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RISKS ARISING FROM THE APPLICATION OF DIGITAL TECHNOLOGIES TO THE LABOR MARKET AND FINANCIAL SECTORS

Abstract

The article examines the importance of risks arising from the application of digital technologies to the labor market and financial sectors. The main objective of the study is to assess the extent to which the application of advanced technologies affects the labor market and financial sectors. The results show that the application of technologies - especially in the areas of digitalization, automation and human capital development - makes a significant contribution to increasing labor productivity, employee engagement and organizational competitiveness. In addition, the article analyzes issues such as the advantages and disadvantages of the application of innovative technologies to the labor market and financial sectors.

Keywords: labor market, risk, financial sectors, digital technologies, automation, microfinance risks, macrofinance risks.

INTRODUCTION

Like any other areas, technologies carry great opportunities, otherwise they would not have become so widespread and their use would not have become a competitive advantage for an individual, enterprises and countries.

The labor market is the most sensitive indicator of changes in the market, the economy and is subject to very significant changes under the influence of digitalization processes.

The process of digitalization does not occur simultaneously in different countries of the world, therefore, it leads to digital inequality in their economies and, as a result, increases the dependence of developing countries on developed countries.

In the process of digital transformation of the country's economy, policy, legal norms, traditions and culture, the achieved level of economic development, the level of education and its own technological base, as well as many other factors play an important role. As a result of the digital transformation of the global economic architecture, new contours of the digital economy are emerging, which are characterized by an exponential increase in information flows. In these conditions, what is important for economic entities is not the fact of having any resource, but the availability of information about this resource and the ability to use it to plan their activities. The digital economy contributes to the development of new business models and provides an opportunity to create innovations, invest, find employees, partners, resources and markets.

Digital technologies can play a key role in training employees, knowledge exchange and implementation of innovative ideas, including in the social sphere.

The impact of digital technologies on the labor market

As early as 1931, economist John Keynes predicted a negative technological impact on the labor market. In his writings, he noted that the discovery and implementation of methods of economical consumption of labor exceeds the rate of formation of new applications of labor. The

ever-increasing automation of workplaces can lead to a replacement of human capital from the structure of the global economy, which, accordingly, will lead to a high level of unemployment.

According to American futurologist John Naisbit, in the digital economy the demand for junior and middle managers, as well as workers with medium qualifications, will decrease, but the number of low-skilled personnel working for low wages will decrease. and without career prospects will increase.

The most dangerous situation is for workers who perform daily operations that can be "coded". One can give many examples of this. More than two-thirds of robots are used in the electrical, electronics and automotive industries, as well as in mechanical engineering and metallurgy. Foxconn Technology Group, an electronics assembly company, has cut its workforce by 30%. This was made possible by the introduction of robots, and production has not been affected. Thus, robots are cheaper, and companies benefit from the fact that production is closer to consumer markets. With the use of 3D printing, new opportunities for Adidas opened up in 2017.

Thus, it was able to open two automated shoe factories in Germany and the United States. This led to reductions in employment, albeit in Vietnam (per 1,000 people). Philips Electronics moved its production from China to the Netherlands in 2012, thanks to new production technologies. Thus, the introduction of automated production can lead to a significant reduction in the number of employees of companies not only in the goods sector, but also in the service segment. For example, the Israeli company Mobileye is developing navigation devices for self-driving cars. Chinese technology companies Baidu and King Long Motor Group are creating driverless buses needed for industrial zones. Financial analysts, who work with calculations and ready-made formulas, have also been subject to active layoffs.

Although it is still difficult for economists to quantify the loss of jobs as a result of technological change, such calculations are numerous.

The PWC report shows the number of jobs that could be lost as a result of automation by 2030 in various countries: in the USA - 38%, in Germany - 35%, in the UK - 30%, in Japan - 21%.

Scientists from the University of Oxford believe that if we take into account this negative trend at a global level, almost 47% of jobs will disappear in 2040-2045. World Bank experts give even more ominous figures for developing countries - two-thirds of all jobs could be automated in the coming years. However, the same report provides data showing that one ICT job stimulates the creation of five jobs in other sectors of the economy.

Data from European countries in 2016 show that, along with changing jobs, new technologies are also increasing the demand for labor. For example, the Chinese platform financial technology company JD Finance created more than three thousand jobs for specialists in the field of data analysis and analytics, instead of hiring "traditional" credit analysts.

However, technological progress also creates the need to create new jobs, especially in high-tech industries. People have long used various gadgets, including tablets and smartphones, to manage and control personal finances. With their help, they can work, relax and do many other things. To increase the use of gadgets for personal and business purposes, the ICT sector is developing interactive resources that operate online.

Given the dynamic change in consumer priorities, interests and needs, the spread of the trend of using new technologies creates wider opportunities for working in the virtual reality segment, as well as for developing mobile applications.

Technology also facilitates the creation of jobs by providing opportunities for working using the Internet. The American company Andela trains computer programmers. The idea of creating a digital environment in Africa was the basis for its business model. The company trained 20,000 African programmers using free online training tools. After completing the training, the programmers continued to work with Andela, as well as with other clients of this company in different countries of the world. The company aims to train 100,000 software specialists in Africa by 2024. Moreover, 90% of its employees are residents of Nigeria.

In this regard, economists from the international consulting company Boston Global Group have concluded that the five professions that will be most in demand in the coming years will be related to the creation, development, use and application of new technologies. For example, ICT designers, programmers, roboticists, systems engineers, trainers for the development of intellectual abilities, and consultants for the implementation of innovations. Thus, changes in professions and occupational structure will lead to an increase in the demand for workers with skills in the field of information technology and software.

Experts also note that there will be an annual increase of 4.54% in hiring for computer science majors, and 3.54% for engineering and design specialists. The functional features of new technologies introduced into the enterprise allow them to completely replace human labor. In particular, the use of artificial intelligence technology allows for the formation of forecasts and value judgments without human intervention. However, machines and humans have certain strengths and weaknesses in the context of forecasting. Forecasting machines powered by artificial intelligence are better than humans at factoring in the complex interactions between various indicators, especially when working with big data. As the number of dimensions for such interactions increases, the ability of humans to create accurate forecasts decreases. However, humans are better than machines in cases where understanding the process of data generation provides a predictive advantage, especially in environments where data is limited.

Machines and humans can work together to make more accurate judgments. This proves a point that goes back to Adam Smith's 18th-century economic thinking about the division of labor. Here, there is a division of labor between humans and machines when making forecasts. Understanding the division of labor involves determining which aspects of forecasting are better performed by humans or machines. This allows us to identify their different roles.

Consider the example of Columbia Bank's evaluation of small business loan applicants after the introduction of its new credit scoring system. The computerized scoring system analyzed various pieces of information about applicants and combined them into a single measure of risk. The bank's lending committee then used the assessment and its own judgment to decide whether to approve or deny the loan. A randomized controlled trial determined whether the score was given before or after the decision.

Thus, it provides a good basis for scientific judgment about the impact of scoring on decision-making. A group of employees were given their scores before they met for a discussion. Another group of employees were not given a score until they had completed their initial assessment. The difference between the first and second methods was whether the decision-makers were informed of the assessment. In both cases, the assessment helped them make decisions, although better results were achieved when the assessment was provided in advance. In this case, the committee made better decisions and had to turn to managers for help less often.

In another case, when the committee was assessed after the discussion, decision-making was not as significant, but it improved because the forecasts helped higher-level managers monitor the committees. This increased the ability of committee members to ensure the quality of their decisions. The anatomy of the solution suggests that new jobs will be created. Humans and AI are likely to work together; humans will complement the forecast with information, judgment, or action. For example, as forecasting becomes cheaper, the importance of judgment increases.

Therefore, the elimination of AI algorithms is expected to increase the number of jobs related to engineering functions. This tends to increase inequality because technology is often associated with skills, which disproportionately increases the wages of highly educated people and can lower them for the category. Technologies that rely on previous skills, including computers and the Internet, are a major explanation for the growing wage inequality in the United States and Europe over the past four decades. As economists Claudia Goldin and Lawrence Katz put it, "people with higher levels of education and higher innate abilities will be more likely to master new and complex tools." We have no reason to expect things to be different with artificial intelligence. People with higher education are better at learning new

skills. If the skills needed to work with artificial intelligence change more frequently, then education will benefit disproportionately. Inequality is also observed in the emerging new format of labor relations, which is expected to increase the share of people working in the informal sector. Digital technologies provide incentives for increased self-employment. Digital platforms allow for flexible work schedules without tying the employee to the workplace, reducing barriers to hiring in production.

Digital work platforms remove many barriers, geographical nature, which previously did not allow solving certain problems. Bangladesh's 650,000 self-employed workers make up 15% of the global Internet workforce.

Indian platform Indiez takes a collaborative approach to outsourcing work via the Internet. This platform is used by professionals from many countries around the world - primarily from India, Eastern Europe and Southeast Asia. Clients include Indian pizza chain Domino's and global corporation Aditya Birla Group.

The ability to work remotely has allowed many companies to continue their activities during the COVID-19 pandemic. Since early February 2020, millions of Chinese workers have switched to remote work, and global companies have followed suit. Expedia and Microsoft have sent 80% of their employees to work remotely. Slightly less - from 34% to 76% of employees work from home for global companies such as Amazon, Facebook, Uber and Google. Twitter management almost completely closed its offices and transferred 12 thousand of its employees to Apple.

Many of the features of the changes in the world of work are most evident in developed countries, where new technologies are widespread and labor markets are more formalized. However, developing countries have been struggling for decades to address many of the same challenges. They retain large levels of informal employment—up to 90 percent in some middle- and low-income countries. Informal employment is difficult to address—with a few exceptions in Eastern Europe. In countries such as Tanzania, El Salvador, and Morocco, only one in five workers is employed in the formal sector. On average, two out of three workers in emerging market economies are employed informally. As technological advances blur the boundaries between informal and formal employment, the nature of work in developing and developed countries is converging. New labor markets are emerging in developed countries, while informal employment dominates in developing countries. The problems faced by short-term or temporary workers, including those in developed countries, are similar to those faced by workers in the informal sector. Informal wage labor without social protection and written contracts, self-employment, and low productivity are becoming the norm for workers in most developing economies. In terms of regulation, such workers are not protected.

Labor legislation in most cases does not clearly define the responsibilities and roles of employers and employees. This group of workers usually does not have benefits. They have no health insurance, no pensions, no unemployment insurance, and none of the protections that workers in the formal sector have.

The development of the digital, platform economy, and the sharing economy, which continues the process of radical transformation of employment, has also led to deeper transformations in the entire social sphere of modern society, erasing the boundaries between employers and employees, consumers and producers. The model of symmetrical regulation of social and labor relations, which was formed thanks to the instruments of equalization of trading conditions (legislation, collective agreements, ILO Conventions), has acquired an asymmetrical, hybrid character. This is due to the significant increase in the individualization of labor relations and the methods of their regulation in recent years. Thus, according to a Deloitte study, in 2018, only 42% of respondents said that their organization largely accepts classic labor relations between employer and employee. At the same time, they expect a sharp increase in the number of fixed-term contracts, temporary, freelance and other groups of workers working in non-standard labor conditions in the next few years.

Analyzing the risks posed by the introduction of financial technologies in an enterprise

While the evidence on financial stability risks arising from the adoption of financial technologies is currently limited, the rapidity of change and early decisions can set important precedents.

In order to mitigate potential financial risks while reaping the benefits, it is important for government officials to assess the adequacy of regulatory policies in the context of the growing adoption of financial technologies.

Since the 2008 global financial crisis, international organizations have developed various approaches to assessing financial stability risks.

The potential for fintech companies to disrupt financial stability can be assessed based on the key characteristics of these entities. The Financial Stability Board identifies two main types of risks:

- microfinancial risks;
- macrofinancial risks.

Microfinancial risks arise from individual firms, financial market infrastructures, or sectors of the economy that are particularly vulnerable to economic shocks. The crystallization of such risks can have systemic effects on the financial system, if they can cause shocks at the level of individual firms or broad sectors of the economy, with possible negative consequences for systemically important markets or counterparties, as in the provision of critical functions and services.

Subtypes of microfinance risks have been identified (financial risks):

- mismatch of maturity dates (issued loans can be sold to other investors ahead of schedule);
- liquidity (there is no incentive for consumers to keep their money, for example, in electronic wallets);
- credit leverage (there is a potential for new market participants to increase the amount of attracted financing to increase profits, for example, financing crowdfunding projects using borrowed loans).

Operational risks:

- weak control by state authorities and regulators;
- cybercrime;
- dependence on third parties (many startups use the services of third-party companies, for example, to provide information that can lead to operational failures).

It should be noted that experts from the International Economic Forum in their risk reports indicate the risk of cyberattacks in the financial sector as one of the most serious risks. About 82% of respondents confirm that this risk will play a significant role in the economy in the near future. The consequences of cyber risk can be the theft of money from banks, the destruction of the infrastructure of financial institutions, the leakage of confidential information, etc. Thus, in this case, cybercrime increases the risk of third parties gaining access to confidential information and using it for criminal purposes. This increase in risk may be associated with the widespread use of large-scale processing technology.

Macrofinancial risks represent system-wide vulnerabilities that exacerbate deficiencies in the financial system and thereby increase the likelihood of financial instability. These risks are mainly associated with the interaction between firms, investors and consumers. A number of general macrofinancial risks have been identified by the relevant authorities that may potentially be related to activities classified as fintech.

Subtypes of macrofinancial risks include:

- contagion risk (unexpected losses of fintech companies can negatively affect the entire sector);
- procyclicality (there is a risk that “new” technology companies will create a strong economic shock);

- excessive volatility (for example, the increase in the volatility of blockchain-based cryptocurrencies, which is especially important against the background of ongoing turnover;
- discussions on the creation of national cryptocurrencies, including reserve currencies);
- risks associated with systemically important organizations (new technologies can replace the existing financial infrastructure, but there is no confidence in the stability of their activities).

Experts from the Bank for International Settlements (BIS) expand and clarify the risks listed above. It is impossible not to agree with the digital. The transformation of the financial sector increases operational risk. The Bank for International Settlements divides it into systemic and internal:

systemic operational risk is associated with the high interdependence of market participants. Thus, any risk event related to information technologies can turn into a systemic crisis, especially if services are concentrated in one or several dominant (players) places. The entry of fintech firms into the banking industry increases the complexity of the system and increases the risk of the emergence of new players who may have limited experience in managing IT risks.

As for internal operational risk, this is primarily due to the proliferation of innovative products that can increase the complexity of providing financial services and at the same time make it difficult to manage and control operational risk. Outdated bank IT systems may not be sufficiently adapted to new products and technologies.

Thus, banks are increasingly using third parties, thereby increasing the complexity of their operations and reducing their transparency. The increase in the number of third parties in processes can increase risks related to data security, confidentiality, money laundering, cybercrime and the protection of customer funds. The most vulnerable situation occurs when banks are ineffective in implementing the required operational risk management standards and controls, or when fintech companies do not have or do not comply with the same rigorous security standards.

The concept of dependency on third parties is also expanding. Value chains are changing as new technologies enter the business. New players are emerging in the value chain - technology firms, including startups. As a result, there is a risk of outsourcing. If a large number of parties are involved in the creation of financial products and services, uncertainty may arise regarding the obligations of different participants in the value chain, which potentially increases the likelihood of operational incidents. If some services provided by third parties are dominated by globally active players, the risk of outsourcing will be even more pronounced, which may lead to a concentration of risk.

Closely related to this risk is a risk that has recently been noted by experts - the risk associated with large technology companies.

In some areas of financial services, such as payment systems, large technology companies can very quickly become systemically important financial institutions. Given the importance of the financial system as an important public infrastructure, the activities of large technology companies represent a wider public interest that goes beyond their immediate circle of users and shareholders.

Many experts, including BIS economists, identify strategic risk as one of the main risks. Its essence is that existing financial institutions may lose a significant part of themselves. New entrants, fintech companies, will gain market share or profit if they can use innovations more effectively and provide cheaper services that better meet customer needs. In our opinion, we are talking about inevitable competition between traditional and new financial institutions. If traditional banks actively use the achievements of fintech, then they have a chance not only to survive, but also to win the competition in certain market niches. It is worth noting that the BIS includes the increasing difficulties in complying with requirements, and in particular with AML/CFT obligations, in the regulatory risk.

If a customer makes a payment using a bank card or account, the bank now has a certain level of responsibility for customer authentication and may be liable for its scope. The high level

and complexity of automation of the product or service offered to banks by fintech companies may be less effective.

Transparency about how transactions are conducted and who is responsible for AML/CFT compliance, in turn, can increase the risk of banks being held liable for the actions of their fintech partners if a customer suffers a loss or legal requirements are not met.

CONCLUSION

In our opinion, the risk is another, no less important tax risk in the process of operations. The development of the latest production technologies, network technologies, information technologies, as well as the widespread use of modern digital business models, give firms an additional incentive to develop and implement cross-border activities. This is confirmed by the increasing number of companies providing services and products on an international scale using digital technologies. This, on the one hand, leads to problems of double taxation and determination of the object of taxation in each tax jurisdiction.

On the other hand, the lack of tax regulation of digital transactions, in addition to their non-taxation in some cases and the state's failure to receive tax revenues, will give digital companies a significant economic advantage over traditional businesses, which may lead to a violation of the principles of free competition in the market.

In some countries, special institutions have been created to accelerate the introduction of innovations and bring them to the mass market. These can take many forms, including hubs and accelerators, are forums for knowledge exchange, and may involve active cooperation or even financing of new players. Such institutions, in the form of regulatory sandboxes, have already been established and are operating in Hong Kong, Singapore and the UK.

They allow innovators to test their products, they can act as direct funding or funding intermediaries, that is, they can provide a dynamic financial landscape that is not dominated by just a few large players. At the same time, the design of these institutions requires careful design and implementation to avoid regulatory arbitrage and to limit support for new, but still essentially speculative, projects.

As already noted, coordination between authorities is important at both the national and international levels. At the national level, attention should be paid to public policy, as the mandates and practices of national business authorities, financial regulators and data privacy authorities may not always be compatible. Financial regulators focus on the specificities of the financial sector, while competition and data privacy laws often set common standards that apply across a wide range of sectors.

As the digital economy transcends national borders, there is a need for international coordination of rules and standards (e.g. for data sharing). These differences have led to conflicting actions that policymakers need not only to find a new compass but also to find the right balance of public policy instruments to avoid.

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Rəqəmsal texnologiyaların əmək bazarına və maliyyə sektorlarına tətbiqindən yaranan risklər

Xülasə

Məqalədə rəqəmsal texnologiyaların əmək bazarına və maliyyə sektorlarına tətbiqindən yaranan risklərin əhəmiyyəti araşdırılır. Tədqiqatın əsas məqsədi qabaqcıl texnologiyaların tətbiqinin əmək bazarına və maliyyə sektorlarına nə dərəcədə təsir etdiyini qiymətləndirməkdir. Nəticələr göstərir ki, texnologiyaların tətbiqi - xüsusən də rəqəmsallaşdırma, avtomatlaşdırma və insan kapitalının inkişafı sahələrində - əmək məhsuldarlığının, işçilərin cəlb olunmasının və təşkilati rəqabət qabiliyyətinin artırılmasına əhəmiyyətli töhfə verir. Bundan əlavə, məqalədə innovativ texnologiyaların əmək bazarına və maliyyə sektorlarına tətbiqinin üstünlükləri və çatışmazlıqları kimi məsələlər təhlil edilir.

Açar sözlər: *əmək bazarı, risk, maliyyə sektorları, rəqəmsal texnologiyalar, avtomatlaşdırma, mikromaliyyə riskləri, makromaliyyə riskləri.*