ТЕНДЕНЦІЇ ВІДОЗМІНИ УРЕЧЕВЛЕНОЇ ПРАЦІ ПІД ВПЛИВОМ ЦИФРОВІЗАЦІЇ ЕКОНОМІКИ ТА ФАКТОРИ, ЩО НА НЕЙ ВПЛИВАЮТЬ

Актуальність. Дослідники все частіше характеризують економіку розвинутих країн як індустріальну, а сучасний етап її розвитку називають нової індустріалізацією. Водночас нову індустріалізацію розглядають як необхідну модель розвитку, яка є важливою для трансформації економіки України. Суть нової індустріалізації пов’язують з процесами суттєвих та радикальних змін у продуктивних силах, які набули прискорення протягом останнього десятиліття.

Один з ключових аспектів розвитку продуктивних сил – це радикальна зміна технологій. Цей процес вимагає великих ресурсів, які вкладаються у фундаментальну і прикладну науку, а також значних інвестицій у новий основний капітал. У конкурентній боротьбі перемагають ті виробники, економіки та країни, які успішно адаптують нові науково-технічні досягнення у свої бізнес-процеси.

Мета та завдання. Дослідити тенденції видозміни уречевленої праці під впливом цифровізації економіки та виокремити фактори, що на неї впливають.

Матеріали та методи. Результати аналізу і теоретичного узагальнення розробок, наукових підходів до аналізу тенденцій видозміни уречевленої праці під впливом цифровізації економіки, що висвітлені в публікаціях фундаментального, аналітичного та практичного характеру, а також офіційних статистичних даних, а також документальні матеріали Кабінету міністрів України, Центру економічного розвитку, звіти McKinsey&Company, UNIDO та Robo Advisor Statistics формують матеріальну та методичну базу дослідження. Дослідження тенденцій видозміни уречевленої праці під впливом цифровізації економіки та факторів впливу здійснено з використанням методів наукового абстрагування, аналізу та синтезу.

Результати. На основі використання методу наукової абстракції (діалектичного матеріалізму), аналізу та синтезу досліджено та систематизовано тенденції видозміни уречевленої праці під впливом цифровізації економіки та факторів впливу, а саме: здійснено дослідження автоматизації та роботизації підприємств; розглянуто поява цифрових засобів в виробництві та вплив Інтернету речей; проаналізовано зміну структури відтворення під впливом цифровізації виробництва; розглянути поява глобальних цифрових платформ та створення ланцюжків до даної вартості; досліджено переход від праці до капіталу та зростання органічної будови капіталу.

Висновки. В сучасному світі формується система розширеного відтворення високих технологій, яка базується на автоматизованих, роботизованих та безвідхідних виробництвах. Тому ефективним шляхом вирішення соціально-економічних проблем в Україні є створення системи розширеного відтворення неоіндустріального типу. Ця система має на меті відтворення загальнонаціонального високотехнологічного промислового капіталу – як державного, так і приватного. Кожен з цих капіталів має свою функцію в національній економіці. Державний капітал повинен діяти там, де приватний капітал не може покрити соціальні витрати, що фінансуються за рахунок податків інших членів суспільства. Замість того, щоб входити в існуючі міжгалузеві ланцюжки доданої вартості, необхідно створювати власні ланцюжки, які можуть інтегруватися в національні та транснаціональні корпорації. Максимізація доданої вартості означатиме зростання її основних складових – заробітної плати, доходів держави та капітальних інвестицій. Це сприятиме збільшенню загального кінцевого попиту і його компонентів – доходів працівників, доходів держави і внутрішнього фонду нагромадження. Основними продуктами нової індустріалізації є автоматизовані, роботизовані, цифрові, енергоефективні та когнітивні технології та робочі місця. Саме виробництво цих високотехнологічних продуктів може стати основою стратегії національного відродження країни.

Ключові слова: уречевлена праця, цифровізація економіки, тенденції, бізнес-процеси, фактори впливу.

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THE TENDENCIES OF OBJECTIFIED LABOR UNDER THE INFLUENCE OF THE DIGITALIZATION OF THE ECONOMY AND FACTORS AFFECTING IT

Topicality. Researchers increasingly define the economy of developed countries as industrial, and the current stage of its development is characterized as new industrialization. At the same time, new industrialization is defined as a necessary development model for the transformational economy of Ukraine. The meaning of the new industrialization is associated with the processes of significant, radical changes in the productive forces, which accelerated in the last decade. Among the features that characterize the development of productive forces, the main one is considered a radical change in technology. Such a change requires first significant resources invested in basic and applied science, and then huge investments in new fixed capital. Those manufacturers, economies and countries that manage to adapt new achievements of scientific and technological progress to their business processes in a timely manner will win in the competition.

Aim and tasks. To study the trends of changes in embodied labor under the influence of the digitalization of the economy and to single out the factors affecting it.

Materials and Methods. The results of the analysis and theoretical generalization of developments, scientific approaches to the analysis of trends in changes in embodied labor under the influence of digitalization of the economy, which are covered in publications of a fundamental, analytical, and practical nature, as well as official statistical data, analytical materials of the Cabinet of Ministers of Ukraine, the Center for Economic Development, McKinsey&Company reports, UNIDO and Robo Advisor Statistics form the material and methodological basis of the research. The study of trends in changes in embodied labor under the influence of digitalization of the economy and influencing factors was carried out using methods of scientific abstraction, analysis and synthesis.

Research results. On the basis of the use of the method of scientific abstraction (dialectical materialism), analysis and synthesis, the trends of changes in embodied labor under the influence of the digitalization of the economy and influencing factors were studied and systematized, namely: the study of automation and robotization of enterprises was carried out; the emergence of digital means in production and the impact of the Internet of Things are considered; the change in the structure of reproduction under the influence of digitalization of production; the emergence of global digital platforms and the creation of value-added chains are considered; the transition from labor to capital and the growth of the organic structure of capital are investigated.

Conclusion. Today, a system of advanced reproduction of high technologies is being formed in the world, the basis of which are automated, robotic, waste-free and unmanned productions. Therefore, a practical way to solve the problems of socio-economic development in Ukraine is the formation of a system of extended reproduction of the neo-industrial type. The immediate object that it must reproduce will be the combined high-tech national industrial capital - state and private. Each of these capitals must fulfill its role in the national economy. Public capital must function where private capital is unable to shoulder the social costs paid for by taxpayers and other members of society. Instead of fitting into other people's inter-industry chains of added value, it is necessary to form our own, which are able to integrate into national and transnational corporations. Maximization of added value will mean that its main elements - wages, state budget revenues and capital investments - will increase. Aggregate final demand and its components - the incomes of employees and the state and the internal accumulation fund - will grow. The basic products of the new industrialization are automated, robotic, digital energy-saving, cognitive technologies and workplaces. The production of these high-tech products can be the basis of the country's national revival strategy.

Keywords: objectified labor, digitalization of the economy, trends, business processes and influencing factors.

Problem statement and its connection with important scientific and practical tasks. The turbulent development of digital technologies is a sign of the present new stage of the industrial revolution, which changes the practice, the life of the people that endow them with new powers and abilities, significantly increasing their productivity. Large-scale implementation of such technologies creates a friendly change of mind for high-profile automation processes and robotic manufacturing. As a rule, it is natural to recognize the fundamental changes in the development of practice under the influence of the digital revolution, even if the appearance of electronic productive forces will inevitably change the nature and the content of social industrial relations.

Analysis of recent publications on the problem. Starting with the works of the classics – A. Smith and D. Ricardo, the problems of the dependence of the development of certain types of economic activity and economic growth have always been at the center of the interests of economic science. Attempts to explain the transformation of economic and social structures were made by foreign scientists: D. Bell, J.K. Galbraith, P. Drucker, K. Clark, S. Kuznets, M. Porat, W. Rostow, A. Toffler, A. Turren. Among Ukrainian researchers, the following are

Allocation of previously unsolved parts of the general problem. Today, there is a powerful and dynamic process of transformation of the modern world under the influence of information and communication technologies. The development of the Internet and other information and communication technologies, stable communication channels, cloud technologies and digital platforms, as well as the information "explosion" – all this contributed to the emergence of open information systems and global industrial networks that go beyond the boundaries of a single enterprise and interact with each other. Such systems and networks had a transformative impact on all sectors of modern society, economy and business and fundamentally transformed the vector of development of the basic component of today's economy – industrial automation. Humanity is on the threshold of a technological revolution that will fundamentally change the conditions of its existence. The speed with which new discoveries are made and technological breakthroughs occur has no historical precedent. Almost all sectors of the economy are being reformed in almost every country, and the breadth and depth of the changes themselves lead to the transformation of entire systems of production, administration and management. In terms of scale, scope and complexity, the transformation itself will be completely unlike anything humanity has experienced before.

A feature of the technological breakthrough in the XXI century there is rapid progress, which is not taking place in any one local field of science and technology, but is a convergence and hybrid-technological clustering in almost all areas of scientific, technical and technological development. Therefore, it is necessary to define approaches to the implementation of digital transformation of markets and sectors of the economy; formation of conditions for the creation, development and dynamic development of the infrastructure of the digital economy, which will ensure the collection, storage, processing and transmission of data; formation of research and technical potential for the development of the digital economy and the creation of a single digital space.

Revolutionary processes "hit" the market, giving rise to fundamentally new segments, participants and forms of their interaction, forming other strategic solutions and innovative business models of operation. The global nature of changes raises the question of vision of the future. Such problems are especially relevant for industrial areas and industrial enterprises in the B2B market, which work in conditions of business globalization and increased competition, a high degree of uncertainty, rapid informatization and internetization of production and commercial processes, new challenges and the need to overcome them. The emergence of this phenomenon requires the understanding of new opportunities and new dangers both for an individual, for production, for the global market, and for society as a whole. It is necessary to develop progressive competitive business strategies for functioning in the global market, use of innovative technologies in the creation, distribution and promotion of avant-garde ideas, goods and services.

Formulation of research objectives (problem statement). To analyze the trends in the modification of embodied labor under the influence of the digitalization of the economy and the factors affecting it.

Materials and Methods. The results of the analysis and theoretical generalization of developments, scientific approaches to the analysis of trends in changes in embodied labor under the influence of digitalization of the economy, which are covered in publications of a fundamental, analytical, and practical nature, as well as official statistical data, analytical materials of the Cabinet of Ministers of Ukraine, the Center for Economic Development, McKinsey&Company reports, UNIDO and Robo Advisor Statistics form the material and methodological basis of the research. The study of trends in changes in embodied labor under the influence of digitalization of the economy and influencing factors was carried out using methods of scientific abstraction, analysis and synthesis.

An outline of the main results and their justification. Having analyzed the structural changes of embodied labor under the influence of digitalization of the economy, the following trends and influencing factors can be identified:

**Trend 1. Automation and robotization of production**, resulting in the formation of a new stage of automation and a new field of robotization. Within the framework of this trend, the following influencing factors can be identified:
1.1. Development and introduction of artificial intelligence. According to PWC forecasts, artificial intelligence will increase the world GDP in 2030 by 15.7 trillion dollars (Ukrainian Institute of the Future). Breakthrough technologies, in particular artificial intelligence (AI), will be able to solve many social problems that are related to the satisfaction of basic human needs. The purchasing power of the population will increase. New segments related to creative realization, leisure of people will be created, new types of demand for non-typical goods, and services will appear. Over the past two years, Canada, Japan, Singapore, China, the UAE, Finland, Denmark, France, Great Britain, the EU Commission, South Korea and India have implemented strategies aimed at promoting the development of artificial intelligence. No two strategies are alike, each focusing on different aspects of AI, including research, talent and skills development, learning, public and private sector adaptation, ethics and inclusion, standards and regulatory requirements, and data and digital infrastructure. If robots will perform all routine work, people will be involved in sectors where higher added value is created (Lyubokhinets, L.S., 2019).

According to research, by 2024, artificial intelligence will have a higher level of ability than foreign language translators will; by 2026, artificial intelligence will be able to independently create written works for schoolchildren; and by 2027 artificial intelligence will be able to drive a truck by itself (Cheryomukha, O.K., 2021).

1.2. Overcoming a person's physical capabilities. A new era of automation is emerging, as evidenced by the latest advances in the field of robotics, artificial intelligence, and machine learning; many machines already match human capabilities or exceed them in various types of work.

According to McKinsey Global Institute's estimates, "between 400 and 800 million people could be made redundant by automation and need new jobs by 2030 worldwide", i.e. between 15 and 30% of the global workforce under the medium and fastest scenarios of society's automation and economies, which would require "between 75 and 375 million … to move into other occupational categories and acquire new skills" or between 3 and 14% of the global workforce.

According to a study by the European Commission, about 50% of current jobs worldwide can theoretically be automated, and in the EU, 37 to 69% of jobs may be partially automated in the future. Already today, about 14% of jobs in OECD countries are automated, and another 32% of jobs will require changes (European Commission).

The results of the study, presented in the report "World Development Report: Digital Dividends", show that the digitalization of the world brings with it the creation of new jobs, so in the US, each high-tech job creates 4.9 additional jobs in other fields. In China, the e-commerce sector created 10 million jobs in online stores and related services, which is about 1.3% of the country's employment (World Bank, 2020). The Internet creates 3.1 jobs for everyone it destroys, and the effect will be even greater in the future: 3.2 new jobs in developing countries and 1.6 new jobs in developed countries (McKinsey & Company, 2018). In the future, machines focused on processing and searching for data will become more common. To maintain their comparative advantages, people need to learn how to manage, counsel, make decisions, reason, communicate, and interact.

1.3. Optimization of material and technical processes. A manifestation of the development of the latest technologies is an avalanche-like increase in the number of interactive interactions. In a study conducted by Seagate and IDC, it is noted that in 2016, the volume of data was measured at 16 GB, and by 2025, this figure will increase to 163 GB. Companies will generate approximately 60% of this information in the world. Thanks to the concentration of a huge amount of data, managers of organizations will have many useful opportunities for business growth and expansion (Data Age, 2021).

IDC expects that by 2025, about 20% of all information in the global infosphere will play a critical role in everyday life, and about 10% of this data will be "ultra-critical". In addition, it is predicted that in 2025, almost 20% of the generated data will be real-time information. At the same time, most of the information (95%) will come to the Internet of Things (Kolomiets, G.M., 2017). Initially, digital technologies had limited use. Gradually improving, they became the basis for achieving strategic goals. In modern conditions, they have become a factor in the emergence of new business models. However, the existing types of activities are at different stages of transformation caused by digital technologies. Analysts estimate that every dollar invested in infrastructure will bring an additional $5 to GDP by 2025 (2016 - $3, 2020 - $3.7).

The digital economy also enables companies to eliminate unnecessary intermediaries or channels and create more direct buyer-seller relationships. A simplified ecosystem has less friction and
lowers the barrier to entry for players elsewhere in the value chain. We can consider the following three directions in which new digital technologies can be used:

- Finding customers: Firms can use digital information and social media to engage their customers in new ways. For example, they can create digital user communities to provide added value.
- Operational processes: digital technologies enable great results in operational activities at all stages of the value chain.
- Business models: digital transformation enables the development of completely new forms of value creation and extraction.

The consequences of digital transformation in business models are diverse. For example, digital technologies make it possible to reorient the boundaries of firms to more global levels. Common digital business models tend to lead to a higher level of interaction between different actors. Such businesses tend to compete on a larger scale than traditional businesses due to low geographic boundaries and resource requirements for customer satisfaction. Because search and communication costs have fallen significantly, operating costs tend to be much lower than for traditional businesses. Internet technologies have increased the level of competition, reduced entry barriers, led to more substitute goods, and increased consumer power. Consequently, opportunities for profit have decreased in most industries. In addition, as a result, digital enterprises stimulate the economic development of the environment, which is often characterized by dynamic competition and high consumer surplus (Chmeruk, H.G. et al., 2018).

1.4. The emergence of self-driving machines and automatic adjustment of production. In the future, plants and factories will be able to improve and modernize independently, that is, without or with minimal human involvement. Business processes, logistics, production cycles will be constantly optimized offline. Predictive analytics will play a significant role in this process, namely: based on the analysis of large volumes of data, it will be possible to predict the probability of failure of a system element or an entire device, and replace the component even before it completely fails. An example of such a smart factory already exists - this is Siemens Electronic Works in Amber (Germany), where human participation is minimized, since the "smart system" implemented in production independently monitors the functioning of its 1.6 billion components, sets production standards and manages logistics streams (Grazhewska, N.I., 2021).

In modern conditions, the creation of "smart" control systems, which not only take on the function of optimization in space and time of production processes, but also serve as an integrating principle that unites the activities of many economic units, is becoming a reality. In particular, "smart" Internet systems successfully solve the problems of logistics of production enterprises, including the task of finding optimal suppliers of resources, optimizing their delivery routes, etc. Similar systems are already available to users in many countries, including Ukraine. For example, the existing transport management system (Google-transport) can not only calculate the most efficient route for the delivery of goods to a certain destination, but also pick up the goods on the return journey.

1.5. Implementation of automatic control over equipment, product quality and personnel. Based on the industrial Internet of Things, a secure computer network is created at smart enterprises, which provides:

- smart technical preparation of production: optimization of material and technical flows, continuous remote control of warehouse equipment, condition of tools and use of machines;
- automatic adjustment of the equipment: automatic recognition and adjustment of equipment depending on the manufactured products and external conditions;
- functioning of self-driving vehicles: justification of intra-enterprise transport priorities and optimization of routes;
- smart maintenance and repair: continuous sensor monitoring of the state of machines and equipment, forecasting of their maintenance needs, reduction of unplanned downtime;
- automatic control of product quality: automatic verification of conformity of the parameters of manufactured products with established requirements;
- personnel health and safety control: continuous sensor monitoring, preventive notification and regulation of hazards to personnel (Burkynskyi, B.V. et al., 2020).

Trend 2. The emergence of digital means of production and the Internet of Things, that is, the emergence of electronic productive forces that will inevitably change the nature and content of social industrial relations. Within the framework of this trend, the following influencing factors can be identified:

2.1. The emergence of new electronic
productive forces, which are the basis of the formation of a new economic system. Over the past 20 years, the number of Internet users has exceeded 50% of the entire population of the Earth. If we take into account that such categories as children, the disabled, the poor, and the elderly mostly do not have access to it, then in fact the penetration of information and communication technologies is much larger and more dynamic. Unfortunately, the countries of North America and Europe have almost exhausted their penetration potential, while the countries of Asia and Africa will increase their presence on the Internet in the future, so they have opportunities to expand their influence in the global virtual space. Yes, the largest emerging e-commerce market is India, although internet penetration there is currently just over 10%. However, countries that have closed the digital access gap often face a new opportunity gap.

The second example of the dynamics of modern processes of forming the digital economy is the rapid development of "e-commerce". In 2020, the total volume of sales of online stores around the world reached the mark of 2774 trillion dollars China accounts for almost half of all e-commerce sales – 47%. In monetary terms, this is about 900 billion dollars. As such, it ranks first in the world in terms of online sales, overtaking the US. The second largest regional market in the e-commerce industry is North America. By 2025, the total volume of sales in Internet trade in the world should double (Worldwide Retail and Ecommerce Sales).

2.2. Transferring market relations to virtual space. The Internet of Things connects the virtual world and various physical objects of the real world (home appliances, industrial equipment, machines) that are equipped with built-in digital technologies for interaction both with each other in the M2M format (machine-to-machine communication) and with the external environment, as well as those capable of adjusting and restructuring economic and social processes without human participation. Communication between objects of the virtual and real worlds is carried out through numerous sensors with the help of data exchange, analysis and processing, which allow making appropriate decisions both with and without human participation.

Unlike the classic Internet, which provides communication links between people, the Internet of Things provides machine-to-machine communication in the M2M format between non-living things, as well as between the non-living and living worlds, between things and humans, informing the latter about what is happening, for example, in a room, apartment, house, factory, warehouse, open area and taking appropriate decisions from a person in the form of signals to correct the situation. Virtual robots started a new direction – the robotic Internet of Things, that is, a computing network of physical objects with built-in technologies for interaction with each other in the format of transmitting and receiving specific information using sensors, barcodes and QR codes. In the conditions of the digital economy, transactions are carried out electronically, which leads to the creation of virtual relationships between business partners and other entities of the virtual market within the framework of B2B (Business-To-Business”), B2C (Business-To-Consumer) business models and B2G (Business-To-Government). Thus, the annual turnover of "B2C" e-commerce in the world is 1.4 trillion dollars; e-commerce between companies reaches 16 trillion dollars.

In the end, automation of things takes place: "smart" heating plants regulate the temperature, supply water to batteries taking into account the temperature of the surrounding air; "smart" curtains regulate transparency taking into account the level of the outside world and the required lighting in the room. The Internet of Things is one of the components of the infrastructure of "smart" industries, a "smart" house, and a "smart" city (Pucenteilo, P.R., 2018).

That is, the process of merging real and virtual markets is taking place. A new global dual real-virtual market is being formed, which means a self-organized economic system formed by the intersection and co-existence of various economic subsystems – real and virtual, which mutually influence each other, but do not change their structure. Consequently, the traditional and new virtual economy interpenetrate, as most of the participants in the interaction are represented and simultaneously conduct economic activity in both real and virtual spaces. Recently, the majority of large industrial enterprises have been operating in conditions of "flowing" of economic activity processes from the real market to the virtual one, and vice versa. In addition, on this basis, new specific market participants are formed and actively influence many processes – so-called "virtual enterprises", whose main activity takes place in a virtual environment. The specific features of the new market form fundamentally new processes of innovation diffusion, a new economic landscape, in which the "peaks" of economic potential are innovative points of space (Litovchenko, I.L., 2020).
2.3. Changing the structure of reproduction under the influence of the digitalization of the economy. Using the latest technologies, digitalization changes the picture of competition and blurs the existing boundaries of economic sectors. The transition to the digital paradigm today is dictated by digital leaders – Google, Apple, Facebook and Amazon – and, accordingly, its significance is determined by the level of expectations of "customers of the new digital generation", who are accustomed not only to the constant availability of services, but also to the high speed of their delivery (receiving). Therefore, the efforts of IT companies, hardware and software suppliers, as well as innovative startups are aimed primarily at changing the form in which existing products and services are offered to customers. Because customers quickly get used to the level of digital service, solutions are offered that better meet their needs, increase accessibility, provide ease of use and personalize services, taking into account the individual characteristics of the consumer and his interests.

Thanks to the development of science, the introduction of modern technical thought, the purchase of licenses for inventions, new opportunities appear in the economy, in particular in production. There is a need to use more efficient and cost-effective technologies that reduce labor costs for production. Scientific achievements and new technical ideas, after being used in the production process, change the structure of the economy. With the appearance of new types of products, technological progress forces the modernization of products that have been produced for a long time. In addition to the direct influence, there is also an indirect influence of scientific and technological factors, for example, by creating opportunities for the effective use of new materials (raw materials), changing the structure of fixed assets and the production management system etc.

However, not only technical progress forms structural changes in the economy, but also the structure of the economy creates incentives for its acceleration. This especially applies to industries that are carriers of technical progress. In addition, the set of production methods that are used or can be used in the economy is the result of existing knowledge and technologies used in the economy, as well as technical ideas that come from other countries (Pelekh, O.B., 2018).

Qualitatively new digital elements of productive forces and new socio-economic relations are changing the structure of social reproduction, increasing the space and boundaries of the economy. The growth of labor activity in the creative sphere means that the production of knowledge, that is, science, becomes a component of social reproduction. In other words, in addition to the two traditional divisions of social reproduction (production of investment goods and consumer goods), a third division appears – the production of knowledge. Thus, in highly developed countries, the modern economy is an economy of a mixed market type. Its technical basis is heterogeneous. The dominance of the industrial segment is combined with digital technologies.

Trend 3. Big Data is a new generation of technologies and architectures designed to obtain economic benefits from very large volumes of a wide range of information through high-speed capture, retrieval and/or analysis. Within the framework of this trend, the following influencing factors can be identified:

3.1. Optimization of operations and product flows at the enterprise. The appearance of digital copies of things and processes, which require almost no costs, are instantly moved to any point on the planet and accurately reproduce the original. This makes it possible to create abundance where there was a shortage, not only for consumer goods, but also for means of production (Burkinsky, B.V. et al., 2020).

The use of such a toolkit allows you to dive more deeply into information flows in real time: firstly, it allows you to identify and optimize technological operations, maintenance according to the actual state of the object, create reserves and accelerate the design and manufacture of high-quality equipment with zero devices; secondly, there is an optimization of commodity flows, the creation of conditions for increasing the availability of products or raw materials without the need to form stocks.

Increasingly, Big Data is becoming a commercial and strategic planning tool. As the business landscape becomes more competitive, companies can no longer afford inefficiencies that cost them time and money. Data-driven digital transformation enables organizations, especially those with high asset value, to improve operational efficiency. Thus, aircraft and production equipment are now equipped with sensors that measure their operational characteristics. This enables airlines to develop preventive maintenance plans and extend the life of their aircraft.

Today, data analytics is most widely used in the areas of customer service and internal operational efficiency. So, Big data technologies
are being actively implemented in such companies as Nasdaq, Facebook, Google, IBM, VISA, Master Card, Bank of America, HSBC, AT&T, Coca Cola, Starbucks and Netflix. However, according to consulting firm McKinsey, the use of Big Data in the banking sector can facilitate better cross-selling, personalized product development, dynamic pricing, better risk assessment and marketing that is more effective. Companies like Netflix and Procter&Gamble use Big Data to predict customer demand. They classify the main properties of previous and current products, model the relationship between these properties and commercial success, and thus build predictive models for new products and services (Statista, 2021).

3.2. Formation of "e-infrastructure" - innovative acquisition and storage of data for the purpose of their further analysis. The application of "cloud technologies", which provides the possibility of remote access to computer facilities for computing operations and data storage. Thanks to this, resources are saved on the creation and maintenance of the infrastructure and its maintenance due to the reduction of equipment costs because of the use of external computer capacities combined in the "cloud".

Clients of such companies are both large corporations and small enterprises. According to statistics portal Statista, the Big Data market (sales of commercial technologies, equipment, software and services related to the acquisition, processing, etc. of Big Data) will exceed $100 billion in 2027.

Trend 4. Emergence of global digital platforms – a group of technologies used as a basis for creating a specified and specialized system of digital interaction, a high-tech business model that creates value by facilitating exchanges between two or more interdependent groups of participants. Within the framework of this trend, the following influencing factors can be identified:

4.1. Formation of chains of added value. Currently, the relations of domination and subordination that have developed between the center and the periphery are clearly manifested in such an economic phenomenon as global production networks, which are based on global chains of added value. In economic practice, this manifests itself in the form of the division by transnational corporations (TNCs) of production activity into links of different technological levels and with different amounts of added value. In developed countries, TNCs concentrate knowledge-intensive types of production with high added value, while labor-intensive operations (own production) are transferred to countries with low wages. Under such economic conditions, patent rights limit the distribution of digital technologies beyond the borders of TNCs, first. Modern TNCs use the cheap labor force of the periphery, thereby reducing the cost of the final product.

In the countries of "peripheral capitalism", which are characterized by the free transfer of part of the income to the countries of the capitalist center, the spread of digital technologies is possible with the growing demand of national business for investment projects that will be able to bring income based on the growth of labor productivity. Therefore, as long as business focuses on obtaining short-term rental income, as it happens now, it will continue to have a low level of use of digital innovations and deindustrialization of production. However, the desire for a continuous process of renewal of production due to innovations is immanent for the development of capitalism. According to experts, increasing the share of local production as a condition for the introduction of new technologies will become a trend of economic development for many countries in the next 10 years (Zveryakov, M.I., 2020; Tarasevich, V.M., 2022).

4.2. A monopoly resource is created, which gives rent-premium income. Digitization creates digital rent, deepening inequality and socializing the problem of poverty, because as a result of the processing of large amounts of data, those in whose interests they are processed win in advance, and the interests of those who lose are neglected. Digital annuity is nothing but an annuity that allows you to receive income due to the position you occupy in the digital space. The income received in addition to the basic income in a society that functions based on information and networks can be called rent-premium. It always exceeds the basic guaranteed income, which is normal and is appropriated based on the use of the resource that distinguishes the subject from others and gives him advantages. The source of rental income is always a value that exceeds normal income and is appropriated because of monopoly ownership of a resource. In the conditions of the information and network economy, rent-premium income is formed at the expense of the value that remained after providing the basic income of all members of society. The formal basis of its appropriation is ownership of a monopoly resource. Rent-premium income can take the form of intellectual, innovative, qualification rent, rent based on location, etc.

4.3. The spread of global inequality and disproportionality. In the modern world, digital
platforms of a global nature are being formed, which increasingly monopolize the modern information space, using it both for enrichment and for political purposes. Access to these technologies and corresponding platforms is far from equal. Platform companies are “...kind of natural monopolies, when the winner takes all... And they have captured the world market, which creates obvious imbalances in the world economy and trade. The tension in the global economy caused by platform companies will continue to cause conflicts between national antitrust authorities and platform companies, as well as between those countries in which the platform companies are based and the rest” (Heyets, V.M., 2022). In turn, this deepens and threatens to deepen inequality at both global and national levels. Unevenness, disproportionality in development between countries in the conditions of global platformization was exacerbated by migration with all its challenges and risks for both donor countries and recipient countries of migration flows.

**Trend 5. There is a transition from labor to capital.** Within the framework of this trend, the following influencing factors can be identified:

5.1. **Increase in the share of capital in gross added value.** The global trend of the economy today is neo-industrialization – the priority development of modern material production, its qualitative renewal based on high technologies. The main goal is to restore the role and place of industry in the economy as part of its structural restructuring as a basic component. Because of such transformations, the cost of transport and communications will decrease; the efficiency of logistics and global networks will increase, and the cost of trade will decrease. All this will open new markets.

5.2. **The growth of the organic structure of capital, which is manifested in the increase in the technology of production.** Technological changes ensure dynamic growth of the economy, development of the business environment and entrepreneurial activity; increase the level of competitiveness of both firms and the country as a whole, which, in turn, leads to an influx of new investments.

Compliance with the principle of technological determinism in economic practice leads to two most important consequences. First, it is the action of the tendency to increase the technical structure of capital, which is manifested in the growing technological efficiency of production. Moreover, in crisis periods, which regularly occur, the removal of obsolete capital and its renewal on a new technological basis are a tried and tested method of overcoming the crisis phase of the industrial cycle. That is why with each subsequent stage the world becomes technological, and this process continues, covering more and more new spheres of human activity on the way to an industrial-digital society. Secondly, it is the approval of an innovative model of economic development for the entire market economy. It is with high innovative activity that the possibility of ensuring the appropriate level of competitiveness is now associated, because thanks to it, companies get the opportunity to maintain and even strengthen their positions in the market, while receiving high profits. Innovation serves as a way to increase profits with capital. For this, new products are needed, as well as demand, which is created through its purposeful formation (Ukrainian, L.O., 2020).

5.3. **Aggravation of problems in the field of employment.** Automation of production will displace low-skilled workers who perform simple, repetitive tasks and personnel capable of creatively performing functions in the field of software development and IT technologies, maintenance, control and further improvement of production cyber-physical systems will be in high demand. , having, in addition to technical skills, important non-technical competencies, namely: knowledge of the English language, project management skills, ability to work in a team, etc.

5.4. **Income differentiation and emergence of non-technical competences.** Inequality in wealth, income and power is increasing, as the economic dividends of automation will flow to the owners of technology, business, and highly skilled labor. Deepening of the social polarization of society, narrowing of the sphere of formation and implementation of the middle class, blocking of social elevators and regressive social mobility of the population. Processes related to the precarization of the economically active population, the country's loss of labor potential due to the growth of labor migration require special attention.

**Conclusions and perspectives of further research.** Thus, the high-tech digital economy is formed in the conditions of the information society and is characterized by: first, the advantage of the information and network sector of the economy over the service economy, the use of the latest technologies during the production, sale and supply of goods and services; secondly, the rapid development of companies related to the development of computer equipment, software, etc.; extensive use of information and
communication technologies, due to which intensive reproduction is achieved; thirdly, a change in the quality of life of the population, the development of competition; fourthly, the preponderance of the share of services in the GDP structure; fifth, by increasing the use of environmentally friendly and resource-saving production methods and the high need for highly qualified and creative personnel, because the key element in the development of the digital economy is people-centeredness.

Modern information technologies and new digital business models based on them make it possible to reduce the uncertainty of the information market, significantly reduce business transaction costs, information asymmetry and risks, increase labor productivity and the quality of implementation of investment projects. In turn, the introduction of new technologies significantly changes industrial relations, the structure of contracts in the economy, functional relationships between economic entities and their economic behavior, opens up new opportunities for organizing and ensuring investment activities, which accelerates the digital transformation of the economic system.

Today, the digital economy sets the vector for the development of multi-level economic systems and determines the global competitiveness of individual enterprises, countries and regions. Increasing the efficiency of the mentioned transformations in Ukraine requires an effective state policy aimed at improving the regulatory and legal regulation of the field of information and communication technologies; active digital transformation of the real and financial sectors on the basis of Industry 4.0; creation of high-quality and accessible digital infrastructure; overcoming digital inequality and increasing digital literacy of citizens, entrepreneurs, and officials; harmonization of the Ukrainian institutional environment with the EU institutional space; introduction of the best global experience in the field of cyber security.

Digitization and new technologies will affect the conditions of competition in the world. As artificial intelligence and robots are involved in production processes and the service sector, the cost of labor will become a less important factor in determining the country's competitiveness, while technological competence and infrastructure quality, on the contrary, will be more important. Technologies such as Big Data and the Internet of Things will help to optimize production processes and reduce operational costs, develop new products and services. Virtual reality will be used to expand professional skills, AI and robotics - to increase labor productivity.

The fourth industrial revolution plans to make automated equipment "talk to each other without human intervention." It is about the creation of global self-organized production systems, which are characterized by high flexibility and realize the synergistic potential of technological development. Productive forces will become self-organized; will be able to receive feedback from the final product, node, machine, household appliance. The dynamics of the processes will grow especially powerfully and will be manifested in the stratification of the market and the formation of niche structures when the Internet of Things begins to be intensively used. Technologies must become cheap and commercially viable. One of the key developments in the Internet of Things and the Fourth Industrial Revolution is that materials are able to identify themselves with their own labels, which is changing communication between things and the market as a whole. The communication process will transform and acquire new qualitative characteristics and participants; communication channels will become more complex, and the market in the digital economy will become more differentiated and niche. The main trend is personification and digitization.

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