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INFORMATION ECONOMY: RETROSPECTIVE ANALYSIS AND CURRENT STATE OF DEVELOPMENT

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ІНФОРМАЦІЙНА ЕКОНОМІКА: РЕТРОСПЕКТИВНИЙ АНАЛІЗ ТА СУЧАСНИЙ СТАН РОЗВИТКУ

A key role in the understanding of modern economic transformations is played by the creation of a fundamentally new theory of economic and technological development, its value criteria and indicators. Traditional ideas based on the resource components of growth, which are measured by the incremental values of manufactured products, income, production volumes, etc., at the beginning of the 21st century have exhausted themselves, because the qualitative transformation of the structure and mechanism of social reproduction requires a rethinking of the system of factors and sources of economic and technological development. The article substantiates that the traditional scheme: labor, land and capital - even with the mechanical addition of science and information to it, is no longer able to explain the changes taking place in the world at the beginning of the 21st century. It is proven that deep technological shifts in the structure of social reproduction, increasing importance of the information component of the economy, technological development, environmental and social restrictions imposed on it, call into question the universality of the labor theory of value in the context of explaining social processes. It was analyzed that the specified theory loses its absolute significance and passes into the category of an "individual case", which is applied to a certain stage of socio-economic progress and is characterized by a relatively smooth development with the predominant or exclusive use of traditional growth factors. It was determined that the introduction of the principle of similarity, correspondence of paradigms into scientific practice is justified. On its basis, in particular, it can be argued that a change in the economic paradigm also leads to a change in the social paradigm, the social character of the era. Moreover, the social paradigm should be adequate to the economic paradigm. In addition, it causes a change in the previous paradigms of all levels in their hierarchy. It is proved that the paradigm of the economy of the pre-industrial society corresponds to the general and higher in the hierarchy paradigm "Man is a child of nature".

На початку XXI ст. відбувається динамічна трансформація епох світового соціокультурного розвитку у нову епоху знань та креативності, що призводить до виникнення конфліктогенної ситуації від існування кількох епох одночасно. Тобто спостерігається формування постіндустріального (інформаційного-інноваційного) суспільства, коли епоха нової економіки проявляється в новому змістовому наповненні, де інформаційний ресурс

виходить на якісно новий рівень. Ключову роль в осмисленні сучасних економічних трансформацій відіграє створення принципово нової теорії економіко-технологічного розвитку, її ціннісних критеріїв та показників. Традиційні уявлення, засновані на ресурсних складових зростання, що вимірюються приростними величинами виготовленої продукції, доходами, обсягами виробництва та іншими, на початку XXI століття вичерпали себе, адже якісне перетворення структури і механізму суспільного відтворення потребує переосмислення системи факторів та джерел економіко-технологічного розвитку. У статті обґрунтовано, що традиційна схема: праця, земля і капітал – навіть з механічним додаванням до неї науки та інформації вже не в змозі пояснити зміни, що відбуваються у світі на початку XXI століття. Доведено, що глибокі технологічні зрушення в структурі суспільного відтворення, посилення значущості інформаційної складової економіки, технологічного розвитку, екологічні та соціальні обмеження, що накладаються на неї, ставлять під сумнів універсальність трудової теорії вартості у контексті пояснення суспільних процесів. Проаналізовано, що зазначена теорія втрачає свою абсолютну значущість та переходить у розряд «окремого випадку», що застосовується до певного етапу соціально-економічного прогресу та характеризується відносно плавним розвитком з переважанням або винятковим використанням традиційних факторів зростання. Визначено, що виправданим є введення в наукову практику принципу подібності, відповідності парадигм. На його основі, зокрема, можна стверджувати, що зміна парадигми економіки веде і до зміни соціальної парадигми, соціального характеру епохи. Причому соціальна парадигма повинна бути адекватною парадигмі економіки. Крім того, це спричиняє зміну попередніх парадигм усіх рівнів в їх ієрархії. Доведено, що парадигмі економіки доіндустріального суспільства відповідає загальна і вища в ієрархії парадигма «Людина – дитина природи».

Keywords: *information economy, TNC, development, transformation, Internet.*

Ключові слова: *інформаційна економіка, ТНК, розвиток, трансформація, інтернет.*

Formulation of the problem. In the conditions of globalization, the world economy is developing in the direction of greater integrity, while at the same time feeling the influence of destructive processes, centrifugal, disintegrating forces. In opposition to these trends, the main contradiction of the era is expressed, the traditional processes of interstate integration are strengthened, the target function of which is not so much the expansion and liberalization of international markets, but primarily protectionist protection and joint customs and tariff regulation within the limits of global economic exchange. At the same time, the movement towards integrity in the process of globalization is disharmonious and uneven in various spheres of socio-economic life. The movement of goods, services, and capital actually means the creation of a global reproductive integrity with all its inherent features (cyclicity, economic gaps, etc.). At the same time, in the sphere of politics, intercivilizational and intercultural interaction, the reverse process of the movement towards integrity is taking place.

A key role in the understanding of modern economic transformations is played by the creation of a fundamentally new theory of economic and technological development, its value criteria and indicators. Traditional ideas based on the resource components of growth, which are measured by the incremental values of manufactured products, income, production volumes, etc., at the beginning of the 21st century have exhausted themselves, because the qualitative transformation of the structure and mechanism of social reproduction requires a rethinking of the system of factors and sources of economic and technological development. The traditional scheme: labor, land and capital - even with the mechanical addition of science and information to it, is no longer able to explain the changes taking place in the world at the beginning of the XXI century.

Analysis of recent research and publications. The issue of the information economy is actualized in the works of many scientists of various scientific schools. In particular, a complex of issues that consider the essence of the knowledge economy, its forms, parameters and features are studied in the works of D. Adair, M. Bauer, B. Bass,

W. Bayham, F. Bailey, K. Byrd, U. Bennis, K. , N. Gazzard, J. Hemphill, L. Downton, R. Daft, E. Deming, P. Drucker, R. Edgeman, D. Ilgen, R. Ireland, L. Kalb, S. Kaze, Carmella, D. Katz , J. Collins, T. Kochubey, R. Crutchfield, V. Kremen, D. Krecha, T. Kuchmarski, S. Kuchmarski, U. Cowley, R. Likert, K. Levine, D. McGregor, A. McFarlane, R., Hollander, J. Homans, M. Huston, B. Shamir, V. Schmidt, G. Yukl, A. Yago and others. Therefore, still a lot of questions concerning the retrospective analyses and the current stage of the development of the information economy needs to be analysed.

The purpose of the article. The purpose of the article is to analyze the specific features of the development of information economy and its current state.

Materials and methods. The method of analysis and synthesis, the method of synthesis, description and dialectics were used to write the article. The research information base is scientific publications and statistical materials concerning the development of informative economy.

The research results. The authors of the concept of technological paradigms (technological systems) do not consider the pre-industrial era in their works, considering the beginning of the classification of paradigms (systems) to be the period of the formation of capitalism in England, namely the end of the 18th century. That is, formally, the same stage of the "rise" is associated with qualitatively different stages of technical and economic development, which is also reflected in the features of the "rise" of countries. Of course, historical studies of economic growth must be conducted for the pre-industrial era as well, but in economic and theoretical terms, we can limit the considered period by starting the analysis from the era of the formation of classical capitalism.

The paradigm of the economy of an industrial society corresponds to the paradigm "Man is the conqueror of nature." The development of the mechanization of production in the specified era required the use of mainly low-skilled labor due to the involvement of an ever-growing mass of labor in the industrial sector, in particular child and female labor. Virtually complete interchangeability of workers, a high level of competition in

the labor market, the absence of a system of social protection for workers in the combination with institutional factors stimulated the acceleration of the movement of a large number of people from the countryside to the city (for example, the consequences of "enclosure" in England). All these factors led to a relative decrease in the incomes of hired workers. Therefore, the growth of the final product was accompanied by a long period of stagnation of the incomes of the working class and the emergence of various "social ulcers" of capitalism, which, in particular, was noted by K. Marx in "Capital"[1].

It is appropriate to distinguish three systemic-historical types of industrial economic growth: early industrial, mature industrial and late industrial. If the representatives of early industrial growth in organizational and institutional terms were mainly firms that were in individual private ownership or in the form of partnerships, then mature industrial growth relies on corporate private ownership in the form of joint-stock companies, where capital-property and capital-function are largely separated .

Mature industrial growth requires the use of mass resources - both capital and labor, and is aimed at the production of standardized products for mass consumption. But their quality is already an order of magnitude higher than the quality of mass resources corresponding to the early industrial type of growth. Mass human capital, which is formed thanks to general education, begins to play an important role in the course of mature industrial growth. Workers are no longer completely replaceable. To manage a complex electrified system of machines, employees with the appropriate level of training and qualifications are needed. The role of "technostructure" in making management decisions is increasing, as pointed out by JK Galbraith in his works.

From the context of research, it can be argued that cost will increasingly be determined not by production costs, but by research costs. That is why the modern paradigm of economics is actually a new formulation of the basic law of economics - the law of value: the value will be equal to the costs of research work, in particular, the post-industrial society is a research society. It is characterized by an unprecedented transfer of emphasis from production to research. In this regard, in the near future it is necessary to review, clarify, and adjust the very concept of "research" [2].

It is traditionally accepted that the term "post-industrialism" itself appeared in the works of English scientists A. Kumaraswamy and A. Penty, and the concept of "post-industrial society" was first used in 1958 by D. Risman. Post-industrialism gained wide recognition in the early 70s of the last century thanks to the fundamental works of R. Aron (1905–1983) and Daniel Bell (1919–2011), who are considered the founders of post-industrialism. In the scientific literature, it is noted that the American sociologist Daniel Bell developed a comprehensive theory of post-industrial society. In his main work "Future Post-Industrial Society" (1973) it is stated: "The concept of post-industrial society is an analytical construction (analytical model) and not a picture of a specific or concrete society. It is a kind of paradigm." This definition did not find further development, because D. Bell and the followers of post-industrialism do not formulate the paradigm itself. They do not yet possess the very concept of "paradigm", but it can be argued that the author has defined the relationship between an epoch and a paradigm.

It is stated in the scientific literature that in order to characterize post-industrialism, D. Bell systematically examines the changes occurring in three main autonomous spheres of society: the social structure, the political system, and the sphere of culture. At the same time, D. Bell unconventionally attributes the economy, technology and the employment system to the social structure. Using numerous characteristics and description of post-industrial society, D. Bell does not connect it with any one generalized objective indicator, criterion and, what is important, does not see the connection of the social character of the era with the economic paradigm. Therefore, in his research there is no definition, term or concept that concentratedly expresses the essence of post-industrial society.

Unlike Daniel Bell, another representative of post-industrialism, Manuel Castells, associates it with the emergence of new trends in the development of society: the information and technological revolution, the globalization of the economy, and environmental movements. He already concentratedly defines the post-industrial society as "informational". According to the author, the concept of "information society" also has certain features of subjectivism, as it is the result of a systemic crisis and the

subsequent change of the previous society, the result of a change in its social and economic paradigms.

Systematizing the content of the post-industrial society paradigm, in our opinion, five components can be distinguished: 1) in the economic sector: the transition from the production of goods to the service economy; 2) in the structure of employment: dominance of the professional and technical class; 3) the basic principle of society: the central place is occupied by technologies as a source of innovations and policy formulation; 4) future orientation: the special role of information and knowledge; 5) decision-making: creation of new "intelligent technology" [3].

It should be noted that K. Kelly in the work "New Rules for the New Economy: Twelve Interrelated Principles of Survival in a Turbulent World" argued that every business will ultimately obey the logic and economy of networks. At the beginning of the 21st century, the processes of displacement of hierarchies by network structures are already massive and irreversible, manifesting themselves through the active formation of a new model of production organization - at the level of companies, markets, national economies, integrated communities and the entire world economy.

It is increasingly obvious that the global recession of 2007-2009 is not so much a financial and economic crisis in its traditional sense, but the beginning of the systemic adaptation of states to the horizontal logic of development. This adaptation is accompanied by a sharp slowdown of macroeconomic dynamics (the so-called "new normality"), the purpose of which is to provide systems with time for organizational maneuver and to give them the opportunity to gradually move to a cluster-network structure. After all, at the beginning of the 21st century, all types of economies, including the US and developed EU countries, faced a crisis in aggregate production, due to which the process of their post-crisis recovery is slower than after similar recessions in the past. This is due to the fact that the latest optical and neural (based on computer simulation of the human brain) information technologies open up new opportunities in various spheres of economic activity. The era of "factories without workers" and "virtual companies" is coming. After all, the network economy not only

integrates branches of companies located in different territories, but also observes the globalization of the world economy into a single space, and in this case, the geographic location of network companies does not play any role, which significantly distinguishes it from the command and market type of economic system.

It is necessary to mention that the emergence of new means of communication made it possible to make a giant leap in the development of a new sector of the economy - the transmission of information (voice, data and images) over a distance, led to the emergence and development of numerous new communication services. One of the most significant recent achievements in the field of communications has been the introduction of Internet services [4].

Initially, the Internet was considered as a means for accessing information resources and e-mail, providing leisure and raising the level of education. However, nowadays Internet services are widely used both in business and in everyday life. The Internet, with its enormous resources and potential, can be viewed as a unique experience of self-organization of "big science", which did not require any long-term coordination and development of long-term plans, or intergovernmental agreements and international state support, as was the case, for example, during the construction of unique installations for research in the field of thermonuclear fusion, space or forces of nuclear interaction. Designed with funding from the US Government as a national information highway to promote basic research, the Internet soon became widely accepted by scholars in virtually every country in the law of the internationalization of science.

By the end of 2004, about 1 billion people had access to the Internet, including about 200 million computers connected to the Internet in the United States. If the radio began to be used by more than 50 million people only 38 years after the creation of the radio network, and television - 13 years later, then the Internet was enough to attract 50 million people even 4 years. In terms of the number of "inhabitants", the Internet is ahead of all countries of the world, including the USA, Japan, Russia and others, with the exception of China and India. There is nothing to say about the area - the worldwide

network covers most of the inhabited land and not a single state can compete with it in this parameter. General economic consequences of the development of the Internet. The advent of the Internet has created new segments of business activity in various areas of business activity, including marketing. The main consequence of its introduction into the modern world economy is the turnover of capital and, accordingly, to increase the efficiency production. According to B. DeLong, a California-based economist University of Berkeley: "Information technology and the Internet are strengthening the power of the human brain, just as the technology of industrial revolutions strengthened the power of his muscles" [5].

The second characteristic of the value of newly emerging technologies is the extent to which they allow the reorganization of production processes and improve their efficiency. The advent of steam engines transferred production from home workshops to plants and factories, railroads led to the emergence and development of mass markets, and electricity made it possible to start the first conveyor. Today The proliferation of computers and the Internet is leading to a complex reorganization of business and production, contributing to the development new management practices and greater decentralization.

Even more important is the impact of new opportunities information technology and the Internet on changes in traditional sectors of the economy. Facilitating access to information, modern information technology thereby enables markets to operate more efficiently, while reducing associated costs and allowing more rationally allocate available resources. Research, influence Internet Productivity Growth in the US by the Brookings Institute, showed that over the next five years, growth productivity through the use of Internet technologies can be up to 0.2-0.4% per year. The impact of the use of Internet opportunities on the changing nature of commercial transactions. One of the most interesting

Internet applications is considered to be electronic commerce, which can be defined as the process of making transactions (buying, selling or negotiating) by electronic means through the global Internet and other electronic networks. However,

on For decades, many transactions have already been carried out with by electronic means (for example, by telephone or fax). Yes and electronic payment cards have existed in the world for quite some time. So there is nothing revolutionary here. Just with the advent of the Internet, this process has received an additional impetus, and the World Wide Web itself has become a global environment for implementation of commercial transactions [6].

The possibility of using the Internet leads to a change in schemes sale of goods. In TNK British Telecom, the acquisition of goods and services through the Internet reduces overhead costs by 90%, and reduces direct costs for the purchase of these goods or services by 11%. Manufacturers are beginning to offer goods directly to the end customers bypassing the network of distributors and dealers. Yes, Dell Computer essentially revolutionized the sales of personal computers, offering them directly to the buyer. Intermediaries of the new epochs create sets of integrated services, systems of intellectual user support, a new commercial environment, an example of which can serve almost any successful website for purposes e-commerce on the Internet.

E-commerce allows you to more effectively manage supply chains, reducing the number of intermediaries. And finally the increase the amount of information available allows companies to reduce the volume products in warehouses. For example, the "build-to-order" system introduced by TNC Dell Computer, which allows the production of goods in accordance with a specific consumer order, made it possible to completely abandon warehouses, and has already become the subject of wide imitation. B2B (Business-to-Business) systems will appear in the near future in most other industries, such as automotive, metallurgy, construction and aircraft manufacturing, helping to increase the efficiency of trade between suppliers and consumers. Multinational corporations General Motors, Ford, Daimler-Crysler and Renault-Nissan are already planning to transfer all their business operations to a single electronic system, which should connect 60,000 suppliers with a total turnover of \$ 250 billion. This step will reduce the cost of car production by 14%. According to the investment bank Goldman Sachs, B2B purchases offer cost savings ranging from 2% in the coal

industry to up to 40% in the production of electronic components. According to the bank's analysts, such a reduction in costs could lead to an increase in production in developed countries by up to 5% on average. More than half of this increase will occur in the next decade, at a CAGR of 25%. To this must be added the indirect savings associated with the inevitable reorganization of companies that widely use the Internet in their work [7].

The cost structure of information goods differs from the cost structure of ordinary goods, the main part of which falls on the initial period of their production (for example, writing a book and further distributing the product electronically). At the same time, information goods are not subject to the law of diminishing returns, demonstrating increasing profitability in the very long term. Accordingly, industries engaged in the production of network goods receive enormous opportunities to exploit economies of scale. The most important regularities of these benefits are as follows: in the information economy, the value of labor products is related to their multiplicity, not rarity; low fixed costs and rapid distribution of products reduce the time interval before the start of rapid growth; increased return on the results of the work performed is provided by the entire network and distributed in it among all participants of the process; in the information economy, all objects that can be copied become cheaper as they are improved, and this contributes to the growth of innovations; the information economy creates the prerequisites for a constant change in the organization of the system [8].

The birth of the network economy was facilitated by large-scale changes in economic processes caused by the use of ICT, the possibility of transmitting huge amounts of information, audio and video materials on the global market. In addition, the widespread use of ICT has caused economic and social changes at the international, macro and micro levels. In particular, this made it possible to: reduce the transaction costs of companies; increase the transparency of the markets - both buyers and sellers can compare the offered prices with the prices of competitors; reduce barriers to market entry and reduce the importance of the spatial and temporal factor for doing business;

strengthen the global nature of the economy. It is these factors that distinguish the information economy from the industrial one [9].

Conclusions. The information economy has significantly different characteristics compared to command and market economies both from the point of view of using a system approach and from the point of view of the placement of productive forces, the circulation of goods and capital, etc. For example, in the information economy, the placement of production forces acquires a socio-economic character, which to the greatest extent corresponds to the interests of the world community. According to such patterns in the last third of the 20th century. There was a transition to the fifth information and technological order, the core of which was the electronic industry, computer technology, software, telecommunications, global and regional information networks and information banks, cosmonautics, robotic construction, and the gas industry.

The development of the information and innovation economy resulted in the formation of a network economy, one of the conditions for its formation was the replacement of the fourth technological order by the fifth in the late 1990s, in which the leading positions are occupied by the latest computer and information technologies, means of space communication, fiber optics, biotechnology. The information economy arose at the junction of the traditional economy and information and communication technologies.

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