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PROBLEMS OF IMPLEMENTATION OF ADVANCED GLOBAL TECHNOLOGIES IN THE CONDITIONS OF DIGITAL BUSINESS

Despite all the advantages of the latest technologies, their implementation is accompanied by significant problems that must be taken into account during the implementation of digital transformation projects at the enterprise. The main advanced world technologies are revealed. The effect of advanced global technologies, namely their impact on business, is studied. The advantages that advanced global technologies provide when they are used in business are defined. The main problems of the introduction of advanced global technologies in the conditions of digital business have been identified. Formulated strategies for overcoming the problems of implementing advanced technologies in the conditions of digital business. The introduction of advanced global technologies not only marks the beginning of the fourth industrialization, but also allows us to continue working even in such difficult situations as COVID-19 and war. The business is developing and developing a plan for the introduction of advanced global technologies. Scientific and technical progress, technological innovations, digitization will allow to switch to alternative options for conducting business, which is very important in modern conditions, to increase the number of customers, to improve the quality of products, to diversify products, to increase production, to increase labor productivity, to use working time rationally and economically.

Keywords: *big data analytics, Internet of Things (IoT), 3D printing, autonomous robots, augmented and virtual reality, cloud computing, cyber security , modeling and blockchain, COVID-19, war, Industry 4.0.*

Introduction. Advanced global technologies are developing rapidly. They affect almost every industry, changing the way firms operate in the global economy of international business. In addition, the introduction of advanced technologies is associated with wider access to international markets and increased international recognition of opportunities. Advanced technologies are playing an ever-increasing role in conducting business, contributing to ensuring its accessibility and openness, improving the quality of work, and accordingly placing increased demands on the digital competence of employees.

The rapid and large-scale spread of such technologies leads to the transformation of work methods, remote work systems, the problem of selecting the necessary resources and appropriate technologies, as well as the formation of a favorable environment for work. The necessity and efficiency of digital transformation is explained by the fact that most employees of enterprises see the use of information and communication technologies not only in professional activities, but also in the sphere of socialization and communication. In addition, the creation and preservation of a competitive advantage by a business entity in the field of activity will be increasingly determined every year by the timeliness of the introduction of new technologies and readiness for fundamental shifts in the direction of the demanded activities of the future. Business methods must be adapted to the requirements of the times and society's expectations through the massive and effective use of innovative technologies and didactic models based on modern information and communication technologies.

This problem becomes especially relevant in the context of the forced transition to a remote form of work, first caused by the spread of COVID-19, and only then by the start of the war, these factors revealed failures in the functioning of enterprises and actualized the need for its balanced digital transformation. Conditions of uncertainty made it possible to assess the degree of importance and effectiveness of the use of information and communication technologies as a tool of labor formation. At the same time, it actualized the need to reorient all areas of activity to the use of advanced technologies - this should affect many programs, methods, means, technologies and forms of activity at the same time.

Literature review. For a better understanding of the concepts of advanced world technologies and digital transformation, you should refer to works of domestic and foreign scientists. Among domestic scientists, we can single out Nikitin Yu., Kulchytsoi O., who devoted their work to defining the concept of digital business and the conditions for its transformation. Their work can be the basis for the definition the concept of digital transformation.

The works of such foreign scientists as Brunetti F., Matt D., Bonfanti A., De Longhi A., Pedrini G. and Orzes G., were devoted to the development challenges of digital transformation and the study of red industrialization. Such scientists as Ahi Alan A., Sinkovix N., Shildibekov E., Rudolph R., Mekhandzhiev N. in their works investigated the importance of advanced world technologies, their functional part and implementation in business.

The scientific works of each of these authors provide an understanding of what the world's leading technologies are, where they are used, and what they are used for.

The purpose of the article is to reveal the problems of implementation of advanced global technologies in the conditions of digital business.

Results and discussion. The main sign of this decade was the Covid-19 pandemic, and then the war. Mandatory social distancing changed everyone's habits, and the war made drastic changes in people's lives. It is the development of technology that has made important remote activities possible, such as communicating with friends and family, maintaining education, and on which many companies and workplaces live. Throughout history, technological revolutions have transformed the workforce: creating new forms and models of work, rendering others obsolete, and leading to broader societal changes.

When we think of the industrial revolution, we immediately compare it to the steam engine and the concepts we learned in school. But it's clear that the industry has recovered over the past few centuries, bringing technological innovation at an ever-faster rate. We are now in the Fourth industrial revolution (Industry 4.0), now with fully digital productions, in which artificial intelligence, work and data race are more than present. Industry 4.0 technologies bring unprecedented progress in human-machine relations with more autonomous and flexible production based on data and information. The result is more efficient companies with optimized processes in both cost and time, in addition to reducing waste and errors.

It will be appropriate to consider nine major cutting-edge technologies: big data analytics, Internet of Things (IoT), 3D printing, autonomous robots, augmented and virtual reality, cloud computing, cyber security , modeling and blockchain. Many scientists and commentators argue that the integration of these technologies marks the beginning of the fourth industrial revolution or Industry 4.0. This new technological framework is based on cyber -physical systems coordinated by wireless and Internet protocols and standards [1].

Key parameters of Industry 4.0 are big data, advanced analytics, human-machine interface, machine-to-machine communication and digital data transmission. Advanced technologies can be divided into certain categories as shown in Figure 1.

The first category includes the Internet of Things and augmented and virtual reality, which are technologies with a high proportion of hardware components and advanced network connectivity. The basic concept of the Internet of Things is that objects can be equipped with identification, sensing, networking and processing capabilities that will allow them to communicate with other devices over the Internet to achieve a goal that is very relevant due to a full-scale invasion. For example, technology can digitally connect physical objects in a supply chain to transfer data and interact with each other.

Technology provides greater reliability, product efficiency, and capabilities than traditional product boundaries, and therefore provides firms with a competitive advantage. Two other technologies in this category are augmented reality and virtual reality. The former refers to a set of technologies that overlay digital data and images onto the physical world, while the latter replaces physical reality with a computer-generated environment. These closely related technologies have the potential to change the way companies interact with customers, train employees, and manage global value chains [1].

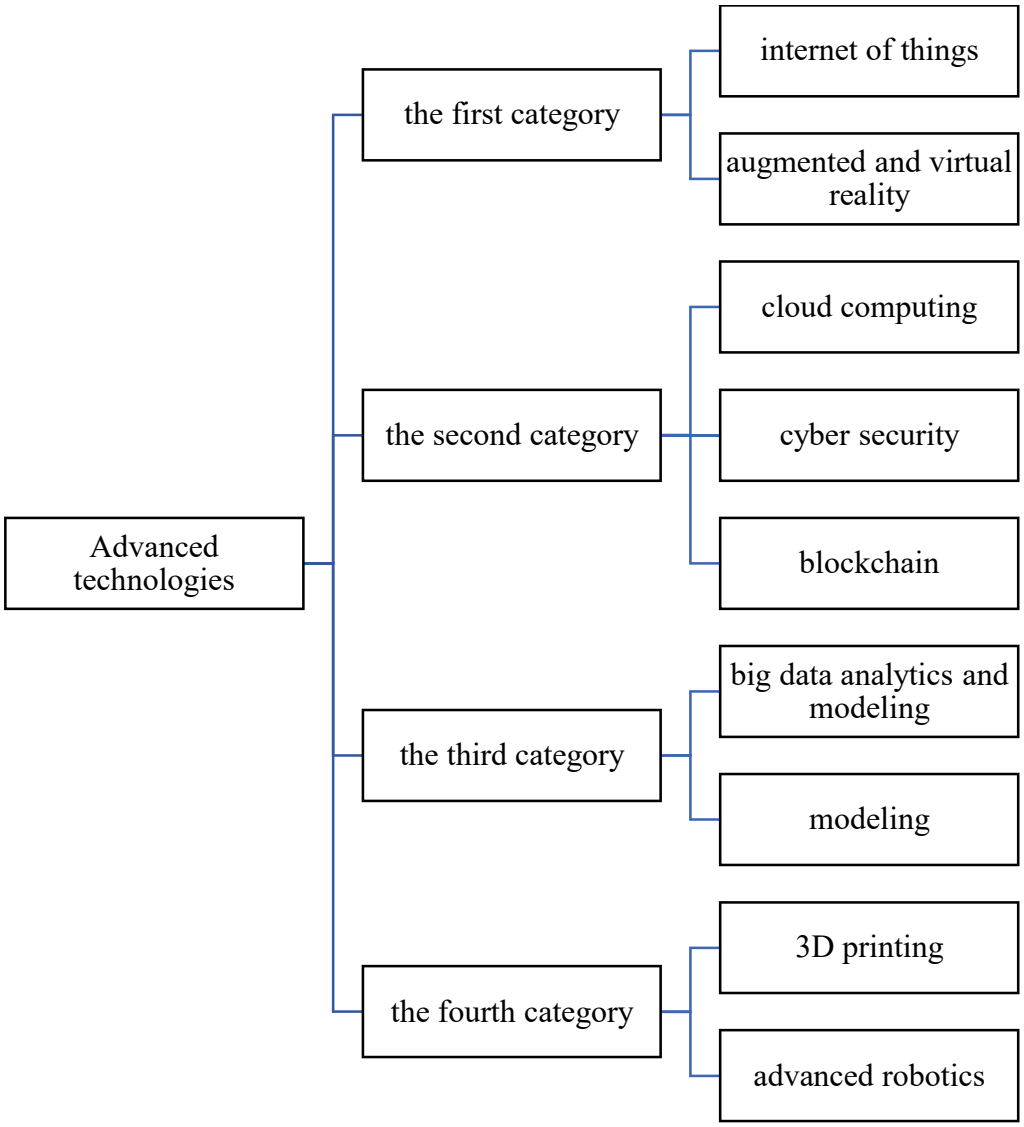

Figure 1 – Main categories of advanced technologies

Technologies with a low share of hardware components but extensive network connectivity are cloud computing, cybersecurity, and blockchain. Cloud computing "is a form of shared external computing in which computing is aggregated into large external data centers and accessed by a number of clients over the Internet". In cloud computing, systems are stored on shared servers and interconnected via the Internet so that they can be accessed from anywhere in the world. This allows you to go beyond corporate servers and expand connectivity between systems.

For large companies, the appeal of the cloud is that they can gain more control over data center costs, while for smaller firms, the cloud lowers the entry barriers to computing and facilitates access to large data centers [2].

The next, cyber security, refers to a set of technologies that help companies reduce cyber risks, such as data breaches and cyber attacks, and therefore reduce the vulnerability of the value chain. The last in this category is one of the most revolutionary technologies of our time — blockchain. It is also known as distributed ledger technology and refers to a list of blocks of encrypted information in a digital ledger arranged in chronological order. A ledger is like a database or spreadsheet that allows any network member to record or monitor transactions. Blockchain can lower transaction costs for companies while increasing transparency and automation of intellectual property ownership and payments.

The third category includes analytics and modeling of big data with a low share of hardware components and a relatively low level of network connectivity. The term "big data" refers to massive,

high-speed, and diverse data sets that require processing capabilities that exceed the capabilities of traditional data management approaches[1].

Using advanced analytical approaches such as data mining and statistical analysis to understand such unstructured big data is called big data analytics. Information systems professionals broadly conceptualize these methods as organizational capabilities and sources of competitive advantage.

This technology is important for managing global value chains, because while flows of physical goods and finance were the hallmarks of the previous century, today's global business is characterized by intangible flows. To create value from this vast amount of data and coordinate intra- and inter -firm relationships more effectively, firms need to rely on big data analytics capabilities.

Another technology in this category is modeling, which is the process of designing a model of a system to describe and analyze its behavior. Simulation technologies allow observing the behavior of complex processes in a digital environment and, thus, avoiding often expensive attempts to experiment with a real system or physical model. Among other applications, it is used as a primary problem-solving method for complex manufacturing [3].

The fourth category includes 3D printing and advanced robotics, two advanced technologies that have a high proportion of hardware components but a low level of connectivity. 3D printing, also called additive manufacturing, is an additive process in which layers of material are successively added to create a 3D object. Using an initial design based on a digital model, products can be printed anywhere with a 3D printer; therefore, suppliers, customers and service firms in the 3D printing industry can be geographically [1].

Finally, we have advanced robots, which are automated, versatile machines that increasingly incorporate sensors and machine learning techniques to perform more and more tasks. Compared to previous types of robots, the new types are more autonomous, flexible and cooperative, capable of solving moderately complex tasks and interacting with each other as well as with human operators. Advanced robots can significantly improve the quality of parts and products and increase overall productivity.

Advanced manufacturing technologies are critical to economically sensitive manufacturing operations. Technologies such as robotics, additive manufacturing and nanotechnology are revolutionizing the way we work. However, understanding the benefits of advanced manufacturing is essential to ensuring greater control over the efficiency of the manufacturing process.

1. Increasing the level of quality.

The main advantage of advanced production technologies is improved quality. When robots and automation are added to the manufacturing process, the potential for human error is reduced. This is the main reason why factories are turning to robotics for mass production. The number of accidents, defects and, as a result, cost inefficiency decreases [4].

The move to automation frees up employees to focus on more strategic decision-making tasks. In a word, manual work is given to machines, and more intellectual work to people.

2. Productivity improvement.

Advanced manufacturing technologies can increase productivity in several ways. This allows manufacturers to scale up or down according to market demand. From small-scale production of individual products to large-scale mass production, productivity has been improved, and individual customization is also possible [3].

3. Encourage innovation.

The ability to scale production allows manufacturers to create new products in an affordable way. Small batches of personalized products can be created without affecting regular production schedules. The quality of the product remains high, but the use of raw materials is reduced and the carbon footprint is reduced.

4. Reduce production time.

Digital manufacturing uses virtualization to create digital factories that simulate manufacturing processes. Such simulations help engineers develop ideal factory layouts, production sequences and output models. Any potential obstacles can be resolved before production begins. This digitally created environment can actually be replicated in multiple locations, reducing time to market [4].

Despite all the advantages of the latest technologies, their implementation is accompanied by significant problems that must be taken into account during the implementation of digital transformation projects at the enterprise. The main problems are depicted in Figure 2.

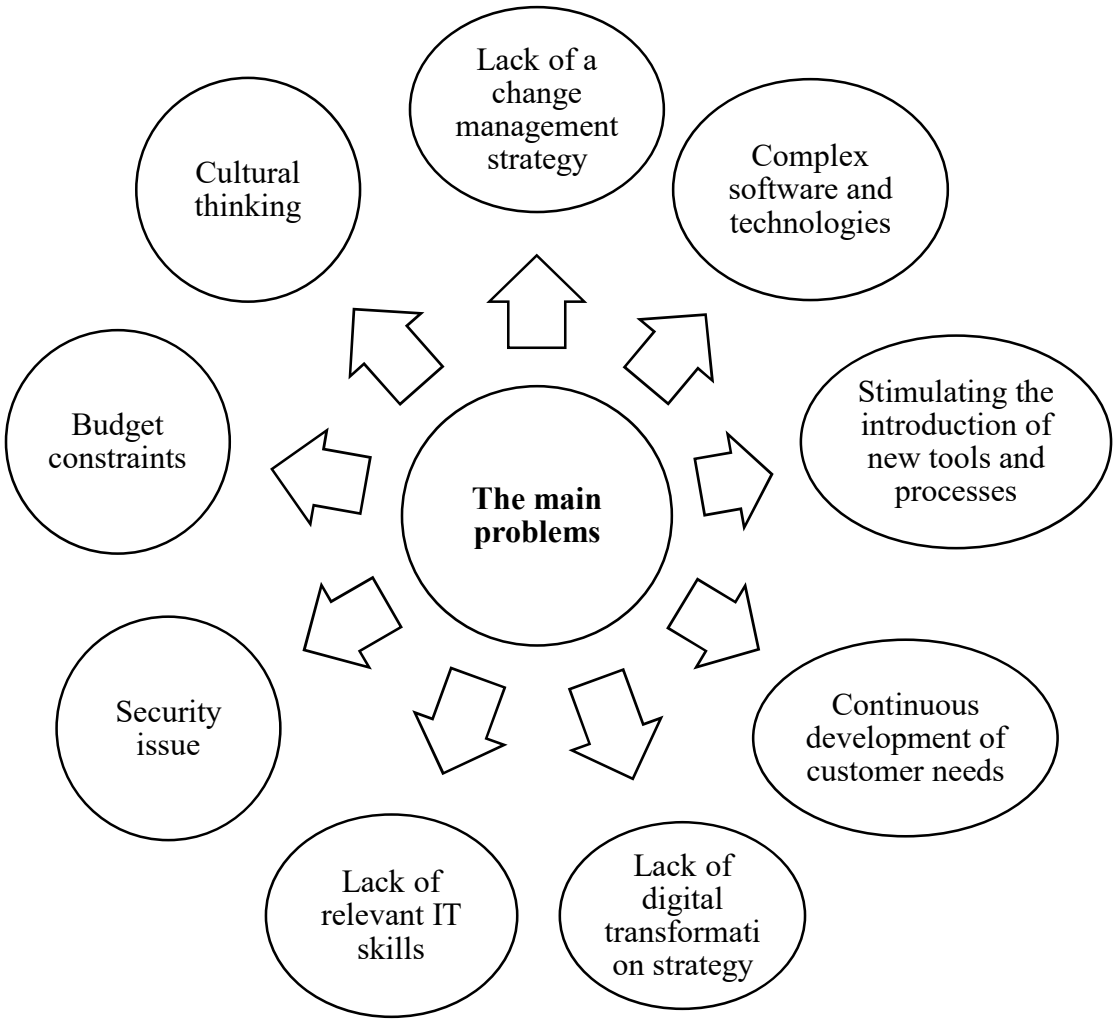

Figure 2 – The main problems of the introduction of advanced technologies

Scientists identify nine main problems of the introduction of advanced world technologies:

1. Lack of change management strategy.

Organizations with a thorough change management strategy are 6x more likely to meet or exceed their digital transformation goals. Having a strong change management culture is vital to the success of any organization. The lack of a change strategy leads to the failure of any new project or implementation plan [5].

An effective change management strategy involves project planning by identifying the root causes of problems and building relationships with all stakeholders and employees.

2. Complex software and technologies.

Enterprise software is inherently complex. New technologies can be intimidating. This is a big challenge for organizations going through digital transformation – both from the point of view of data implementation and integration, and from the point of view of interaction with the end user. Managers should consider this in the early stages of a transformation project and look for the most intuitive integrated systems [6].

3. Stimulating the introduction of new tools and processes.

New processes and technologies often cause problems in the form of resistance to change from regular employees who believe that there is nothing wrong with the way they currently work. To

implement new software, organizations must provide a comprehensive training course as well as ongoing employee productivity support to help employees quickly become productive and proficient with the tool, allowing them to understand the value of these new processes [5].

4. Continuous development of customer needs.

Organizations are constantly evolving – and COVID-19 has accelerated this. Consider what the client wants. This is changing as the world develops and industries change.

Digital transformation is not an easy project, and intensive transformation efforts can take years.

5. Lack of digital transformation strategy.

Why are you replacing legacy systems and manual processes with new digital systems? Does your organization have a plan (or need) to implement advanced and complex systems? Are you ready to properly migrate your existing systems to the new ones? [7].

All these questions should be answered before starting the digital transformation process. There is no such thing as a successful transformation project without a predetermined strategy. Don't fall for false assumptions and buzzwords. Find out where your organization can improve, what areas of the company need improvement, and start there.

6. Lack of relevant IT skills.

To succeed in your transformation efforts, you need a skilled, high-performing IT team. And this is difficult to combine, especially in the conditions of the current shortage of technical workers. According to a survey of enterprises, 54% of organizations stated that they cannot achieve their digital transformation goals due to a lack of technically skilled workers [8].

Challenges facing organizations include skills shortages in cybersecurity, application architecture, software integration, data analysis, and data migration. Organizations short of IT professionals can overcome this challenge by outsourcing this work to external consultants and digital transformation experts to help bridge the implementation and migration gap.

7. Security issues.

Many corporate organizations in data-sensitive industries are eschewing privacy and cybersecurity. And it is fair. Most digital transformation efforts involve the abandonment of local solutions for the transition to the cloud, as well as the integration of all company data into one centralized system [6].

Of course, this creates an increased threat of cyberattacks that steal customer data and company secrets. Online attacks can target system vulnerabilities, bad settings, and unsuspecting users. Make sure you have a plan to proactively mitigate these threats before they happen. Engage a cybersecurity expert to help you identify weaknesses in your defenses.

8. Budget restrictions.

Digital transformation is not a cheap investment. For organizations with a less impressive transformation strategy, changing scope can slowly shift timelines and add new work, all of which add to the cost of the project. Add in any consulting work, changes in your customers' needs, or IT errors, and the cost of digital transformation continues to rise.

Understand what your long-term goals are and what ROI you plan to achieve from the transformation process. This will help you clearly understand which expenses are unnecessary and how much you need to increase your budget.

9. Cultural thinking.

Organizations with legacy systems and manual processes often have an old-school mentality. Everything changes slowly, automation is looked down upon, and new technologies are hard to master. The huge challenge of digital transformation is cultural. Everyone - from management to new employees - must be on the same page. Everyone should be ready for big changes in their everyday life and not be afraid to learn new things [7].

Scientists highlight five strategies that businesses can implement to overcome the challenges of implementing advanced digital technologies and realize their potential with their help.

A new digital program or process won't automatically make you more efficient – you'll need to ensure that your employees or end users are properly onboarded, trained and supported to make better

use of these systems. To ensure the success of your digital transformation project, invest in a digital implementation platform (DAP- digital adoption platform).

DAPs provide organizations with code-free tools to create in-app content to deliver contextual, adaptive experiences as well as ongoing productivity support. This includes:

- Interactive walkthroughs and user flows that guide new users step-by-step through how to use various features
- Product overviews and commissioning that include pop-ups, highlighting different areas of the product and overlaying to-do lists on the user's screen
- Built-in knowledge bases that include a searchable FAQ repository on the platform and allow companies to link to other productivity resources on their Sharepoint, Google Drive, internal wiki or anywhere on the web [5].

The best digital onboarding platforms also include features that allow end users to provide feedback on training and support while using them. They also provide detailed analytics on what features are being used, what flows are most successful, areas of your new digital tools that need further explanation, what the overall level of product adoption looks like in your organization, etc. [7].

1. Create a change management team. Look at your current workforce and find those who are influential, innovative and trustworthy. Bring together a cross-functional team of these high performers to create a team of change leaders. This team will help create a vision for the digital transformation process that aligns with business goals and is created by those connected to the inner workings of your organization[6]. This enables organizations to proactively approach digital transformation initiatives that focus on the human side of change.

2. Hire a digital transformation consultant. Every change is not digital transformation – digital transformation is a complete overhaul of core processes, tools and experiences. Most organizations have never gone through a full transformation process like these, and it is a daunting challenge for organizations that may feel intimidated by this scale [7]. Hiring a digital transformation consultant gives you the comfort of professionals who have done it before and know what they're doing. They will give you the structure and foundation to succeed, and the track record to prove it.

3. Align business goals with digital transformation strategy. What are the reasons for the digital transformation of your organization? It should be front and center of everything you work on when implementing new processes. Understand your customers' needs and the pain points and friction areas in your offerings, products and services. Analyze current processes to identify legacy systems that require infrastructure improvements [3]. Ultimately, your transformation process should be directly aligned with your core business goals. This should help employees perform their roles better, improve customer interactions with more intuitive systems that solve more customer problems, and increase revenue for our organization.

4. Be flexible. At the heart of digital transformation projects is a sense of organizational vulnerability. Leaders recognize that adapting and competing in a global digital world requires innovation and change. But technology changes rapidly and continues to develop faster than most imagine [7].

Being nimble means not being afraid to turn. This means seizing opportunities when they arise. The very fact that you're going through digital transformation is already a testament to your flexibility, but rely on it. Don't be afraid of new processes and tools or changing traditional practices to new ones.

Conclusions. Ukraine is increasingly integrated into the world economy, enterprises face major competitors with financial potential, technologies and modern management skills. In order to quickly adapt to new conditions, Ukrainian enterprises need to constantly introduce innovations in technology and equipment, apply modern management systems, innovative tools and advanced business models in order to quickly adapt to new conditions, increase production and business efficiency.

An important point is to support the business in implementing solutions to improve productivity and quality. Not stopping at what has been achieved or effective models in terms of productivity and quality improvement, improvement support projects have contributed to improving the ability to independently implement improvement measures in enterprises. The introduction of advanced global

technologies not only marks the beginning of the fourth industrialization, but also allows us to continue working even in such difficult situations as COVID-19 and war. With the help of advanced technologies, businesses continue their activities in the most difficult conditions.

A business that wants to survive and develop must develop a plan for the introduction of advanced global technologies. Scientific and technical progress, technological innovations, digitization will allow to switch to alternative options for conducting business, which is very important in modern conditions, to increase the number of customers, to improve the quality of products, to diversify products, to increase production, to increase labor productivity, to use working time rationally and economically . This will increase competitiveness, expand sales markets, promote rapid growth and increase business efficiency.

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ПРОБЛЕМИ ВПРОВАДЖЕННЯ ПЕРЕДОВИХ ГЛОБАЛЬНИХ ТЕХНОЛОГІЙ В УМОВАХ ЦИФРОВОГО БІЗНЕСУ

Проблема. *Передові світові технології стрімко розвиваються. Вони впливають на кожну галузь, змінюючи спосіб роботи фірм у глобальній економіці. Впровадження передових технологій пов'язане з ширшим доступом до міжнародних ринків і підвищенням міжнародного визнання можливостей. Передові технології відіграють усе більшу роль у веденні бізнесу, сприяючи забезпеченню його доступності та відкритості, покращенню якості роботи, висуваючи підвищені вимоги до цифрової компетентності співробітників.*

Мета *– виявлення проблем впровадження передових світових технологій в умовах цифрового бізнесу.*

Результати. *У статті розглядаються дев'ять основних передових глобальних технологій, таких як аналітика великих даних, Інтернет речей (IoT), 3D-друк, автономні роботи, доповнена реальність, віртуальна реальність, хмарні обчислення, кібербезпека, моделювання та блокчейн. Вони поступово змінюють спосіб ведення бізнесу транснаціональними компаніями. Вивчається вплив передових світових технологій: як вони впливають на бізнес і як вони працюють. Висвітлено переваги передових світових технологій при їх використанні в бізнесі. Розглянуто основні проблеми впровадження передових світових технологій в умовах цифрового бізнесу. Сформовано стратегії подолання проблем впровадження передових технологій в умовах цифрового бізнесу. Висвітлено чинники використання підприємствами передових світових технологій та ймовірні результати їх використання. Незважаючи на всі переваги новітніх технологій, їх впровадження супроводжується суттєвими проблемами, які необхідно враховувати під час реалізації проектів цифрової трансформації на підприємстві.*

Наукова новизна. *Визначено переваги, які надають передові світові технології при їх використанні в бізнесі. Визначено основні проблеми впровадження передових світових технологій в умовах цифрового бізнесу. Сформульовано стратегії подолання проблем впровадження передових технологій в умовах цифрового бізнесу.*

Висновки. *Впровадження передових світових технологій не тільки знаменує початок четвертої індустріалізації, а й дозволяє нам продовжувати працювати навіть у таких складних ситуаціях, як COVID-19 і війна. Бізнес розвивається і розробляє план впровадження передових світових технологій. Науково-технічний прогрес, технологічні інновації, цифровізація дозволять перейти до альтернативних варіантів ведення бізнесу, що дуже важливо в сучасних умовах, збільшити кількість клієнтів, підвищити якість продукції, диверсифікувати продукцію, збільшити виробництво, підвищувати продуктивність праці, раціонально й економно використовувати робочий час.*

Ключові слова*: аналітика великих даних, Інтернет речей (IoT), 3D-друк, автономні роботи, доповнена та віртуальна реальність, хмарні обчислення, кібербезпека, моделювання та блокчейн, COVID-19, війна, Індустрія 4.0.*

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