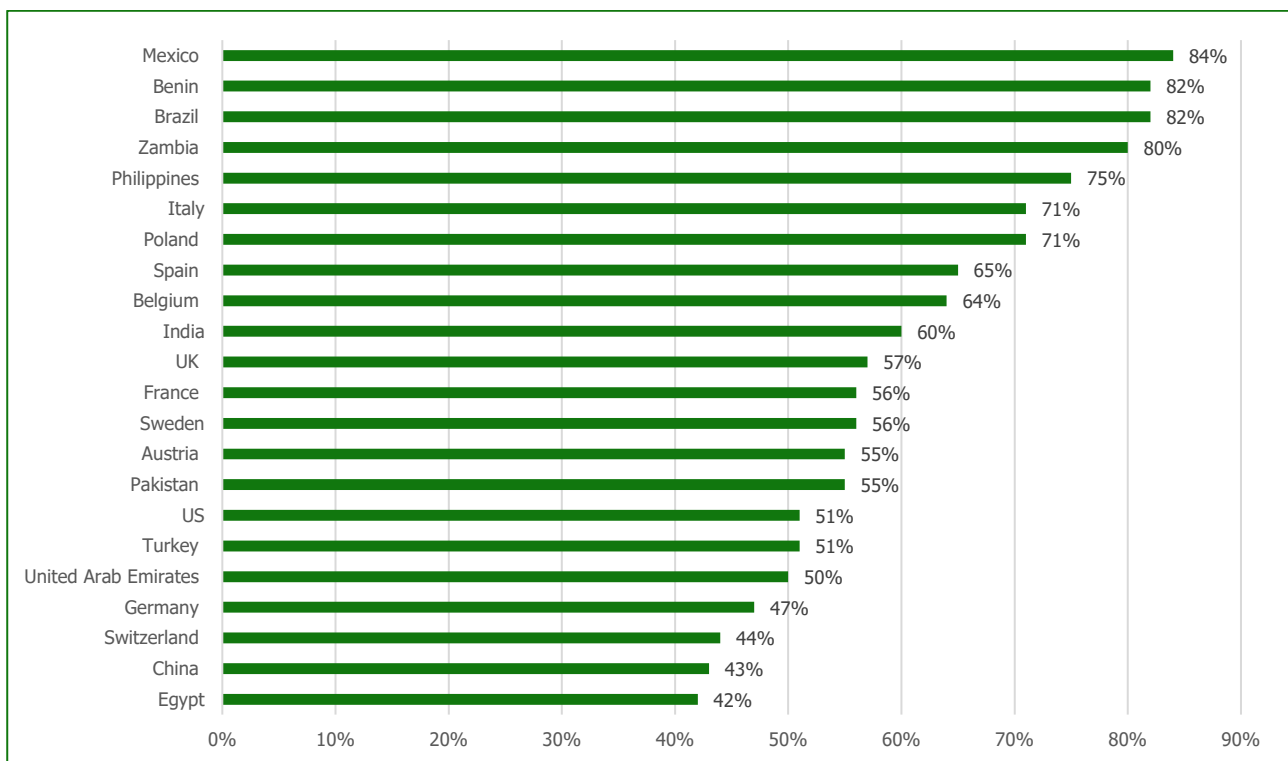


Figure 1. Percentage of respondents who would work remotely for an employer with no physical presence in their country. (Source: Kovács-Ondrejčovic et al., 2021)

In the conditions of the pandemic, remote work has become one of the important means of organizing the educational process. Of course, online education could not completely replace classroom classes, but at least in some cases, it allowed not to stop the educational process where it was possible.

An unknown number of people in the world earn income by working through the online platforms Upwork and Amazon Mechanical Turk. Analysis of the data on those who regularly or occasionally receive tasks through these platforms suggests that there are at least 16.3 million online freelancers worldwide as shown in Figure 2. This number of online workers can

be indicated by the number of their freelancer profiles. About 1,900,000 workers have received a job through one of the platforms at least once, and 5,000,000 people have successfully completed at least ten projects or earned at least USD 1,000. These figures indicate a significant increase in the number of registered workers between 2015 and 2020, but a comparative analysis shows at the same time relatively less, significantly less growth in the volume of work performed by such employees. Today, online freelancing remains a non-trivial segment of work, which is relatively rare in some countries and sectors of production and service provision (Kässi et al., 2021).

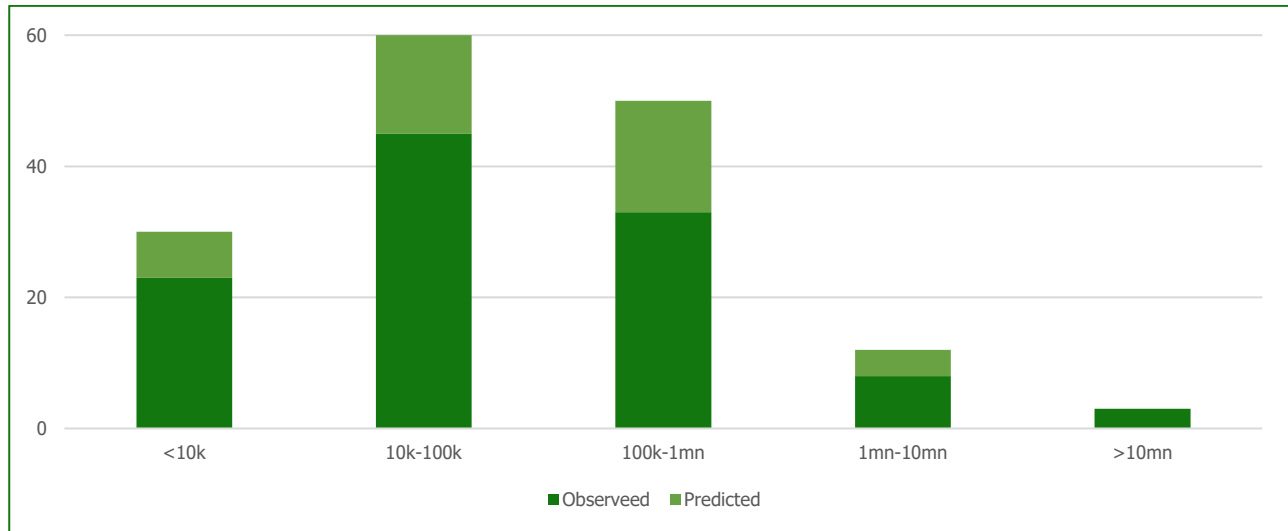


Figure 2. Distribution of registered workers for predicted and observed platforms. (Source: Kässi et al., 2021)

At the same time, this state of affairs required a certain regulatory policy in the labor market, directed against the arbitrariness of employers in the case of organizing casual work or the temporary nature of labor relations. In this case, not only employees were interested, but also state institutions since there were cases when qualified IT workers, not receiving the stipulated earnings, tried to later direct their anger against the state institutions of the country from which the employer came or in which they were placed its main production facilities.

Relatively rapid changes in the labor market forced the governments of many countries to take certain measures to regulate it. Perhaps the most noticeable was the reaction of state governments to the regulation of the labor market in the context of the spread of the COVID-19 pandemic. It was then that the lagging behind the policy of protecting employees from digital transformation became noticeable (Charles et al., 2022).

Digitization has led to the blurring of labor relations, and therefore the interpretation of their results and possible consequences. In some cases, the latter could pose a threat to the national security of the country or the stability of the region. This became especially noticeable in the case of organized cyber-attacks by interested persons against competitors' enterprises, institutions, or organizations.

The ephemerality and transience of most jobs in cyberspace have made this process circular. The attractiveness of temporary work in the future can only increase not only due to the increase in the number of orders, but also due to the awareness of IT workers and bloggers of their importance due to the potential opportunity to become opinion leaders who can influence not only the formation of demand, but also the adoption of certain political decisions or their refusal, for example, in the field of regulation of the taxation system or formation of local fees.

However, while providing benefits to workers and employers interacting in global digital labor markets, virtual migration simultaneously exacerbates chronic imbalances and generates new sources of social tension. The reason for this is the global asymmetry of socioeconomic and digital development, the emergence of new factors and areas of employee competition in the labor market, and insufficient social security of employees.

At the same time, virtual labor migration has become an important means of solving the problem of youth unemployment in some developing countries. Youth unemployment is a serious problem in many developing countries, especially in places that are poorly connected to large urban markets. The "virtual migration" of young people to become online freelancers has enabled young people to export their labor services to the global online market.

In some countries, particularly Bangladesh, a kind of "freelancer incubator" was created, which provided the necessary workspace and infrastructure - in particular, high-speed Internet connections and computers. Project participants were also provided with assistance for better orientation in the competitive online market. However, the relatively high cost of education, access to the necessary work infrastructure, and soft skills requirements for market success remained a challenge as shown in Figure 3.

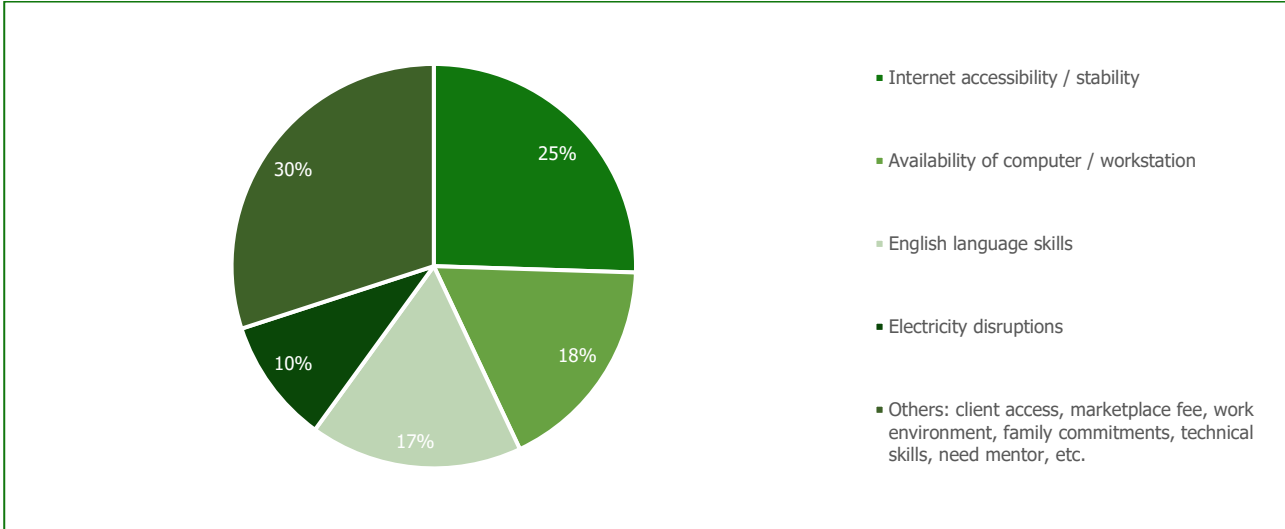


Figure 3. Reported work constraints. (Source: Mehrab Bakhtiar et al., 2021)

To solve some of these problems, even "virtual exporting companies" appeared, which were focused on helping young people find work and develop skills (Mehrab Bakhtiar et al., 2021).

Some sub-national authorities have developed programs or strategies to attract digital nomads, for example by providing a package of services, accommodation, and social activities for new arrivals, as a means of supporting the local economy and in some cases slowing down the effects of demographic decline. National governments could support these efforts by better packaging information about remote work options to attract talent from around the world and help foreign workers understand and comply with the rules. They could also help regions to be attractive to telecommuting by introducing high-speed broadband (Hooper & Benton, 2022).

It is most likely that remote work will become a much more common feature of the workplace in the future. The attractiveness of the work of "digital nomads" is evidenced, in particular, by the growth of their number in the USA by almost 25% in just one year (Figure 4).

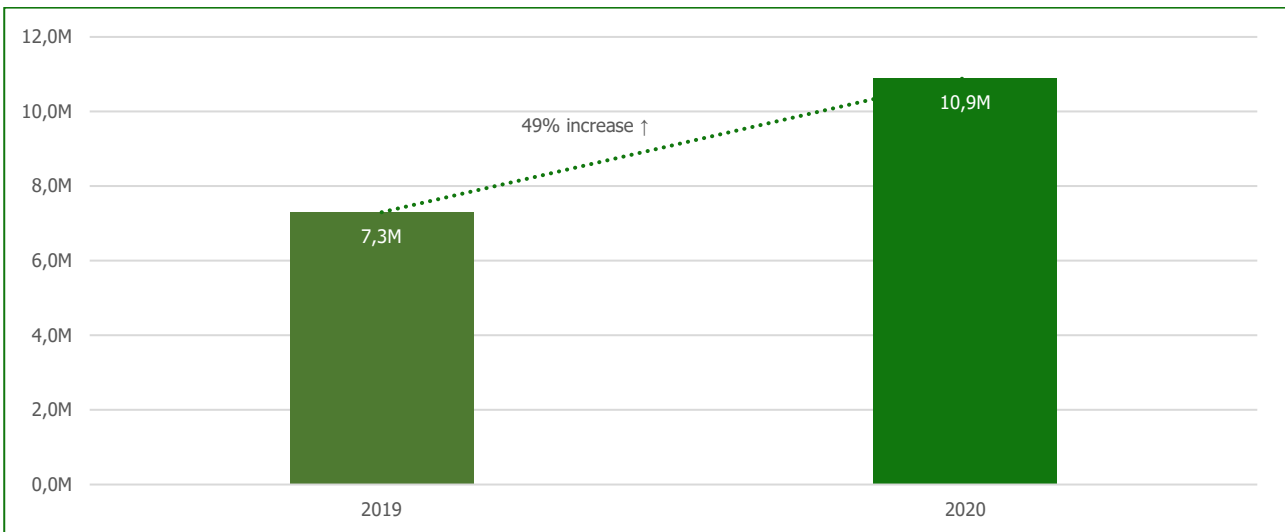


Figure 4. Number of American Digital Nomads. (Source: Hannonen, 2020)

A government-agreed policy of remote workers can be an important driver of economic growth and help boost tourism as the pandemic eases. Periodic remote work for foreign workers is becoming more and more common in the labor market, and its artificial limitation by government decisions will certainly contribute to a decrease in GDP (Hannonen, 2020). Countries that do not adapt to new trends such as telecommuting risk falling behind in the global competition for talent and putting employers at a disadvantage as they seek to attract and retain foreign workers. Currently, many politicians do not understand the "digital nomads", but more and more countries are launching new programs to take advantage of this phenomenon. To avoid falling behind, governments must balance retaining their current citizens with attracting nomadic visitors who can help them recover from the pandemic through spending and local integration.

DISCUSSION

O. Ivanenko (Ivanenko, 2020) and I. Prybytkova (Prybytkova, 2021) rightly argue that the surge in foreign labor migration is related to the COVID-19 pandemic, and argue that after the end of the pandemic, most employers will be inclined to resume the work of their employees in offices. The desire of managers of successful companies not only to preserve the backbone of employees but also to form and strengthen the corporate spirit among them should testify in favor of such an opinion. However, this statement can be countered by the desire of employers to reduce expenses on production organization. In this case, we are talking about the reduction of costs for renting office space and social benefits for employees who work at the main place of work. Using the temporary work of "digital nomads" allows you to save on both. In addition, the involvement of special digital platforms for hiring virtual migrant workers not only simplifies the search for the right specialists but also eliminates any possible mutual obligations after the successful completion of a certain job. In view of the need to reduce production costs, employers will contribute to the growth of the number of virtual labor migrants. This will also be facilitated by the position of governments and entrepreneurs of some developing countries (Mexico, Bangladesh, Ukraine, Poland) since virtual labor migration will allow them to solve the problem of unemployment to some extent. In this case, the costs of specialist training, acquisition, and use of soft and hard will be compensated by promising earnings of "digital nomads". For instance, the countries of Eastern Europe and Latin America have become more and more attractive for virtual labor migrants, which has made it easier for them to access the INTERNET network and simplified access to platforms where possible tasks or projects are posted. Threats of disclosure of certain information by external migrant workers can also contribute to the recruitment of additional workers to protect access to important databases. In this case, the use of external labor migrants with appropriate qualifications for information protection will be quite likely.

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Virtual labor migration will only intensify as a result of the search for work associated with natural disasters and armed conflicts, which will make it impossible for some workers to return to their previous places of residence. In this case, "digital nomads" can not only be involved in performing certain analytical work or searching for useful information but also in ensuring the stable operation of communication lines and their protection from unauthorized interference. The growth of the involvement of virtual labor migrants in software product testing and the organization of online trade also seems promising.

CONCLUSIONS

An analysis of the development of virtual labor migration over the past five years allows us to believe that the number of "digital nomads" is growing with the simultaneous "standardization" of the tasks they perform. Not having personal contact with the majority of such workers, employers mostly prefer to have them perform "mechanical tasks". And in this case, chatbots, which mostly have the ability to write simple programs much faster than people, are increasingly competing with "digital nomads". A certain unification of tasks is also associated with the reluctance of employers to provide such data to third parties for analysis, the study of which may pose a potential danger to individual firms in the future.

The trend of forming permanent groups of performers from the environment of "digital nomads" has become noticeable. Such groups are formed on the basis of long-term high-quality performance of certain tasks and in the future their members may be invited for permanent residence in a certain country. In this case, it can be attractive not only to provide a permanent place of residence but also the opportunity to work on much more powerful equipment than they could work on before.

Efforts by governments to monitor the activities of virtual labor migrants who organize the work of bot farms or participate in the implementation of informational and psychological operations for commercial or other purposes have become noticeable. In the future, virtual migrant workers who worked in this way may be restricted from entering certain countries, and in some cases, they may be wanted in connection with the commission of crimes in cyberspace.

Virtual labor migration can become one of the most important means of socialization for young people from developing countries. Participating in work for foreign customers will not only alleviate the problem of unemployment but also contribute to the solution of a number of social issues, representing a way of self-realization that is not related to involvement in criminal structures.

The rise of remote work is creating the opportunity for more people to become virtual migrant workers or "digital nomads". This will contribute to the rethinking of the status of a citizen and the attitude towards civil rights and duties. Not interested in the development of production in the country of permanent residence, digital nomads can only be interested in the economy of the country for whose employers they work. The prospect of introducing simplified visa regimes for some virtual labor migrants, in whose work certain states will be most interested, may contribute to their indifferent attitude towards donor countries.

Governments of countries should respond accordingly, as such a phenomenon can become a serious threat to the development of the national economy. By fulfilling the orders of foreign campaigns, virtual migrant workers can potentially harm the economy of the country where they live or temporarily stay. Therefore, the activities of virtual labor migrants will be increasingly codified, and certain types of activity or inaction will even be criminalized. At the same time, the country's power structures will be increasingly interested not only in establishing the identities of "digital nomads" for the purpose of forming a tax base but also in attracting them to qualified work in state bodies.

Artificial intelligence will be a serious competition for some of the virtual labor migrants working in the IT field. This will require employees not only to increase the level of professional training but also to develop creative thinking aimed at finding new niches in labor activities that artificial intelligence could not master in the near future.

ADDITIONAL INFORMATION

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ВІРТУАЛЬНА ТРУДОВА МІГРАЦІЯ: СУЧАСНІ ТЕНДЕНЦІЇ ТА ПЕРСПЕКТИВИ РОЗВИТКУ

Мета дослідження полягає у визначенні можливих наслідків різкого зростання кількості віртуальних трудових мігрантів для національної економіки та окресленні основних загроз інформаційній безпеці у зв'язку із залученням до роботи «гібридних працівників». На основі аналізу відкритих джерел окреслено умови праці «гібридних працівників», а також можливості їхньої співпраці з роботодавцями. Висвітлено вплив нормативно-правового регулювання роботи фрилансерів на модернізацію їхньої діяльності. Визначені основні тенденції розвитку віртуальної трудової міграції в умовах зростання швидкості й обсягів передачі інформації через мережу INTERNET. Переважно тимчасовий характер трудових відносин зумовлює порівняно низький рівень оплати праці віртуальних трудових мігрантів, але є вагомим засобом протидії поширенню безробіття. Віртуальні трудові мігранти, як правило, не обмежені у своїй роботі зобов'язаннями перед конкретним роботодавцем. Їхні бізнес-інтереси також можуть йти в розріз із національними інтересами країни, де вони постійно проживають. Такий характер роботи несе в собі загрозу несанкціонованого поширення певних даних, а також виконання окремих завдань зарубіжних роботодавців, які загрожують економічним інтересам країни проживання «цифрових кочовиків» або її окремим підприємствам. Це несе в собі потенційну загрозу бізнес-інтересам і окремих держав, і певних транснаціональних корпорацій, що вимагатиме посилення заходів у царині інформаційної безпеки виробництва.

Ключові слова: віртуальна трудова міграція, «гібридні працівники», віддалена робота, фрилансери, інформаційно-комунікаційне середовище

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