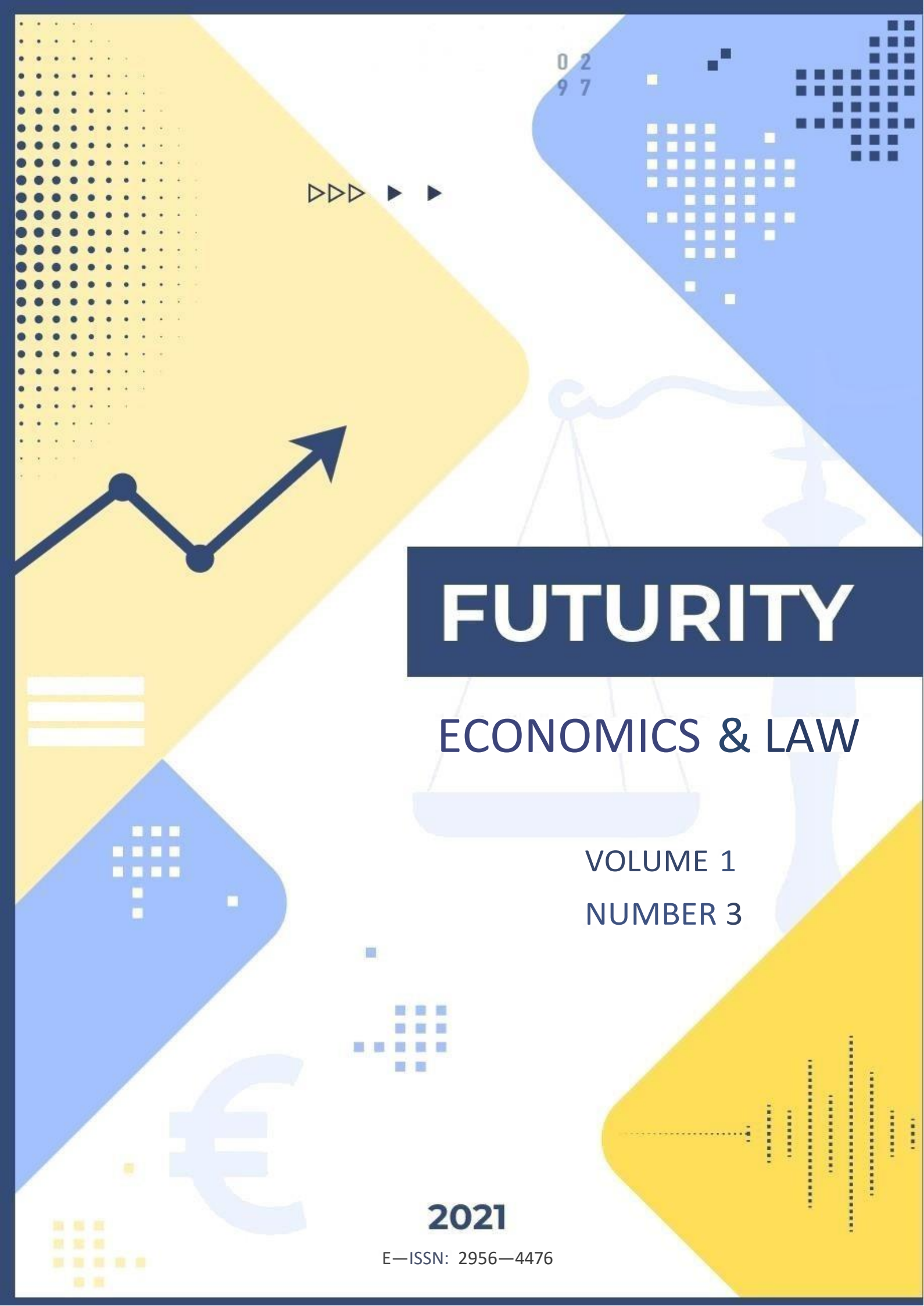


FUTURITY

ECONOMICS & LAW

VOLUME 1

NUMBER 3

2021

E—ISSN: 2956—4476

Futurity Economics & Law

Futurity Economics & Law

ISSN 2956-4476

Volume 1 Number 3

2021

Futurity Economics&Law of the Future" aims to publish modern, innovative scientific articles on issues of economics and law, written by leading

experts in the field of economicsand law. The journal FuturityEconomics&Law is designed to explore the future of economics and law, as most countries in the world are facing numerous serious problems in the fieldof law and economics

http://www.futurity-econlaw.com/index.php/FEL/about

Publisher:
Futurity Research Publishing, Poland,Lodz, STEFANA ŻEROMSKIEGO street53, 90-625.
info@futurity-publishing.com

CONTENT

Publication schedule

Futurity Education is published fourtimes a year, on March 25, June 25, September 25 and December 25.

Type of publication: electronic

Country of publication: Poland

Date of Number: September 25

FUTURITY
Economics & Law

DOI: https://doi.org/10.57125/FEL.2021.09.25.01

How to cite: Ostropolska, Y. (2021). Problems and prospects of development of SMART-economy in Problems and Prospects of Development of SMART-Economy in the Post-Socialist States (challenges of the future). *Futurity Economics & Law*, *1(3)*. 4-16. https://doi.org/10.57125/FEL.2021.09.25.01

Problems and prospects of development of SMART-economy in Problems and Prospects of Development of SMART-Economy in the Post-Socialist States (challenges of the future)

Yevheniia Ostropolska

PhD in Economics, Associate professor the Department of Management, Marketing and Public Administration Higher Educational Institution "Academician Yuriy Bugay International Scientific and technical university" (HEI "ISTU"), Ukraine, Kyiv, Magnitohorskyi lane 3, ostropolskaya74@gmail.com, ORCID ID: 0000-0001-7462-8069

Received: June 10, 2021 | **Accepted:** September 1, 2021 | **Published:** September 25, 2021

Abstract: Post-socialist transformations have been in the focus of attention of scientists around the world for more than 30 years. Thus, the issues of smart-economy development in post-socialist countries are of particular relevance, since it is possible to provide the population with a decent standard of living in modern conditions only through the implementation of innovative development and introduction of the latest smart technologies aimed at the development of intellectualization, institutionalization, socialization, and ecologization in all spheres of society. The purpose of this article was to study the features of the development of the economies of post-socialist countries and to determine the problems and prospects for the formation of a smart-economy. The research was based on a qualitative combination of general scientific methods. In particular, the study of the existing base of scientific literature used methods of analysis (logical and statistical analysis, as well as analysis of the structure and dynamics), synthesis, induction, deduction, concretization, methods of generalization, and analogy. For clarity, the data obtained as a result of the analysis are presented using tabular methods. As a result of the study, the essence and features of the smart-economy have been defined, and the reasons for the need for the transition of modern society to the smart-economy have been established.

Keywords: post-socialist countries, economic development, innovation, smart - technologies, intellectualization, institutionalization, socialization, ecologization.

Introduction

In modern conditions, the behavior of the world community is characterized by chaotic dynamics of social changes, caused by the change of stereotypes, values. At the same time, national economies of post-socialist countries are included in a complex transformation process, characterized by changes in

the system of economic relations due to the exhaustion of growth potential, because further progress of society is possible only within the construction of a fundamentally new system of economic relations.

Structural reforms form the systemic basis for increasing microeconomic efficiency, which leads to rapid economic growth. However, sustainable growth requires an appropriate development strategy and effective public policy of post-socialist countries aimed at strengthening market forces in the post-socialist transformation. In this context, it is not enough to address the "old problems" associated with the restructuring of the real economy and institutional reforms. It is also necessary to use the opportunities offered by the new stage of development of the world economy, called the smart- economy.

Research Problem

In the context of globalization, the growing problems initiate the formation of a new stage in the development of economic relations smart (intellectual) economy.

The necessity of transition to the smart-economy is caused by the underlying reasons, which determined the vector of transformation of all spheres of society. One of the reasons can include significant changes in the structure of consumer, corporate and public demand. So, in modern conditions the consumer's demand for spiritual values is growing, the way and style of life, adequate, set, and quality of services, organization of business climate, life and recreation are important for the members of society. The implementation of consumer choice takes place on the basis of advantages, formed as a result of changes in the sociocultural development of society. The conducted research shows that consumer preferences are increasingly dominated by high-quality goods, capable of satisfying the increased aesthetic demands of consumers.

As for the corporate demand, employees with a wide range of competencies are becoming more and more relevant for enterprises and organizations, allowing to solve problems of increasing added value, increasing productivity, generating new knowledge and incorporating it into production processes, implementing innovative processes at the local and integral level. As it allows to achieve sustainable stable development. There is an urgent need to use the latest technologies, primarily information and communication, which condition the transformational processes and contribute to the implementation of strategic and tactical objectives of enterprises. On the part of the state in postsocialist countries, there is an increasing demand for the rational use of material, labor, intellectual resources, the solution of national and global problems. This refers to changes in the nature of labor, strengthening its innovative component, the growth of participation in production processes of intellectual workers. New technologies persistently demand the formation of an information culture, as well as the creation of flexible organizational structures that facilitate adaptation and quick reaction to conjunctural changes. Another reason for the formation of smart-economy in post-socialist countries is globalization, which actualizes the possibility of maintaining system manageability and balance by coordinating the dependence of individual countries on the global level of development of world processes - political, economic, financial and social. Globalization implies first of all an expansion of the openness of economic entities, liberalization of markets, creation of structures adapted to the external influences of the economic, social, cultural and informational environment. The processes of global synchronization and standardization of world development determine new interrelationships and specific perspectives for individuals, corporations or states to regulate mechanisms for preventing and reducing losses in the course of globalization. Thus, a global structure of independent but dependent regional and local networks of exchange of knowledge, information, technology, qualifications, and experience is taking shape. This process is multidimensional and contradictory. On the one hand, it strengthens the opportunities of an individual, country, or region through the action of multipliers of a global scale, and on the other hand, it keeps them within the local, although not the only place of implementation.

Research Focus

In general, this study focuses on the study of peculiarities of SMART-economy development in post-socialist countries, which have chosen different vectors of development. As well as the study of the

features of socio-economic development of the selected countries in the period from 1990 to 2020 and the definition of the main prospects for the formation of smart-economy.

Research Aim and Research Questions

The purpose of this work is to study the peculiarities of smart-economy development in post-socialist countries on the basis of the vectors of their socio-economic development.

The following tasks contribute to the achievement of these goals:

- study of the features of socio-economic development of the selected countries in the period from 1990 to 2020;
- identification of the elements inherent in the smart economy existing in the studied countries;
- determination of the main goals of the formation of a smart economy in post-socialist countries;
- allocation of the main elements whose development will contribute to the formation of the smart economy in the studied countries.

Research Methodology

General Background

The solution of the tasks set in the study was carried out on the basis of the application of general scientific research methods in the framework of comparative, logical, and statistical analysis, as well as by analyzing the structure and dynamics, graphical interpretation of information, etc.

Instrument and Procedures

The study of the development of the smart-economy in post-socialist countries is based on a qualitative combination of general scientific methods. In particular, the following methods were used in the study: analysis (logical and statistical analysis, as well as analysis of the structure and dynamics), synthesis, induction, deduction, concretization, methods of generalization, analogy, and methods of graphic interpretation of information.

Data Analysis

The basis for this study of smart-economy development in post-socialist countries is the works of famous scientists, statistical information, and international rankings data. Despite the extensive study of problems of development of post-socialist countries in the modern world in the scientific literature, it should be noted that the problems of development of SMART-economy in post-socialist countries need further research.

Research Results

Post-socialist transformations have played a significant role among the developments of the late twentieth and early twenty-first centuries. They affected nearly three dozen countries, among them: Estonia, Poland, Czech Republic, Lithuania, Latvia, Bulgaria, Slovenia, Hungary, Montenegro, Croatia, Romania, Slovakia, Albania, Serbia, Azerbaijan, Kazakhstan, Georgia, Armenia, Ukraine, Moldova, Tajikistan, Kyrgyzstan, and others. All post-socialist countries at the moment of change of their development direction had planned economic system, developed under conditions of strict state management, centralized distribution, and redistribution of resources, economic good,s and incomes of economic subjects proceeding from the general state interests. The high level of centralized management seemed to be an important advantage of a socialist country's economy in comparison with other countries. Socialist-type countries exhibited a closed economy, limiting their international relations. As a consequence of such policies pursued by the party bureaucracy, the national economies of socialist countries were practically “on the sidelines” of world civilization at the beginning of reforms.

At the end of the first decade of the 21st century, the formation of the smart-economy began. Smart-economy is characterized by intellectualization, institutionalization, socialization, and ecologization in all areas of society.

In the course of our study, we will consider the economic development of a set of post-socialist countries, conditionally divided into three groups.

The first group includes the bulk of the Commonwealth of Independent States (CIS) countries: Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Uzbekistan, and Tajikistan. Turkmenistan is also included in this group because it has the status of an associate member of the CIS. The second group is Georgia and Ukraine, which have embarked on a course to join the European Union (EU). The third group is the Baltic states, which are already members of the EU (Latvia, Lithuania, and Estonia).

For objective evaluation of the results of socio-economic development, we consider it advisable to cover the period from 1990 to 2020 and dwell on the main aspects of the development of the post-socialist countries. 1990 is the last year of the planned economic system.

The determining factor of the scale of state production is the quantity and quality of labor resources. The main indicator of their availability in the country is the population. Table 1 shows the dynamics of population in some post-socialist countries for the period 1990-2020.

Table 1

Population dynamics of the studied part of the post-socialist countries in the period from 1990 to 2020

Countries	1990		2020		Growth, 1990-2020		Forecast 2100	
	Th.per.	%	Th.per.	%	Th.per.	%	Th.per.	%
1	2	3	4	5	6	7	8	9
CIS countries								
Azerbaijan	7 200	5,1	9 731	6,5	2 531	35,2	9559	6,1
Armenia	3 377	2,4	2 984	2,0	-393	-11,6	1794	1,2
Belarus	10 201	7,3	9 492	6,4	-709	-7,0	7605	4,9
Kazakhstan	16 398	11,7	18 272	12,2	1 874	11,4	25738	16,5
Kyrgyzstan	4 382	3,1	6 140	4,1	1 758	40,1	8852	5,7
Moldova	4 394	3,1	3 551	2,4	-843	-19,2	1856	1,2
Uzbekistan	20 530	14,6	32 512	21,8	11 982	58,4	38142	24,5
Tajikistan	5 272	3,8	9031	6,0	3 759	71,3	18928	12,2
1	2	3	4	5	6	7	8	9
Turkmenistan	3658	2,6	5 758	3,9	2 100	57,4	8324	5,3
Total	75 412	53,7	97 471	65	22 059	29,3	120 798	77,6
Countries not included in the CIS								
Ukraine	51 622	36,8	42 099	28,2	-9 523	-18,4	28184	18,1
Georgia	5 426	3,9	3730	2,5	-1 696	-31,3	2438	1,6
Total	57 048	40,6	45 829	31	-11 219	-19,7	30 622	19,7
EU countries								
Latvia	2664	1,9	1932	1,3	-732	-27,5	1278	0,8
Lithuania	3695	2,6	2813	1,9	-882	-23,9	2013	1,3
Estonia	1 569	1,1	1 319	0,9	-250	-15,9	904	0,6
Total	7928	5,6	6064	4,1	-1864	-23,5	4195	2,7
TOTAL	140 388	100,0	149 364	100	8 976	6,4	155 615	100,0

Source (Countrymeters, 2020; Human Development Report, 1990; Human Development Report, 2020)

Analysis of population dynamics over 30 years showed that by early 2020 there was a decrease in population in 8 countries. Especially it concerns Ukraine (the number decreased by 9.5 million people or 18.4%), Georgia (31.2%), and the Baltic countries, where the population decreased by 1.9 million people. (24,0%). Population growth occurred in Asian countries and Azerbaijan, where the annual

growth rate was between 40% and 70%. According to experts, this trend will continue until the end of the XXI century.

According to forecasts, in the future, there will be a further decline in the proportion of the population of postsocialist space. The same situation is predicted for Ukraine, Belarus, and the Baltic States (Human Development Report, 2020). At the same time, there will be a significant increase in the number and proportion of people aged over 65 years, which is of particular concern. In the post-socialist space, population growth will occur only in Asian countries. However, high rates of population growth, being an extensive factor of economic growth, do not reflect the well-being of either the state itself or the quality of life of its population. The analysis confirms this hypothesis. Thus, Asian countries, where the birth rate is usually high, have been and remain the favorites in terms of population growth rates. However, this raises the question: to what extent does the nature of the demographic situation correlate with macroeconomic indicators, the level and quality of life of the population? To answer this question, let us analyze the dynamics of gross domestic product (GDP) per capita and indicators of the standard of living and quality of life. GDP is an important, but not the only indicator assessing the achieved level of socio-economic development of countries since it measures the current production of goods and services, rather than the degree to which economies contribute to broader socio-economic progress. New research shows that success measured by GDP alone can be unreliable. For a more complete and objective assessment in recent years, economists have used an alternative system for evaluating countries' economic development, based on the calculation and analysis of the Inclusive Development Index (presented in 2018 at the World Economic Forum in Davos). The Inclusive Development Index is based on 12 indicators grouped into three groups: growth and development; inclusiveness; lasting equity and sustainability (The Inclusive Development Index, 2020). A comparison of the Inclusion Index of post-socialist countries for 2020 showed that none of the countries fell into the category of developed economies of the world. They are classified as developing countries, with Lithuania in the first place. The degree of the well-being of the population is usually determined by GDP per capita. Along with it, such indicators as the level of wages and the human development index were used to assess the level and quality of life (Table 2).

Table 2

Indicators of Living Standards and Quality of Life in Post-Socialist Countries

Countries	GDP per capita					Average salary		HDI 2020
	1990		2020			2020		
	dollars US	In % to the world level	dollars US	In % to the world level	Place in the world	dollars US	In % to the level of Switzerland	
CIS countries								
Azerbaijan	4639	90	4569	40,2	103	346	9	0,756
Armenia	6066	118	4169	36,7	109	378	9,8	0,776
Belarus	7194	140	6306	55,5	88	545	14,1	0,823
Kazakhstan	7458	145	9236	81,3	71	486	12,6	0,825
Kyrgyzstan	3602	70	1268	11,2	154	253	6,7	0,697
Moldova	6 170	120	3218	28,3	124	437	11,3	0,75
Uzbekistan	4 260	83	1263	11,1	155	184	4,8	0,72
Tajikistan	3013	58	826	7,2	169	155	4,7	0,668
Turkmenistan	7 616	148	7646	67,3	78	3:06	9,2	0,715
Countries not included in the CIS								
Ukraine	6027	117	2963	26,1	127	460	11,9	0,668
Georgia	7 616	148	4400	38,7	87	458	11,9	0,812
EU countries								
Latvia	9 916	192	18032	158,8	44	1217	31,5	0,866
Lithuania	8 663	169	19143	168,5	42	1419	36,8	0,882
Estonia	10	210	22990	202,4	37	1560	40,4	0,892

Source (IMF, 2020; World Bank, 2020)

The data in the table showed that during the years of reforms in the post-socialist space there has been a significant decrease in GDP per capita. So, in 2020, with the exception of the EU member countries of the Baltic states, not a single country was able to reach the average world level. A similar picture emerged with the level of average wages. The analysis is done in comparison with the level of wages in Switzerland, which in 2020 is ranked first in the world by this indicator. Unfortunately, all post-socialist countries studied do not provide a decent level of wages and, above all, it concerns Asian countries with high rates of population growth and low levels of GDP. The Human Development Index (HDI) is an integral indicator reflecting the most important aspects of the socio-economic development of the state (life expectancy, literacy rate, GDP per capita). The latest version of the Human Development Index, released in 2020, shows that none of the surveyed post-socialist countries ranked among the top 10 best or the top 10 worst countries. Seven countries were in the group of countries with a high level of SCI and eight countries were in the group with an average level of SCI (Human Development Report, 2020).

Table 3 shows the ratings of post-socialist countries, characterizing the ease of doing business, the level of perception of corruption, the degree of economic freedom, and, as a result, global competitiveness. Scientists have proved and practically confirmed a close correlation between the rate of economic growth and these factors. To assess them, the systems of indicators were used, and the country ratings developed by international organizations (the World Bank, Transparency International, the Heritage Foundation Research Center, the World Economic Forum).

Table 3

Development ratings of post-socialist countries

Countries	Ranking of countries by ease of doing business (190 countries)		Ranking of countries by corruption perception (180 countries)		Ranking of countries by degree of economic freedom (180 countries)		Ranking of countries by global competitiveness (141 countries)	
	points	place	points	place	points	place	points	place
CIS countries								
Azerbaijan	76,7	34	30	126	69,3	44	62,7	58
Armenia	74,5	47	42	64	70,6	34	61,3	69
Belarus	74, 3	49	45	72	61,7	88	н/д	н/д
Kazakhstan	79,6	25	34	114	69,6	39	62,9	55
Kyrgyzstan	67,8	80	30	128	62,9	81	54,0	96
Moldova	74,4	48	32	120	62,0	87	56,7	86
Uzbekistan	69,9	69	25	157	57,2	114	н/д	н/д
Tajikistan	61,3	106	25	156	52,5	156	52,4	104
Turkmenistan	н/д	н/д	19	167	46,5	170	46,5	170
Countries that are not included in the CIS								
Ukraine	70,2	64	30	129	54,9	134	57,0	85
Georgia	83,7	7	56	46	77,1	12	60,6	74
EU countries								
Latvia	80,3	19	56	47	71,9	32	67,0	41
Lithuania	81,6	11	60	37,7	76,7	16	68,4	39
Estonia	80,6	18	74	18	77,7	10	70,9	31

Source (World Bank, 2020; Transparency International 2020, World Economic Forum 2020)

Without dwelling on the methodology of ranking, we note that their analysis confirmed the hypothesis about the influence of factors on economic growth in post-socialist countries. Assessment of general conditions of doing business (the rating of ease of doing business, which includes 190 countries) in 2020 shows a higher index in such countries as Georgia (7th place in the world) and Lithuania (11th

place in the world). The first places are taken by New Zealand, Singapore, Hong Kong, Denmark, South Korea, and the USA. As for the ratings of perception of corruption and economic freedom, almost all of the analyzed post-Soviet countries have low positions. Moreover, we can say that these two factors remain among the most serious obstacles to economic growth.

A high position in the ratings means that the country is open, doing business is organized simply and safely, and there is no corruption. As a result, the competitiveness of such a country will be high. Unfortunately, none of the post-socialist countries studied are in the top 10 in any of the rankings. In the ranking of countries by level of global competitiveness, Estonia takes the highest place (31st place), followed by Lithuania (39th place) and Latvia (41st place). At the bottom of the ranking is Turkmenistan (170th place).

The study showed that the best development indicators are demonstrated by the countries that have chosen the Western-style development path. Thus, among the countries studied the leaders in terms of the indexes of inclusive and human development, the ratings of countries on the ease of doing business on the level of perception of corruption, the degree of economic freedom and the level of global competitiveness are the EU members. Ukraine and Georgia, which at this stage are not members of this union, although they have chosen the path of European integration, are generally ahead of most other CIS countries in their intellectual and innovative development.

The analysis of the ranking of countries according to the Global Innovation Index, 2020, showed that the level of their innovative development remains relatively low: none of the studied countries was included in the first twenty.

It goes without saying that the creation of an innovative environment, including national innovation systems, will be able to ensure the competitiveness of states in the context of globalization and the development of the smart-economy. This is possible both at the expense of breakthrough development through the formation of a common scientific, technological, innovation space by increasing the cost of science, education, and active building of their own scientific and technological potential, and through cooperation and integration with other countries.

The study highlighted the components of smart-economy development in Ukraine, Georgia, and the Baltic states:

- infrastructure, including technical means, information storage, processing and conversion centers, information transmission centers, software, telecommunication means;
- electronic services of legislative and executive authorities and administration;
- business processes of business entities using computer networks in conditions of virtual interactions between market subjects;
- electronic commerce, which is currently one of the largest segments of the digital economy.

The study made it possible to identify the main goals of the formation of Smart-economy in post-socialist countries, these include:

- Restoring economic growth after the global crisis and ensuring it in the long term.
- Achieving high labor productivity. According to analysts, the decline in labor productivity in recent years was due, in particular, to the high level of state regulation, especially in the services sector.
- Preparation and widespread introduction of intellectual workers in the production of new products and services. For example, in the UK, the task is currently set to bring the level of employment of intellectual workers to 50% by 2025 (*Kalenyuk, & Uninets*, 2020).
- Formation of an innovative ecosystem.

- Introduction of the latest technologies in all sectors of the economy to ensure quick access to information and knowledge, and generation of new ideas with their further implementation in the production of products and services with increased added value and intellectual component.

- Creating and ensuring a productive business environment to increase the degree of innovation, and optimal use of natural, energy, and material-saving technologies.

- Ensuring social stability.

- Development of the “green economy”.

The study shows the insufficient level of development of the smart-economy in post-socialist countries, even among countries with a high level of economic development. Smart-economy is characterized by intellectualization, institutionalization, socialization and ecologization in all areas of society, the development of these areas in postsocialist countries will contribute to the formation and development of the smart-economy.

Thus, the development of intellectualization in postsocialist countries involves the growth of research and development with their subsequent introduction into production on an innovative basis, the development of the intellectual potential of the individual and enterprises, the creation and development of intellectual needs, stimulation of the creativity, creative approach to the tasks, the constant increase of knowledge in the process. continuous education based on international standards.

Institutionalization means the activation of post-socialist countries in the field of structural transformation of property relations, creation of an effective system of intellectual property rights protection, improvement of the legislative legal framework regulating research and development and innovation processes, and stimulation of environmental activities of economic entities.

Ecologization of post-socialist countries should be aimed at the realization of ecological and economic interests, ensuring the integrity of natural systems, environmental protection, its reproduction and rational use of natural resources, improvement of ecological infrastructure, increasing the level of ecological culture of the population.

Socialization is aimed at achieving joint well-being and collective security in an increasingly interconnected world, the movement towards universal values, socially-oriented coordination of actions, formation of a set of new socio-cultural and economic values, ensuring the realization of adequate relationships within civil society, ensuring people's confidence in professional education, quality health care, adequate employment, adequate remuneration for work, access to other social benefits.

The determining direction of the vector of transformations in the smart-economy of post-socialist countries should be the preferential creation and consumption not of material goods, but of intellectual values, including their embodied form as goods with a high intellectual component. Indeed, in terms of engineering solutions, the modern car differs little from the prototypes of the beginning of the last century - it is still the same vehicle that can drive. Their fundamental difference lies in the amount of embodied knowledge and information - the last examples of car manufacturing are equipped with onboard computers, composite materials and plastics not found in nature are used in production, salons are equipped with air conditioners, cellular communication equipment with Internet access, and so on. As a result, the price of a car is determined primarily by the value of the information and knowledge concentrated in it, rather than the iron.

The main components of the smart-economy of post-socialist countries today should be e-commerce, investment in innovative development, public administration, export-import activities.

The broad development of smart-economy in post-socialist countries is now complicated. In order to activate it, it is necessary to prepare the ground, including the following elements:

- formation of a regulatory framework that creates a dynamic business environment and allows businesses and households to fully use digital technologies to compete and innovate, reduce various costs, and improve the comfort of the environment;

- development of skills that will allow business and civil servants to use the opportunities of information technology;

- development of institutions (government agencies and private companies) that will help to use information technologies.

Consequently, it is necessary to be careful and build a smart-economy step by step, taking into account the historical, technological, and socio-economic characteristics of each individual state.

Thus, the current stage of economic development in post-socialist countries is characterized not just by structural and technological changes, but by the transformation of the entire economic process, the formation of a new development paradigm.

The reduction of intellectual resources to the rank of the main factor of production generates many problems in a theoretical and practical plan, in particular, such as the gap between the market and balance sheet value of the enterprise, the assessment of the share of GDP caused by the use of intellectual resources, high profitability of "intellectual companies", the formation of supply and demand in the market of high technology goods, the measurement of intangible assets, the mechanism of value added by intellectual resources, etc.

Discussion

The study of economic development models is important from different points of view, first of all to identify the world's most successful practices for their development and application. It is also necessary for building economic relations and expanding mutually beneficial cooperation with developing countries, for a better understanding of their interests and opportunities for mutual adaptation of economies.

According to scholars (Roland, 2018; Sviržić Gotovac, Podgorelec, & Villa, 2021) post-socialist transformation processes occurred against the background of the growing globalization of the world economy of innovative and smart technology development, which had implications for their external component: - Post-socialist countries abandoned the state monopoly on foreign trade because it isolated them from the global economy. Legislative acts regulating the activity of foreign investors were adopted (in the planned economy they were actually absent). Thus, these countries became direct participants of the globalization process; - Globalization as a process of the mutual intertwining of national economies (i.e., increasing their dependence on each other) has a significant impact on the general nature of reforms in post-socialist countries.

In her research, S. Kalinkova emphasizes that since globalization was born as a result of the increasing internationalization of economic activity in the capitalist part of the world, postsocialist countries needed to integrate into the system with the already established rules of the game. Obviously, enterprises in the developed industrial countries had already accumulated a wealth of experience in functioning in an internationally competitive environment. Under these conditions, postsocialist countries could hardly play key roles in innovation processes and smart technology development (Kalinkova, 2019).

This explains the weak position of post-socialist countries in the modern world of the smart economy compared to the leaders. At the same time, it is impossible not to note a certain success of Central Eastern European countries (CEE), almost without raw material resources, were able to achieve steady growth in exports and the development of smart technologies. This fact indicates a gradual increase in their international competitiveness as a result of smart transformations. The inflow of foreign direct investment in this region is growing, which indicates the increased investment attractiveness of its member countries. The participation of other post-socialist countries in the process

of forming the smart economy can hardly be considered successful at the moment. The relatively small volume of smart technology development indicates a low level of international competitiveness (Borzenko, 2019). The attracted volumes of FDI (especially considering the size of the markets) also do not speak in favor of the international investment attractiveness of the CIS and former socialist countries of Asia.

Thus, the chances offered by the process of smart economy development were even better used by the CEE countries than by other post-socialist countries. This conclusion is confirmed by the data of international competitiveness rankings.

In post-socialist countries, the factors of economic growth operate in the conditions of transition from one economic system to another based on market relations. In addition to direct factors of economic growth, institutional factors have a significant influence on the level and rates of socioeconomic development. Post-socialist countries have market rules of the game and established market institutions, but the question arises as to how effective they are and how well they correspond to the modern model of an efficient intellectual economy. Researchers N. Mikiashvili and G. Karmowska note that in the modern economy there can be both efficient and inefficient rules of behavior. In the case of an underdeveloped economic system, inefficient rules of behavior are often more stable than efficient ones, leading to the existence of institutional traps (Mikiashvili, & Karmowska, 2020). Corruption, short-term goal prioritization, institutional property traps, and taxpayer behavior all hinder sustainable economic growth and national competitiveness.

A study of the literature (Mammadova, 2020; Borzenko, 2019) showed that post-socialist countries do not occupy top positions in the ranking of international competitiveness, which in itself reduces their chances of benefiting in the process of smart-economy development. The highest international competitiveness ratings among the post-socialist countries of Europe are in the CEE countries, including those with the highest export and FDI attraction rates (Estonia, Poland, Czech Republic, Lithuania, Latvia, Hungary). Bulgaria's clear progress and Slovakia's steep fall in international competitiveness ratings are noteworthy. Relatively low ratings of the CIS countries and post-socialist Asian countries.

Western economists Roland (2018), Sikora-Fernandez, (2018) emphasize that the division between traditional and new economies is due to the fact that information and telecommunication technologies have radically transformed the way knowledge is generated and distributed, significantly reduced the marginal cost of obtaining it. , storage and transmission.

Almost all researchers of a modern stage of development of economy name information and knowledge or intellectual resources as the main economic resource. Adequate use of intellectual resources is of fundamental importance for solving the problems of qualitative modernization of the economy, expanding the production of goods and services that meet the requirements of material, labor and energy saving, innovative development, increasing competitive advantages, sustainable economic growth, etc. (*Sikora-Fernandez*, 2018; *Zucman*, 2019; *Lin, & Tjio*, 2020; *Kristoffersen, Blomsma, & Mikalef*, 2020)

In modern conditions, intellectual resources are widely used in terms of structural changes, the creation of new forms of entrepreneurship, and innovative corporate relationships, as well as to increase the competitive advantages of the firm. For example, in the U.S. and Europe firms are created that use little or no fixed capital, but only intellectual capital (they are called “knowledge companies” - knowledge companies). Such companies sell knowledge rather than produce traditional goods. Half of the fast-growing companies are knowledge companies (Sotnyk, Zavrazhnyi, Kasianenko, Roubík, & Sidorov, 2020).

The term knowledge workers appeared - intellectual workers who generate new knowledge. A recognized expert in the field of management P. Druker argues that if in the XX century leadership in the world economy depended on the ability to achieve high productivity of physical labor, then in the XXI

century, this leadership will pass to the countries that manage to increase the productivity of mental labor most systematically and most effectively. Druker, 2020, p. 210-211).

According to I. Uninets, in 2019, about 45 percent of those employed in the U.S. economy were "intellectual workers." Characteristically, the largest increase in such workers for 2019 (by 57%) came from medium-sized companies with 100 to 999 employees, while the share of "intelligent workers" in large companies remained unchanged. By using the labor of "intelligent workers," firms save up to $5,000 per year per employee (Uninets, 2021). intelligent labor of a long-established form of employment - remote work - but at a higher level of productivity.

So, the study of different approaches showed that the problem of integration into the modern system of the world economy on the basis of smart-technology is still acute for most of the studied post-socialist countries. Only CEE countries oriented towards the European vector of development managed to achieve relative success in solving it at this stage. Many of them have made progress in the markets of goods and investments have gained membership in the EU, but their level of smart-economy development is not at a high enough level compared to the leading states and requires further significant improvement.

Conclusions and Implications

The conducted research of features of smart-economy development in post-socialist countries has allowed allocating a number of features, in particular among a set of the investigated countries the tendency of the prevalence of a level of development of the countries focused on the European integration over the CIS members is clearly traced. The CIS countries and the former socialist countries of Asia (with positive dynamics of some indicators in certain periods) still occupy a modest position in the modern system of world economic relations.

The analysis revealed the following picture. At the beginning of reforms, all former socialist countries faced an identical task: to integrate into the system of world economic relations on a new (market) basis. Developed industrialized states, as well as a number of developing countries, had a peculiar historical background, i.e., more experience of functioning within the system of international economic relations established on the basis of market principles. Despite the similarity of problems of post-socialist countries, the trends of development of their national economies are varied. The differences are caused, in particular, by such factors as the availability of resources, period of market reforms, awareness of historical perspectives, and individual decisions of individual politicians.

The problem of integration into the system of world economic ties and the formation of the smart-economy has been solved quite successfully (against the general background) in the CEE countries. Many of them have made progress in the markets for goods and investments and gained membership in the EU, but their level of smart-economy development is at a low level compared to the leading states.

It is obvious that the problems of competitiveness growth, an increase of investment attractiveness, and strengthening of positions in international markets are still acute for the vast majority of post-socialist countries. The carried-out research has allowed defining the basic purposes of the formation of smart economy in the post-socialist countries, to allocate the basic existing components of smart economy of the post-socialist countries, and to generate prospects of their development which to a great extent depend on how these problems will be solved at a level of introduction of modern innovative and smart technologies. The study proposes the main directions of development of post-socialist countries, which will contribute to the formation of smart-economy and lead to their comprehensive development. The practical significance of this study lies in the possibility of using its results for further research aimed at developing specific recommendations and programs for the development of smart-economy in post-socialist countries.

References

Borzenko, O. (2019). Imperatives of development of post-socialist countries financial markets. *University Economic Bulletin*, 43, 80-88.

Brzezinski, M., Sałach, K. (2020). Why Wealth Inequality Differs Between Post-Socialist Countries? *SSRN Electronic Journal*, 10, 21-39.

Druker P. (2020). Management Challenges for the 21st Century. K.: KM-BUKS, 2020. 240 .

Doing Business 2020. (2020). URL: https://openknowledge.worldbank.org/bitstream/handle/10986/32436/9781464814402.pdf

GDP, current prices, Billions of U.S. dollars. (2020). URL: https://www.imf.org/external/datamapper/NGDPD@WEO/OEMDC/ADVEC/WEOWOR LD/RUS

GDP per capita, (current international $)/World Bank.(2020). URL: https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?locale=ru&locations=RU

Global Competitiveness. Report 2020 World Economic Forum. (2020). URL: https://www.weforum.org/reports/global-competitiveness-report-2020

Global Innovation Index 2020. (2020). URL: https://w ww.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020.pdf

Human Development Report 1990. (1990).URL: http://hdr.undp.org/sites/default/files/reports/219/hdr_1990_en_complete_nostats.pdf

Human Development Report 2020. The next frontier Human development and the Anthropocene. (2020). URL: http://hdr.undp.org/sites/default/files/hdr2020.pdf

Kalenyuk, I., Tsymbal, L., Uninets, I. (2021). INTELLIGENT DRIVERS OF SMART ECONOMY IN THE GLOBAL ECOSYSTEM. *Baltic Journal of Economic Studies*, 7, 91-100.

Kalenyuk, I., Uninets, I. (2020). Factors and features of the smart economy development. *Economics & Education.* 5. 42-47.

Kalinkova, S. (2019). Measuring the competitiveness of post-socialist countries. *University Economic Bulletin,* 90-98.

Kristoffersen, E., Blomsma, F., Mikalef, P. (2020). The smart circular economy: A digital-enabled circular strategies framework for manufacturing companies. *Journal of Business Research*, 120, 241-261.

Kuźmar, S., Piatek, D. (2019). Institutional determinants of inequality in chosen post-socialist countries: the role of political freedom. *Ekonomia i Prawo*, 18, 295–315.

Lin, Lin, Tjio, H. (2020). Alternative Investments, Sustainability in the Digital Age. *European Business Organization Law Review*, 21, 1-5.

Mammadova, G. (2020). Innovative Tools for Investment Management in the Digital Economy: a Guide for Post-Socialist Countries. *Marketing and Management of Innovations*, 10, 181-190.

Mikiashvili, N., Karmowska, G. (2020). The development of Georgia and Poland compared to other post-socialist countries. *Folia Pomeranae Universitatis Technologiae Stetinensis Oeconomica*, 352, 43-58.

Population of the world and countries. (2020). URL: https://countrymeters.info

Ranking of countries in the world according to the index of economic freedom Ranking of countries in the world according to the index of economic freedom 2020. (2020). URL: https://gtmarket.ru/ratings/index-of-economic-freedom

Ranking of countries according to the level of perception of corruption 2020. (2020). URL: https://gtmarket.ru/ratings/corruption-perceptions-index/info

Roland, G. (2018). The Evolution of Post-Communist Systems: Eastern Europe vs. China. *Economics of Transition*, 26 (4), 589–614.

Sikora-Fernandez, D. (2018). Smarter cities in post-socialist country: Example of Poland. Cities, 78, 10,10-16.

Sotnyk, I., Zavrazhnyi, K., Kasianenko, V., Roubík, H., Sidorov, O. (2020). Investment Management of Business Digital Innovations. *Marketing and Management of Innovations*, 10, 95-109.

Svirčić Gotovac, A. (2020): Učinci procesa privatizacije stanovanja u postsocijalističkoj Hrvatskoj, *Geoadria*, 25 (2), 151-176.

The Inclusive Development Index 2020. (2020). URL: http://www3.weforum.org/docs/WEF_Forum_IncGrwth_2018.pdf

Uninets, I. (2021). Subjective disposition of smart economy. *Economics & Education*, 6, 12-16.

Zucman, G. (2019). Global Wealth Inequality. *Annual Review of Economics,* 11 (1), 109– 38.

DOI: https://doi.org/10.57125/FEL.2021.09.25.02

How to cite: Morska, N., Davydova, N. O. (2021). Philosophy and the future of human rights: peculiarities of the relationship between recent science and technology. *Futurity Economics & Law*, *1(3)*. 16-25. https://doi.org/10.57125/FEL.2021.09.25.02

Philosophy and the future of human rights: peculiarities of the relationship between recent science and technology

Nataliia Morska

PhD in Phylosophical Sciences, Associate Professor Philosophy and Social Sciences Department, Faculty of History Ternopil Volodymyr Hnatiuk National Pedagogical University, 46027, Ternopil 2 Maxyma Kryvonosa str., Ukraine, e-mail: pravo@tnpu.edu.ua, ORCID : 0000-0002-6533-2802

Nataliya O. Davydova

Doctor of Science of Law, Professor, Leading Researcher, Department of Private Law Academician F.H. Burchak Scientific and Research Institute of Private Law and Entrepreneurship of the National Academy of Legal Sciences of Ukraine, 01042, 23-a Raevsky Str., Kyiv, Ukraine, ndavydova11@gmail.com, ORCID: 0000-0002-2362-3724, AAR-8239–2021, 57224514537

Received: June 20, 2021 | **Accepted:** September 1, 2021 | **Published:** September 25, 2021

Abstract:
Modern trends in the development of information society demonstrate the important role of scientific advances and technological innovations in affecting human society. Legal aspects of such influence remain a topical issue for research, since the dynamics of the emergence of new technological solutions is quite high, so lawyers have to respond to today's challenges promptly. The article aims to analyze the future of human rights in the digital day, to understand and outline the threats arising from the impact

of technology on society from a philosophical point of view. The methods of knowledge used in the article are divided into general scientific (analysis and synthesis), specific scientific (historical, psychological), philosophical (prediction, synergetic method), and special legal (dogmatic). The results traced the peculiarities of transhumanist and posthumanist perception of the future development of human rights through the prism of legal aspect and analysis of the relevant most significant current legislative acts. It is proved that possible humanistic violations can have technological roots. At the core of humanistic principles are individuality, mutual respect and recognition of the dignity of others, and self-improvement. However, excessive attention to science and technology does not allow us to completely safeguard the future development of humanity and, consequently, human rights. Contemporary Russian aggression is an example of such an opportunity. The conclusions summarize that the need to regulate artificial intelligence is already overdue. In addition, the authoritarian regimes of today are also using high technology for their own purposes. To protect human rights, it is necessary to develop principles for punishing political leaders and entire regimes.

Keywords: transhumanism, posthumanism, philosophy of law, digital society, human rights.

Introduction

The scientific and technological revolution was not only the impetus for the development of technology and the impetus for accelerating progress but also a significant factor that changed man himself. Modern possibilities of information transfer, digitalization of everyday life, automation, and robotization of production processes have become parts of everyday life, which, however, require further understanding and comprehension. In particular, we are talking about the place of man in the new world, the problems, and the challenges that humanity is facing or will face as a result of the further development of technogenic society. Philosophers have paid attention to the fact that social life is not becoming easier or fairer, and the free time, which appears through the latest communication, transportation systems, and the possibilities of the Internet, is being absorbed by gadgets, games, and other digital entertainment. The result is a certain atomization of consciousness, seclusion of the physical and the moral, which can peculiarly affect the future. Braidotti (2013) forms his own concept of understanding the posthuman, an individual who is preparing to be superhuman, while also making use of both technical and natural possibilities. Braidotti (2017) also explored the main aspects of the posthumanist concept, outlining its possibilities and challenges. F. Fukuyama, a critic of the transhumanist development of being, raises a very important issue about interference with the genetic programs of both humans and animals (Fukuyama, 2004). Such interference can affect the transformation of all social, legal, political structures. Balaban (2020) characterized the likely configurations in the realm of natural law. Bolinska & Martin (2021) identified the problem of path dependence on history and the philosophy of science. The transformation of future human rights was analyzed by Cargas (2019). However, Dovhan & Mikhailina (2021) explored the problem of the use of digital rights through the lens of transhumanist theory. Features of the legal scientific revolution were analyzed by Kedar & Hon (2020). At the same time, Llamas Covarrubias (2020) described key opportunities, threats to the development of human rights through the lens of transhumanism and posthumanism. Tamborini (2020) identified the special role of computer technology in changing the social structures of human existence. However, contemporary researchers studying the problem of the transformation of law have not envisioned the possibility of changing the basic concepts of law through a nuclear threat (or nuclear apocalypse).

Research Problem

An important problem will be the personal communication of people without the use of various messengers and other technical “intermediaries”. Communication will inevitably affect other areas of human relations. For example, significant changes will take place in the family and social life, where social networks have already taken a powerful place. At the same time, the influence of technology has also affected global perceptions of the role and place of the individual, influencing humanistic concepts and the human-centeredness of the surrounding reality. In the hypothetical times of technological

singularity in the future, technological development is expected to acquire such a rapid pace that the graph of technological progress will become almost vertical. Nevertheless, contemporary globalization challenges question the "inner development" of human law.

Research Focus

The study of social relations of the information age from the point of view of the philosophy of law is an urgent task because the transformation of society necessarily leads to transformations in the understanding, interpretation, and adoption of new laws. In particular, it is said about the compliance of Ukrainian legislation and international acts with the principles of transhumanism, posthumanism, understanding, and respect for rights and freedoms in the context of an aggressive technogenic environment, the notion of cohabitation norms and their possible violations through the influence of digitalization.

Research Aim and Research Questions

The article aims to analyze from a philosophical point of view the future of human rights in the digital time of human development, to determine what threats the development of modern technology has on the future of society, specific communities, and the perception of others.

The objectives of the study are to investigate the modern origins and issues of transhumanism through the prism of the legal aspect, the definition of human rights of the fourth generation.

Research Methodology

General background

The conceptual idea of the study was implemented by using the following research methods: general scientific, specifically scientific, philosophical, specifically legal. Among the general scientific methods, we will distinguish analysis, synthesis, modeling, induction. The study used specifically scientific methods: historical, logical. Among the special legal methods used dogmatic principle of understanding the transformation of modern law. In the work, philosophical methods of research are implemented through the plane of use of general and specifically scientific methods.

Data Analysis

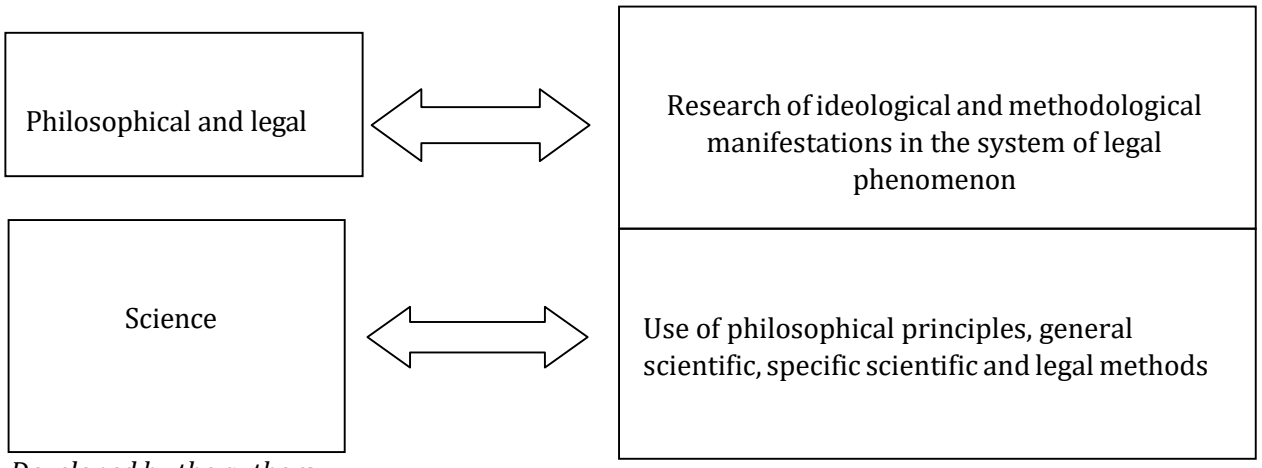
Based on the analysis, the main subject of research (paradigms of development of philosophy and future human rights) is divided into smaller parts (human rights in the context of the development of science and technology, characteristics of transhumanism, and main challenges of modernity). Based on synthesis these parts are combined and our own conclusions about the specifics of human rights development in the future are made. With the help of the prognostic method, the peculiarities of further transformation of philosophy and law of the future are reflected. As a result of using content-analysis, a thorough study of modern professional literature has been conducted, outlining the unresolved and debatable problems in the structures of the philosophy of future law.

The study uses specifically scientific methods: historical, logical. In particular, based on the historical method it was possible to trace the origins of understanding the influence of modern technologies on the public and legal opinion. Among the special legal methods, the dogmatic principle of understanding the transformation of modern law was used.

In the article philosophical methods of research are used through the plane of application of general and specifically scientific methods. Note that the subordination between them is the same as between the principles of the general and the specific. Particularly that the philosophical principle

allows generalizing the material obtained from the general, concretely scientific, and in some cases - to continue or specify the philosophical method. Separately, the study uses a synergetic approach that proves that a person's way of seeing, attitudes, and worldview are a consequence of nonlinear influences (See Figure 1).

Figure 1
Levels of the methodology of cognition of law



Developed by the authors

The work uses the principles of the natural philosophical methodology of research, which is based on the unity of social structures with nature, and human laws with the principles of nature (Cosmos). Consequently, the natural-philosophical approach contributes to the formation of a holistic understanding of such paradigms as law and state. The work also uses the principles of a philosophical-legal approach based on the patterns and features of the philosophy of law. In order to explore the future of the philosophy of law, the authors of the article turn to modern scientific approaches to explain the future of humanity: transhumanistic and posthumanistic, based on a belief in the possibilities of technology and innovation (See Table 1).

Table 1
The main differences between the transhumanist and posthumanist concept

Transhumanism	
The concept is focused on "expanding outward", establishes a hypothetical set of digital and biomodified subjects.	Transhumanist ideas are imbued with the desire to achieve a posthuman era
Posthumanism	
Aimed at the "inner expansion" of Anthropos (in the classical sense - man). Denies the superiority of the human, the main thing is the liberation of the oppressed.	The main attention is paid to the rights of women, vulnerable social groups, animals. There is no place for the ideal of man and postman in the concept, as there is no hierarchy in it.

Compiled by the authors

The research was conducted in several stages. At the first stage, the content analysis of the main sources on the problem was carried out, the modern literature was processed. The second stage characterized the features of understanding the future of law through the prism of analysis of modern transhumanist and posthumanist concepts. At the third stage, the problem of transformation of the philosophy of law in the context of the development of science and technology is investigated. At the fourth stage of the study, the authors of the article noted that the concepts of the development of the future of mankind did not provide for military transformation and nuclear threat, which will further influence the formation of another post-military (post-nuclear) concept of the future law. At the last stage of the study, the authors made their own conclusions and judgments on the following development of human rights.

Research Results

Modern researchers make sense of humanity's future using the latest philosophical approaches. This is also true for predicting future legal relations, for they do not exist without society and develop along with it (Rodriguez, 2021). Among the most common scientific concepts of human development are transhumanism, posthumanism, which is based on the belief in human progress based on the use of modern technology (primarily artificial intelligence).

Transhumanism was formed as a current at the end of the 20th century, with the main goal of defeating death. Now, this ideology has spread all over the world, its adherents raise many questions and outline different ways of solving them. Transhumanism is traditionally divided into democratic, religious, libertarian, extropianism, and singularism (Llamas Covarrubias, 2020). General transhumanism seeks to recognize the need to overcome the end of human existence (Death). At the same time, the transhumanist worldview is based on modern scientific advances (Dovhan & Mikhailina, 2021). Posthumanism offers a different conception of the posthuman. The posthumanist vision is characterized by the rejection of any binary oppositions and any hierarchies (Braidotti, 2017). The main theme of posthumanism is the idea of the posthuman, and in this, there is an illusory resemblance to transhumanism (Llamas Covarrubias, 2020). However, posthumanism goes beyond individual binary oppositions:

1. the human - the inhuman,
2. culture is nature,
3. man is a woman,
4. humanism - anti-humanism.

Braidotti (2013) in "The Posthuman" notes: "The posthumanist perspective is based on the notion of the historical decline of humanism but goes further ... without sinking into the rhetoric of the crisis of man" (p. 37). The researcher criticizes concepts of humanism, describing the Holocaust and the existence of the Gulag camps as extreme points of the humanist manifesto. The hopelessness of humanist principles led to the emergence of anti-humanist concepts. The researcher identifies the following "feminism, anti-racism, pacifism, nuclear disarmament" (Braidotti, 2013, pp. 38-45). However, transhumanism and posthumanism are fundamentally different concepts. Transhumanism continues the Enlightenment idea that humans are the point of formation of the biological noosphere. In this sense, the conquest of the cosmos is important - a logical extension of the influence on the surrounding reality. This is an important difference with posthumanism, for the latter advocates non-interference in natural processes and cooperation with other species of animate and inanimate nature (Llamas Covarrubias, 2020). Posthumanism does not distinguish between humans and nature in principle but recognizes the presence of special intelligence in humans (Kedar & Hon, 2020). In addition, posthumanism focuses on the development of human rights, defines the transformation of women's rights, previously socially impressive categories of the population. Separate is the struggle for animal rights. Such a strategy "grants rights previously powerless" (Braidotti, 2013).

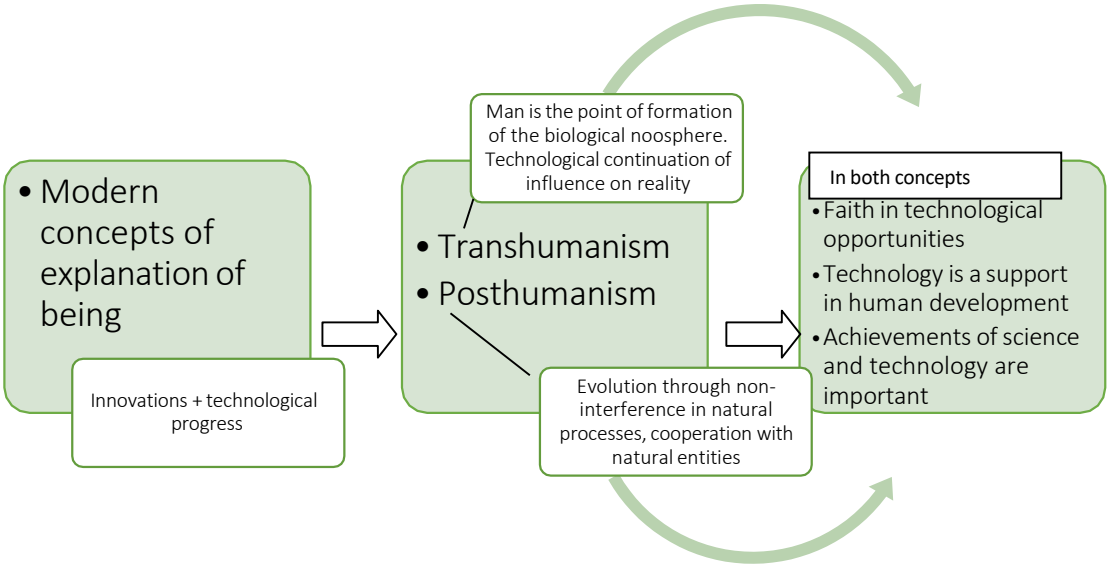
What both theories have in common, however, is the inclusion in their conceptual space of hope in the progress of technology. In transhumanism, the technical takes on sacred characteristics (Fillard, 2020). Technical possibilities begin to be seen as something that will free human from biological streams. Taking into account the scientific principles of posthumanism and transhumanism, we note that the adherents of the concept believe that the achievement of modern science makes it possible to predict the future of human beings (See Figure 3).

Transhumanism and challenges of modernity: legal aspect

At the heart of transhumanism is the desire and understanding of human change brought about by the use of modern advances in science and technology and aimed at overcoming aging, death, suffering, and pain, and improving the human body. Artificial intelligence should be the main engine that will bring about the desired transformation and create posthumanity. Its development has been going on since the time of the first computers. Currently, neural networks, bots, and other elements of artificial intelligence

are used in many areas, covering both human life and automatic control of complex mechanisms and spacecraft systems (Fillard, 2020). By further refining and improving the technical capabilities of computer networks, humanity may come to the creation of artificial intelligence that will not be inferior to human intelligence, perhaps even exceed it in many respects (Balaban, 2020). This situation may lead to the emergence of posthumanity, which will occur through the use of the creative capabilities of computer systems and the improvement of the human body and mind (Tan, 2021). The positive aspects of this direction are tangible, as they speak, for example, of the possibilities of augmented and virtual reality, improvement of existing human characteristics, and overcoming deficiencies through treatment or prosthetics.

Figure 3.
Scheme of the main aspects of the formation of transhumanism and posthumanism



–

Development of the authors

Then proponents of the theory of transhumanism believe that the latest technology can change philosophy, sociology, anthropology, culture, and jurisprudence. And the latter was especially noted because human rights will also undergo global changes with the development of the technological environment in which humans will live (de Grefte, 2020). Many of the foundational principles of the legislative industry will likely require change.

In particular, it is said that the rules of humanism may be violated because of the development of technology. In general, humanism is based on respect for individuality, mutual respect, and recognition of the dignity of others, opportunities, and needs for self-improvement. At the same time, contemporary globalization processes and the development of science and technology do not allow for definitive and affirmative safeguarding of humanity's future development (Llamas Covarrubias, 2020). The threats of interethnic, interethnic, and even civilizational clashes are very high. In the face of such unfavorable developments, human rights also undergo changes.

The development of science and technology and artificial intelligence will open up many possibilities for bodily enhancement and health improvement. Clearly, as a result of changes in human nature itself, modern rights will emerge, some of which (now already partially implemented) researchers call the fourth generation of human rights (Fillard, 2020). We are talking about sex reassignment operations, transplantation of organs from donors to affected people, possibilities of cloning and artificial cultivation of organs, appeal to the possibilities of virtual reality, legalization of same-sex marriage, use of artificial insemination, euthanasia, child-free family and full non-interference of public authorities. and moral views, formation of new norms of legal behavior.

In the realities of Ukraine, it is possible to introduce new opportunities for lawful behavior. In particular, acceptable from the legislative side in some states artificial insemination and surrogacy, non-interference of the state to the religious and moral views of citizens (refers to the autonomy of human life), organ transplantation (but not "black", but legal, fair and performed voluntarily). The child-free family, virtual reality with all its disadvantages and advantages, same-sex marriage, gender transformation of personality, etc. can be recognized as legally neutral. Human cloning and euthanasia are considered unacceptable. At the same time, this conditional distribution may be reconsidered in the future, as representations of the capabilities of the human body and artificial intelligence will change - many provisions of the current Constitution and adopted international treaties may become invalid. The psychological consequences of such transformations for the individual and society as a whole are important. Among the negative consequences of such transformations may be the loss of individual traits, identity, and uniqueness, the formation of cybernetic organisms deprived of natural characteristics formed by nature (Braidotti, 2017). In the future it is possible to replace birth with a technical and controlled process, the concept of parents may also be reconsidered. Therefore, from a transhumanist perspective, the law will require changes and additions in the future, as human organisms will undergo such changes as a result of digitalization and cybernetic technology that it will be extremely difficult to consider them human in the literal sense of the word.

Human Rights in the Context of Science and Technology Development

The fixation and realization of fourth-generation human rights is a relevant problem for the public debate because the limits to which they are to be applied have not yet been regulated. This applies in particular to the legal and judicial bodies of the member states of the European Union, where discussions have only certain results, which are difficult to define into a single system. In particular, in the Charter of the European Union par. Article 3 (1) states that everyone has the right to his or her physical and mental integrity, and Article 3 (2) specifies the possibilities of using the latest developments in the field of human rights and fundamental freedoms. 2 specifies the possibilities of using the latest developments in the field of medicine and biology. This refers to the voluntary and duly formalized consent of the persons concerned, which is formalized in the manner prescribed by law, the prohibition to use of the human body or its parts as a source of funds, the prohibition to use of cloning for medical treatment, the waiver to use euthanasia or in any other way help the sick person to end his life or to be inactive for the same purpose.

The problem with the functioning of these transactions at the international level is obvious, but there is still a lack of legislation. The difficulty lies in the fact that only certain documents have prescriptions that are intended to define certain limits, such as the 1997 Council of Europe Convention on the Protection of Human Rights in the Context of Modern Medicine, Genetics, and Biology. Indeed, the national parliaments of EU member states (Belgium, Luxembourg, and the Netherlands) have legislated for the possibility of euthanasia for terminally ill patients (Fillard, 2020). The implementation of these laws (for example, for the first time in the Netherlands in 2002) has demonstrated a lack of unity in the understanding of the role of modern human rights even in legally developed countries.

There are considerably fewer legal questions about the rights to use virtual space since the globalization of modern society has entailed unity in understanding the formation of such a group of legal decisions (Cargas, 2019). For example, a resolution of the UN General Assembly enshrined the right to information, the essence of which was reduced to freedom of speech on the Internet. In various versions, the right access to the Internet is recognized and regulated in quite a few developed states, and its importance has been repeatedly emphasized by international decisions (Ben-Menahem & Ben- Menahem, 2020). In particular, since 2000 in Estonia, the right of access to the Internet is included in the guaranteed public telecommunications services, which should be used by all citizens. In 2011, Greece supplemented its constitution with an article allowing for easier access to information that can be obtained online. In Finland, the minimum speed of Internet connection has been set since 2009, which in 2012 should already be 100 Mb/sec. Ukrainian lawmakers have also discussed the possibility of recognizing guarantees of access to the Internet for individuals. Moreover, this right should be unlimited. However, due to a lack of political will and lack of funding mechanisms, these initiatives could

not be implemented. However, given the European experience and recent trends in the digitalization of the life of Ukrainians, consideration of such bills in Ukraine may return.
Gradually European institutions began to discuss the possibility of the legalization of robots, that is, the possibility of identifying moral and legal rights, the ability to be aware of their feelings and responsibilities. The development of autonomous mechanisms and advances in robotics will raise questions about the regulation of their relationship with humans (Braidotti, 2017). Further advances in artificial intelligence could make major changes to the known classification of living beings (Northcott, 2020). Many questions may also arise from changes in criminal law, which also involve the problem of who will be responsible for the consequences when a robot breaks down and causes serious damage (Fukuyama, 2004). Also problematic is the determination of how much artificial intelligence will be responsible for the crimes it commits and what means of punishment are appropriate. Accordingly, the Criminal Code will require additions in the area of electronic offenses.

Discussion

An intermediate conclusion that can be drawn from scholarly research is the interest of international legal institutions in the latest principles of human dignity based on the use of modern technology in information transmission, medicine, robotics, etc. (Dovhan & Mikhailina, 2021). Mention should also be made of the UNESCO Universal Declaration on Bioethics and Human Rights, which has a clear legal direction and is intended to extend international law to the field of biomedicine as the latest synthetic branch of science and technology. The Declaration does not explicitly refer to the specific characteristics of human dignity, but it is difficult to consider this document as completely rhetorical. The search for new definitions of human dignity indicates that there is some concern about the need to promote respect for the intrinsic values of individuals and the definition of the integrity of the human species as a whole (Torres, 2015). For this reason, international bioethics law is believed to combine an understanding of human dignity as a universal rule with general updated human rights that guarantee effective and practical resolution of bioethical problems in the future.

All of the above examples analyzed by researchers lead to the aspect that humanity will evolve with the use of high technology (Tamborini, 2020). Beyond the philosophers (as well as legal scholars) are other aspects of the use of modern technology - extremely powerful opportunities for destruction. Digital technology is actively used in hybrid confrontations in the global arena, artificial intelligence can control cruise missiles as effectively as vehicles, and current unmanned aerial vehicles are actively used in the military industry. In part, philosophers were convinced that in the realities of the twenty-first century, war as a tool for resolving political disputes would retreat to a certain local level. These sentiments were especially tangible after the collapse of the Soviet Union and in the 1990s when no one thought of a return to global confrontation with the Western world. At the same time, the economic successes of the Russian and especially the Chinese power elites demonstrated something else - a desire to revive the past by resorting to bloody ways. The Russian-Ukrainian war demonstrated the unscrupulousness of the Kremlin regime, which actively resorted to propaganda in the digital space, used drones to attack civilians and critical infrastructure.

The war in the center of Europe has shown that ideas of peaceful coexistence and the benefits of globalization can be negated by Russian missile strikes. The possession of a powerful nuclear arsenal makes the official Kremlin an influential player in the political arena (despite the obvious problems of the Russian army in general), dangerous to its close and distant neighbors. The emergence of such authoritarian and supremacist regimes, possessing a high technology and using it for warfare, will require additional legal scrutiny.

It is clear that Russian aggression has pointed to the possibility of brutal human rights violations, but the legal response to such actions is ambiguous. The only effective tool is sanctions and international isolation, which, however, have many exceptions and can be circumvented. There are no options to punish the perpetrators, although the mechanisms of the Hague Tribunal are known. Such blatant aggressive behavior of regimes that are in conflict with modern society and openly challenge it requires

the development of updated legal norms. The use of the latest technologies only strengthens such authoritarian regimes, since advances in, for example, biomedicine are also available to dictators and tyrants (due to any price they are willing to pay, then above all to dictators and tyrants). Modern philosophical concepts of thinking about the future (transhumanism and posthumanism) do not assume the existence of ruling elites who so aggressively oppose technological progress, but use its individual assets for their own purposes. Given the future availability of nuclear weapons to such regimes, the categories of not only progress but also regression are also subject to legal and philosophical reflection. At issue is the possibility of developing human rights in a post-nuclear day, the extent to which such rights can be developed and retained. Perhaps the issues of human cloning, the capabilities of cybernetic organisms, artificial intelligence, and other possibilities require reconsideration through a possible nuclear apocalypse.

War as science and technology advances will not leave human sociality. It may become even more destructive than before. For this reason, close attention to human rights must consider effective mechanisms for dealing with dictators now.

Conclusions

Understanding human rights in light of the development of modern technological progress is an integral part of the philosophical and legal sciences. The analysis of the fourth generation of human rights has shown the vision of transhumanists and posthumanists on the development of this important legal object. Let us note that there is a clear understanding of the need to revise legal acts already today, which is demonstrated by the example of the studied resolutions of national parliaments of EU member states, EU resolutions, and UNESCO directives. Common to all these legal acts is the belief in the better capabilities of human beings and the human body caused by the development of biomedicine, digital and other technologies, and the need to limit uncontrolled experiments that may pursue a criminal or terrorist intent. It has been established that among the practical needs of modern regulation is the need to regulate problems of artificial intelligence. At the same time, the fascination with ideas of human progress should not neglect the needs of the more immediate present. We are talking about the use of technical innovations and advances in science for blatantly invasive purposes. Modern authoritarian regimes have internalized the model of borrowing significant achievements that are used for aggressive purposes. The current policy of the Kremlin regime is an obvious confirmation of this. From this perspective, legal scholarship should develop additional principles to punish not only individuals but also political leaders and entire regimes that resort to outright human rights violations and feel impunity because of the possibility of symmetrical and asymmetrical strikes.

References

Balaban, O. (2020). Genera and species vs. laws of nature two epistemic frameworks and their respective ideal worlds. *Studies in History and Philosophy of Science Part A*, *81*, 6–15. doi:10.1016/j.shpsa.2020.01.007

Ben-Menahem, H., & Ben-Menahem, Y. (2020). The rule of law: Natural, human, and divine. *Studies in History and Philosophy of Science Part A*, *81*, 46–54. doi:10.1016/j.shpsa.2019.05.001

Bolinska, A., & Martin, J. D. (2021). The tragedy of the canon; or, path dependence in the history and philosophy of science. *Studies in History and Philosophy of Science Part A*, *89*, 63–73. doi:10.1016/j.shpsa.2021.07.008

Braidotti. (2017). Posthuman Critical Theory. *Journal of Posthuman Studies*, *1*(1), 9–25. doi:10.5325/jpoststud.1.1.0009

Braidotti, R. (2013). *Posthuman*. Polity Press.

Cargas, S. (2019). Fortifying the future of human rights with human rights education. *Journal of Human Rights*, *18*(3), 293–307. doi:10.1080/14754835.2019.1617117

de Grefte, J. (2020). Epistemic benefits of the material theory of induction. *Studies in History and Philosophy of Science Part A*, *84*, 99–105. doi:10.1016/j.shpsa.2020.09.001

Dovhan, B., & Mikhailina, T. (2021). Fourth-generation digital human rights through the prism of transhumanism. *Entrepreneurship, Economy and Law*, (*1*), 171–175. doi:10.32849/2663-5313/2021.1.30

Fillard, J.-P. (2020). *Transhumanism: A realistic future?* World Scientific Publishing Co Pte Ltd.

Fukuyama, F. (2004). Transhumanism. *Foreign Policy*, (*144*), 42. doi:10.2307/4152980

Kedar, Y., & Hon, G. (2020). Law and Order natural regularities before the scientific revolution. *Studies in History and Philosophy of Science Part A*, *81*, 1–5. doi:10.1016/j.shpsa.2020.02.002

Llamas Covarrubias, J. Z. (2020). Human rights, transhumanism and posthumanisim: A human technological enchancement. *SSRN Electronic Journal*. doi:10.2139/ssrn.3887926

Northcott, R. (2020). Big data and prediction: Four case studies. *Studies in History and Philosophy of Science Part A*, *81*, 96–104. doi:10.1016/j.shpsa.2019.09.002

Rodriguez, Q. (2021). Idealizations and analogies: Explaining critical phenomena. *Studies in History and Philosophy of Science Part A*, *89*, 235–247. doi:10.1016/j.shpsa.2021.08.007

Tamborini, M. (2020). Technoscientific approaches to deep time. *Studies in History and Philosophy of Science Part A*, *79*, 57–67. doi:10.1016/j.shpsa.2019.03.002

Tan, P. (2021). Inconsistent idealizations and inferentialism about scientific representation. *Studies in History and Philosophy of Science Part A*, *89*, 11–18. doi:10.1016/j.shpsa.2021.07.002

Torres, L. (2015). Semantic constructions and Law. In *XXVI World Congress of Philosophy of Law and Social Philosophy*. Initia Via. doi:10.17931/ivr2013_wg135_03

DOI: https://doi.org/10.57125/FEL.2021.09.25.03

How to cite: Paryzkyi, I. (2021). General theory of future law: definitions, innovative potential. *Futurity Economics & Law*, *1(3)*. 25-32. https://doi.org/10.57125/FEL.2021.09.25.03

General theory of future law: definitions, innovative potential

Igor Paryzkyi

Doctor of Science (PHD), Pro-rector Professor of Marketing, Economics, Management and Administration National Academy of Management, Kyiv, Ukraine,

ORCID:0000-0001-6835-5930, Scopus Author ID: 57218616448, Scopus Author ID: 57212603399

Received: June 28, 2021 | **Accepted:** September 3, 2021 | **Published:** September 25, 2021

Abstract: The article actualizes promising ideas that have the innovative potential for the formation of new institutional and functional elements of the law of the future. The legal system is one of the more conservative spheres of public activity. The general theory of law is a constant paradigm oriented to the traditional and fundamental components. However, the rapid development of the socio-cultural space produces challenges and threats, requiring the reaction of the legal environment. The

purpose of scientific exploration is to identify specific aspects of the general legal space that require improvement and transformation; as well as to realize the feasibility of using the definition "general theory of law of the future". The objectives of the article are to analyze contemporary legal concepts and ideas that can actualize transformations in certain segments of jurisprudence in the short-term and long-term strategy. The methodology that was used to achieve the objectives of scientific exploration can be divided into several clusters: general scientific methods, individual scientific methods, special methods of scientific legal discourse. The result of the research is the development of theoretical and methodological settings (dynamism, flexibility, and efficiency), which will be relevant to the legal paradigm in the future. So, the general theory of law has historically proved its effectiveness and relevance for civilizational development and does not require cardinal revolutionary changes, however, it is necessary to transform some legal institutional and functional elements in response to the rapid and permanent changes in the sociocultural space.

Keywords: theory of law, legal system, jurisprudence, legal synergy, innovations in legal space.

Introduction

A general theory of law (in continental legal science discourse) or jurisprudence (in Anglo-American parlance) is the fundamental basis of the legal system in its various manifestations. State legal systems, international law, institutional clusters of practical jurisprudence - all these segments are fused on the principles of the general theory of law. The peculiarity of jurisprudence is its constancy and conservatism. The probability of revolutionary changes in the legal space is defined as rather low or not allowed at all. Changes in the legal system are implemented in an evolutionary way. The general theory of law, on the other hand, declares the invariability of its principles, which are oriented to the rule of law.

In such circumstances, the question arises - how to carry out reforms, implement innovative transformations, and predict changes and prospects of development in the legal space? The institutional cluster of the legal system involves constant updating of theoretical and methodological and organizational and logistical potential. In the functional cluster of the legal system, it is customary to improve the practice-oriented dimension associated with the modernization of legal institutions. This is how the conditions for innovations in the legal system are formed.

Research Problem

The key problem of scientific exploration is to determine the optimal way to implement innovative development in the general theory of law. On the one hand, interesting is the potential possibility of forming the definition of "the right of the future". However, such theoretical transformation requires the introduction of qualitatively new elements of the general theory of law, which is not seen as appropriate, because the legal system demonstrates its civilizational socio-cultural relevance and effectiveness, not requiring a new format. Another more appropriate way to transform the general theory of law is to introduce progressive elements into the existing legal paradigm. The aggregate of innovations in the systems of state and global legal environment provide a synergetic effect, due to which the legal system is renewed without violating its fundamental principles, however, responding to socio-cultural challenges and changes.

Research Focus

The main focus of innovative transformations in the general theory of law is focused on changes in the institutional formats of the legal system and its functional purpose. Worldview transformations of legal understanding in society are also important. "The law of the future" is a synergetic combination of the content and format of the legal system in the context of socio-cultural changes. For thousands of years, society has tried to correlate the institutional and functional components of the legal environment, which ensured its simultaneous stability and flexibility. The dilemma: "the law for the individual" or "the individual in the law" entailed the need for clarification of the human-meaning

contexts. Since this contradiction has been relevant throughout civilizational development, it is obvious that it will also arise in the future.

Research Aim and Research Questions

The purpose of the scientific exploration is to find out the key aspects concerning the prospects for the development of the general theory of law in the short-term socially oriented and long-term civilizational perspectives. The tasks of the article will concentrate on solving such problems:

- revealing the positive and negative manifestations of the definition of the "law of the future" and the worldview interpretation of the general theory of law in the context of socio-cultural changes;
- potential transformations of the format of the legal system by reorganizing the existing institutional structure in accordance with new social realities;
- innovation of the functional cluster of the legal system using progressive principles and mechanisms.

Research Methodology

General Background

The methodological techniques and tools used in the study can be divided into several clusters:

- general-scientific methods (analysis, classification, forecasting, modeling) that form a general matrix of interpretation of the principles of the theory of law and comprehension of its innovative potential;
- individual-scientific methods (intuitive methods, observation, induction, deduction, verification, evaluation, forecasting, introspection method), allowing to specify of the impact of innovative transformations on the objects and subjects of the legal system;
- methods of scientific legal discourse (legal analysis, legal statistics, legal logic) that ensure the functioning of institutions of the legal system in conditions of both stability and uncertainty of social development;
- philosophical methods (dialectic and synergetic), thanks to which strategic planning of the general theory of law development is worked out with the account of innovation potential.

The doctrinal paradox and the discursive dilemma (Mongin, 2019) are considered as promising methodologies used in interpreting the principles of legal theory. The peculiarity of these two methodologies is their focus on the motivational element of the theory of law in its logical dimension. At the same time, it should be noted the orientation of these methods on the unity of theory and the ordering of interpretative elements, obligatory for jurisprudence, but requiring consistency and balance, which is achieved thanks to the doctrinal paradox and the discursive dilemma.

A progressive format in the functional cluster of the legal system are the characteristics of luck. In particular, the successful litigation function (LSF) forms the theoretical and methodological premises for better coverage of the legal field (Osório & Luppi, 2019).

Sample / Participants / Group

The objects of the study were sociocultural systems, which are units of the legal field. Modern socio-cultural realities form a new priority niche for the general theory of future law. In recent decades, the legal system has identified the human being as a priority factor in its professional orientation. Despite the total globalization of civilizational development, the legal system has responded to these processes by directing additional efforts precisely to protect the individual from the impact of globalization. This approach has been justified up to now, but as the realities and projections of the global sociocultural situation in the world indicate, the legal community will soon be confronted with the issue of global legal problems. Particularly in international law, social developments are stubbornly

approaching the observation and need for an appropriate legal response to concepts such as international crimes or crimes against humanity (Torres, 2019).

In addition, the traditionally humanistic principles of modern sociocultural space dictate the primacy of humanity in the general theory of law, which is expressed in the observance of the principles of humanism, equality, and the rule of law.

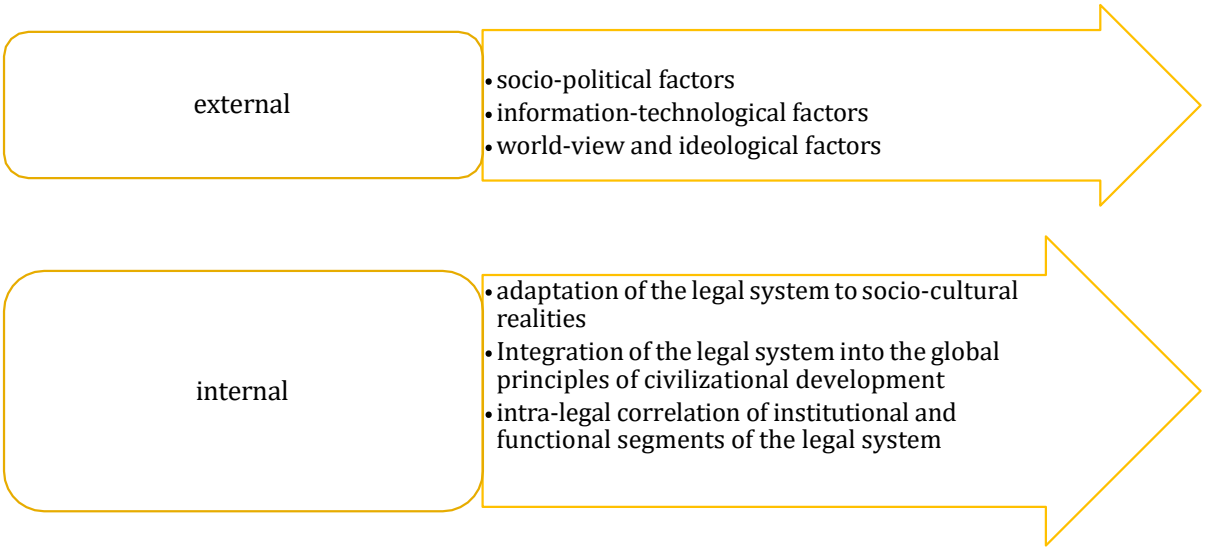
Research Results

The legal sphere, like any other sphere of public activity, requires transformation. However, jurisprudence has its own peculiarities in terms of updating the organization and principles of work. The legal system does not tolerate abrupt changes, because such an approach can unbalance the integral system of the rule of law, which in turn will destroy the normative-regulatory function in society. The result of such transformations can be chaos in society, which will lead to irreparable consequences. Consequently, the integrity and balance of the legal system always remain priority factors in the process of its transformation. The study revealed two factors that affect the innovative transformation of the legal system (see Fig. 1).

Let us consider in detail the elements of the legal system of the future, which can potentially undergo innovative changes. At the same time, we note the relevance of the boundaries of these transformations, which will not violate the integrity of jurisprudence as a sphere of social activity. The institutional cluster of law is less involved in the need for innovative transformations. When we talk about legal institutions, these are, as a rule, clearly organized structural elements, the reorganization of which is impossible without reformatting the entire legal system.

Figure 1

Factors of innovative transformations in the legal system



Source: author own development

Since the general legal theory is difficult to transform and reformat into new definitions, transformations in the jurisprudence of the future will be predominantly about institutional and functional clusters. In his study Hunter (2020) identifies five sweeping changes awaiting the legal field in the near future. These are the technologization of legal devices, technologization as an alternative to legal methods, the globalization of the legal system, the increasing accessibility of legal support in society, and the increasing role of ICT in legal practice. Basically, the mentioned transformations have already begun to be actively implemented in today's legal environment. At the same time, in the future, these transformations may become full-fledged elements of the general theory of law.

In particular, an important practically oriented direction of criminological theory is "building a general theory of crime through theoretical verification and theoretical integration" (Wang & Zhuang, 2018). The general theory of crime under a new structure in the future will have an important impact on the principles of general legal theory. The construction of new prospective segments of general crime theory includes:

- worldview-philosophical interpretations of good and evil in human nature;
- dichotomous interpretation of the nature and manifestations of law-abiding and criminal behavior;
- elucidation of the dimensions of the favorable environment for the formation of crime and the unfavorable environment for its spreading.

The application of the latest technologies not only as standard use of ICT in the legal space but also the formation of legal innovative elements forms the overall picture of the future legal paradigm. Understanding coding, programming, artificial intelligence as legal elements is important for the professional activities of legal professionals (McGrath & Contreras, 2020). Innovative technologies implemented in the legal system are rather ambiguously perceived in society. Insufficient awareness of the potential and specifics of the implementation of scientific and technological tools in the legal system raises doubts about their effectiveness for this industry. However, the practical application of innovative scientific and technological elements confirms their relevance and feasibility of the legal system.

The role of information and communication technologies in the development of all spheres of social activity is constantly and rapidly growing. Increased capacity to perform the fundamental functions of the legal system (controlling, normative and regulatory) thanks to innovative digital technologies contribute to the overall development of the functional cluster of the theory of law. The ability to physically impact (tracking, recording) and intellectually inform (analytic systems, big data sharing) allows the principles of the legal field to be implemented with greater efficiency (Bhattacherjee & Shrivastava, 2018). Consequently, the role of ICT and other technological innovations contributes to the reorientation of this segment from a supporting factor (in modern jurisprudence) to an independent structural unit in the legal picture of the future.

An important aspect of building promising models of the legal system is the correlation of the jurisprudence cluster with other spheres of social activity. One of the key definitions of civilizational development is the formation of principles of the common good (Stojanovic, 2019). Such precepts cannot be realized without an effective legal system. The common good describes the interaction between different spheres of human activity. The general theory of law in this context defines as its tasks not only the construction of the effective legal policy but also the coexistence between law and economics, politics, and other clusters of social activity.

There is a clear need to take into account social transformations in the construction of an updated general theory of law. The social-legal nature has two dimensions:

- the priority of the rights of society over the rights of the individual (the compliant society);
- the priority of individual rights over the rights of society (the society of freedom) (Little, 2021).

Another important flaw characteristic of the contemporary legal environment is the notion of bias (Arena & Ferris, 2018). A theory of the law of the future is designed to overcome all aspects of bias in order to shape a progressive social order.

One of the globalized strategies for the development of society is the doctrine of a "human community with a shared future" (HCSF). It is a Chinese diplomatic program of institutional principles of international and state law in the context of the global transformation of society (Zhang, 2020). Today, there is a certain declarativeness of international law, which in the future (and in the long term and especially in short-term practice) should develop effective application mechanisms for a dynamic response to the globalization legal challenges.

For the full implementation of innovative principles in the legal space of the future, it is necessary to transform the system of legal education as the main source of jurisprudence (Sundquist, 2020). The future of legal education is inextricably linked to the transformation of professional legal competencies. The renewal of legal principles must be comprehensive, so the legal community must be able, through education, self-education, training, or professional development, to receive appropriate skill updates in the new legal paradigm. In addition, the updating of the general theory of law should correlate with the philosophy of law, because this way it is much easier to implement legal transformations in the public consciousness. Legal understanding in society is achieved not only by normative-regulative activity. Awareness at the level of public consciousness of transformations in the legal system greatly accelerates the process of their perception both in society and in individual manifestation.

Discussion

According to Lanneau (2019), the preservation of the moral-values component as a fundamental element of law should be a priority, despite all the innovative transformations of this sphere. Morality is the basis of law, so the leveling of moral aspects in the principles of the general theory of law is unacceptable. Although trends toward the pragmatization of jurisprudence are increasingly heard in scientific legal discourse. Such admonitions contribute to the reorientation of the principle of "law for man" into the principle of "man in law". Such definitions are an enabling environment for the legal system in its institutional and functional dimensions.

Synergetic principles in improving the general theory of law form opportunities to avoid excessive pragmatization of the legal system, organically and effectively correlating the human dimension with the fundamental legal constants.

One of the key attitudinal precepts of modernity is pragmatism and a focus on results. Based on such priorities, one of the key indicators of the legal system of the future is the principle of optimization. Under such conditions, pessimism or optimism about legal consciousness is replaced by realistic-pragmatic aspects, the essence of which boils down to the effectiveness of individual elements of jurisprudence or its integrity in the general theoretical dimension.

An important aspect of the future legal system is the observance of the conditions of equality in the legal system. The general theory of law is a fundamental factor that focuses on the general principles of the essence and functioning of law in society or the general process of civilizational development. However, the integrity of the legal paradigm is possible only by taking into account the factors of indirect legal nature. Equality before the law and the rule of law should provide the notion of justice. However, a number of contradictions are formed with this aspect, because a definition is considered, which a priori cannot be legally perfect. Consequently, even mundane issues such as payment levels for legal actors in different communities generate contradictions (McIntyre & Simkovic, 2018).

The concept of interdisciplinarity, synergetic principles of self-organization, and the multicultural approach form the priorities of a worldview sociocultural picture of the future. This approach implies the creation of a variety of environments functioning in a particular sphere of human activity. For example, in education, in addition to full-time education, a distance learning format is actualized; in the economy, in addition to the traditional format of commodity-money relations, innovative clusters of economic activity are activated. When attempting to model the legal system of the future, the introduction of various environments of a legal nature is a prerequisite. In particular, a group of researchers (Deffains et al., 2019) proposed the use of three legal environments in legal practice:

- environment of strict law, which provides for total control and strict implementation of all norms of the legal system;
- soft law environment, which actualizes the format of legal intervention depending on the severity of the consequences of the violation;

- relative legal environment, which is characterized by the dynamism of legal evaluation and legal influence on the legal problem, depending on the external and internal factors affecting this situation.

Such differentiation of legal environments is an innovative approach in jurisprudence. However, despite certain contradictions with the principles of the legal system (in particular, with the principle of completeness of the law and the inevitability of punishment), this organization of the legal field meets the requirements of dynamism of social development, which is a prerequisite for the future. Let us note that for all the structured and organized nature of the modern theory of law, the principle of dynamism is leveled in it, which sooner or later must lead to the realization of the need to transform this segment of the legal system.

One of the promising areas of work in terms of organizing the legal system of the future has become the modeling of legal space. As recent studies have shown, there is much admonition among education applicants and practitioners about the lack of a common understanding of legal space (Turner et al., 2019). Today's legal system is quite cumbersome because it includes a significant number of global, local, and individual components. Note that jurisprudence is only effective in its integrity. No single legal element or object can be considered alone. The subjects of the legal system face the need to understand the legal element in a global-civilizational, state-regulatory, worldview-cultural understanding. Given the rapid socio-cultural progression, the legal field will only expand. Therefore, the problem of modeling the potential legal field and the innovative elements that will be relevant to it in the future is obvious. The solution to this problem is only possible with the involvement of innovative strategies.

The legal system in the future must function in a dynamic dimension. The traditional established model of jurisprudence's response to socio-cultural challenges is already ineffective. Unless the legal system continues to demonstrate sociocultural flexibility, the ungovernability of the world threatens to become an uncontrollable process (Herbst, 2020). And this already threatens not only the legal system but also civilizational development in the cultural-historical dimension.

Conclusions and Implications

Thus, the universal theory of law during the development of human civilization successfully implemented the regulatory function on a global scale. When modeling the legal system of the future two variants of its transformation are distinguished: cardinal transformations in the legal field and innovative renewal of the legal environment. Analyzing the social and historical mission of the legal system and the constancy and fundamentality of its positioning in the sociocultural space, we note that it is more acceptable to build a general theory of law in the future through innovative updates of its functional and institutional elements.

Forecasting prospective actual principles of the legal system is carried out through the introduction of innovations in theoretical-methodological and practical-legal aspects. The development of short-term programs and long-term strategies for the development of future legal theory should be based on innovative elements that will meet the principles of flexibility, dynamism, and efficiency and correlate with socio-cultural realities and worldview beliefs.

References

Arena, M. P., & Ferris, S. P. (2018). A global analysis of corporate litigation risk and costs. *International Review of Law and Economics*, 56, 28-41. https://doi.org/10.1016/j.irle.2018.05.003

Bhattacherjee, A., & Shrivastava, U. (2018). The effects of ICT use and ICT Laws on corruption: A general deterrence theory perspective. *Government Information Quarterly*, 35(4), 703-712, https://doi.org/10.1016/j.giq.2018.07.006

Deffains, B., Espinosa, R., & Fluet, C. (2019). Laws and norms: Experimental evidence with liability rules. *International Review of Law and Economics*, 60, 105858. https://doi.org/10.1016/j.irle.2019.105858

Herbst, M. (2020). On the relational transformation of law through common sense, via objects and movements. *Field Journal of Socially Engaged Art Criticism*. https://www.academia.edu/44051716/On_the_Relational_Transformation_of_Law_through_Common_Sense_via_Objects_and_Movements?auto=citations&from=cover_page

Hunter, D. (2020). The death of the legal profession and the future of law. The University of New South Wales Law Journal, *43*(4), 1199–1225. https://search.informit.org/doi/10.3316/informit.546300102945618

Lanneau, R. (2019). To what extent should we enrich law and economics? On Calabresi and his future of law and economics. *Global Jurist*, *19*(3). https://doi.org/10.1515/gj-2018-0050

Little, G. (2021). The future of freedom. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3875980

McGrath, J., & Contreras, A. (2020). Law, Technology, and Pedagogy: Teaching Coding to Build a "Future-Proof" Lawyer. *Minnesota Journal of Law, Science & Technology*, 21(2). Umn.edu. Retrieved November 2, 2022, from https://scholarship.law.umn.edu/cgi/viewcontent.cgi?article=1479&context=mjlst

McIntyre, F., & Simkovic, M. (2018). Are law degrees as valuable to minorities? *International Review of Law and Economics*, *53*, 23–37. https://doi.org/10.1016/j.irle.2017.09.004

Mongin, P. (2019). The present and future of judgement aggregation theory. A law and economics perspective. In *The Future of Economic Design* (pp. 417–429). Springer International Publishing. https://doi.org/10.1007/978-3-030-18050-8_59

Osório, A., & Luppi, B. (2019). Argumentation quantity and quality: A litigation success function. *International Review of Law and Economics*, *59*, 21–30. https://doi.org/10.1016/j.irle.2019.05.001

Stojanovic, A. (2019). Commons in the past and the Future of law and economics. *Global Jurist*, *19*(3). https://doi.org/10.1515/gj-2019-0021

Sundquist, C. (2020). The future of law schools: COVID-19, technology, and social justice. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3725017

Torres, P. (2019). International criminal law and the future of humanity: A theory of the crime of omnicide. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3777140

Turner, J. J., Amirnuddin, P. S., & Iqbal Singh, H. S. (2019). University legal learning spaces effectiveness in developing employability skills of future law graduates. *Malaysian Journal of Learning & Instruction*, *16*(1), 49–79. https://doi.org/10.32890/mjli2019.16.1.3

Wang, X., & Zhuang, Y. (2018). The future of criminological theory: Tendency and construction methods. *OAlib*, *05*(03), 1–9. https://doi.org/10.4236/oalib.1104492

Zhang, N. (2020). Institutionalization of a Human Community with a Shared Future and Principles of International Law. *Frontiers of Law China*, *15*(1), 84–106. https://doi.org/10.3868/s050-009-020-0006-6

DOI: https://doi.org/10.57125/FEL.2021.09.25.04

How to cite: Bushman, I. (2021). The development of the intellectual economy of the future: trends, challenges of the future**.** *Futurity Economics & Law*, *1(3)*. 33-42. https://doi.org/10.57125/FEL.2021.09.25.04

The development of the intellectual economy of the future: trends, challenges of the future

Iryna Bushman

Ph.D. philosophy of education SKILLS VMBO College, Netherlands,

ORCID: 0000-0003-1036-9066,

Received: July 20, 2021 | **Accepted:** September 12, 2021 | **Published:** September 25, 2021

Abstract: The modern development of scientific and production technologies leads to profound transformations in global economic life. The intellectualization of the economy has become a challenge, which in recent decades needs additional scientific actualization. The article aims to analyze the possible trends and challenges of the intellectual economy of the future. The article is based on general scientific methods of research: analysis, synthesis, induction, and deduction. Special economic research methods are also used (methods of collecting and processing information, analytical work, forecasting). The results of the article emphasize the general trends of global investment in education and science, which are typical for modern EU countries, the USA, Asian states (primarily, China). It is also established that within the framework of a large-scale transition of world economies to the phenomenon of intellectual production it is necessary to take into account the intensification of scientific and technical work and the increasing number of scientific resources, the global impact of information and communication technologies, the growth of international trade in intellectual services, the increase in the international movement of investment capital, etc. Important challenges have become new requirements for workers whose knowledge and skills in times of intellectualization of the economy. It is noted that the intellectual economy can lead to many problems, in particular the growing gap in the development of countries. The conclusion summarized the general trends, found that further research requires an assessment of the indexes of the intellectual economy, the analysis of industries related to the sphere of knowledge.

Keywords: economics, intellectualization, learning-by-doing, technology, asymmetry.

Introduction

Under the influence of scientific and technological progress (STP) and information and communication technologies (ICT), significant changes in the economic organizations of modern society have emerged. At the same time, the intellectual potential is increasingly seen as a basic factor for growth and development. In the context of globalization and increasing competition in markets, the production of goods with significant added value is an extraordinary advantage. Minimizing resources and increasing efficiency is also possible through the use of formerly knowledge-intensive industries, which use a considerable layer of modern developments in their production processes that are impossible without intellectual property. Current examples show that in the United States more than 40 million people use only intelligence and a computer or laptop to make products. Approximately similar trends are also tangible in the member states of the European Union, where up to 60% of jobs belong to those sectors of the intellectual economy, which combine the development of scientific knowledge, commercialization of science, research, and development of the latest technologies, and the IT-industry.

The Netherlands has a special place in the free family of European nations because the small country is the heart of the high-tech and scientific product of the European Union. European and American experiences of implementing technological innovations and maximizing the use of the latest developments demonstrate the promising potential of this industry for the whole world, including Central and Eastern Europe (Chekina et al., 2020).

The methodological basis of the article is based on the developments of American and European scientists. Marquez-Ramos & Mourelle (2019) in their empirical work looked at education as a factor in improving not only human capital but also economic growth. Their results showed a correlation between higher education and economic growth. However, the authors hypothesize the existence of a special threshold of education, after which the features of economic growth are transformed. Goczek et al (2021) tried to study. How the quality of education affects the process of economic growth. Their results were based on data from developed countries and an analysis of GDP over the past 50 years. Their results confirmed the relevance of education quality as an important factor in economic growth. A study by Chekina et al. (2020) demonstrated the impact of higher education funding on GDP growth in several European countries. The authors concluded that there is a tendency for higher spending on education to be proportional to higher GDP. Hayes (2021) explained the term knowledge economy, described its basic criteria, principles, and gave practical examples of the use of an intelligent economy. Messacar & Frenette (2019) identified the impact of education on reforming the economy. Nordin et al. (2019) characterized the transformations in the economy of foreign countries in recent decades. However, the possible consequences of the intellectualization of economic life, the direct results of the transition to a new level of production, have been little explored.

Research Problem

It is obvious that the trends of development of the intellectual economy have developed into an established pattern. Intellectualization has moved from the state_ of formation to the stage of further improvement. The reduction of remuneration for physical labor led to a simultaneous increase in payment for intellectual work. Various economic structures, as components of the economic system (labor, capital, property, rent, innovation potential, organizational features) during the subsequent development become a substitute for each other, acquire intellectual saturation, and generally determine the elements of intellectualization of the economy. Prospects for the formation of this model on the example of economic development indices, taking into account the criterion of intellectual potential of individual European countries is an important scientific problem, because, on the one hand, local economic life is inherent in all these trends, but at the same time the features of economic life development are worth additional attention. In particular, investment in science and education and other science-intensive industries, which in the future will determine the production and economic capacities of countries, need to be analyzed separately.

Research Focus

The main focus of the study turns to the introduction of a new system of building a world economy based on intelligence and related products. It is formed based on mega-trends inherent in the modern world. This study draws attention to the dependence of indicators of investment in education and science and the overall indices of economic development. However, given the development of the intellectual economy, the possible negative consequences of its development, as well as the possible difficulties of functioning in society as a whole, also remain extremely important problems. We are talking about the emergence of such a phenomenon as the asymmetry of economic capacities in developed and developing states.

Research Aim and Research Questions

The purpose of the article is to analyze the possible trends and challenges of the intellectual economy of the future.

Consideration of the main purpose involves the study of the following issues: statistical and investment indicators and their impact on the intellectualization of the economy, consideration of the debatable problem of the formation of a new economic order, analysis of possible future trends and risks of forming a global intellectual economy.

Research Methodology

General Background

The methodological approaches used in this study are based on the practice of analytical-corporate research and the corresponding characterization of the most appropriate and effective solutions that have significant potential for the implementation of the intellectual economy, taking into account regional characteristics.

The article was formed based on general scientific methods of research: analysis, synthesis, induction, deduction. Of particular importance was the use of special methods of economic knowledge (methods of collecting and processing information; methods of analytical work; forecasting).

Instrument and Procedures

Based on the analysis the main subject of research (intellectual economy) is divided into the following key discussion issues: the characteristics of the innovation economy, its main elements, outlined trends and prospects for its implementation, analyzed the key negative trends in the case of its global spread. As a result of using the synthesis, the mentioned elements are combined and the own conclusions and judgments concerning the future development of the intellectual economy are formed. The work also used a systemic, based on which the intellectual, considered as a special system, which develops and consists of many elements. The use of the historical and structural method on the basis of which the emergence of the term "knowledge economy" was marked and characterized on the basis of its components was of separate importance. Based on abstraction the transition from general (accepted in economic science statements) to the discussion of debatable points in the studied problem was carried out.

The study was implemented in several stages. On the first - the relevance of the subject of research was defined, on the second - the key foundations of the intellectual economy were characterized, the problem of the concept of a new world order based on the intellectualization of the economic sphere was characterized, the main current, in case of large-scale implementation - positive and negative trends were investigated. In the last stage of the study, the result of the obtained results was carried out.

Data analysis

In the methodology of this study, the use of the method of collecting the necessary information by surveying the process under study through the prism of statistical observation is noteworthy. Through the statistical analysis, primary information is gathered about the main opportunities for the development of the intellectual economy in the future. The use of materials based on rankings has helped to illuminate the potential of certain countries for the wide implementation of the knowledge economy.

The study also used indicators of such world indices as the Index of Globalization, the sub-index of education, and the sub-index of information and communication technologies development. These indicators showed the countries that have the greatest potential for large-scale implementation of the intellectual economy.

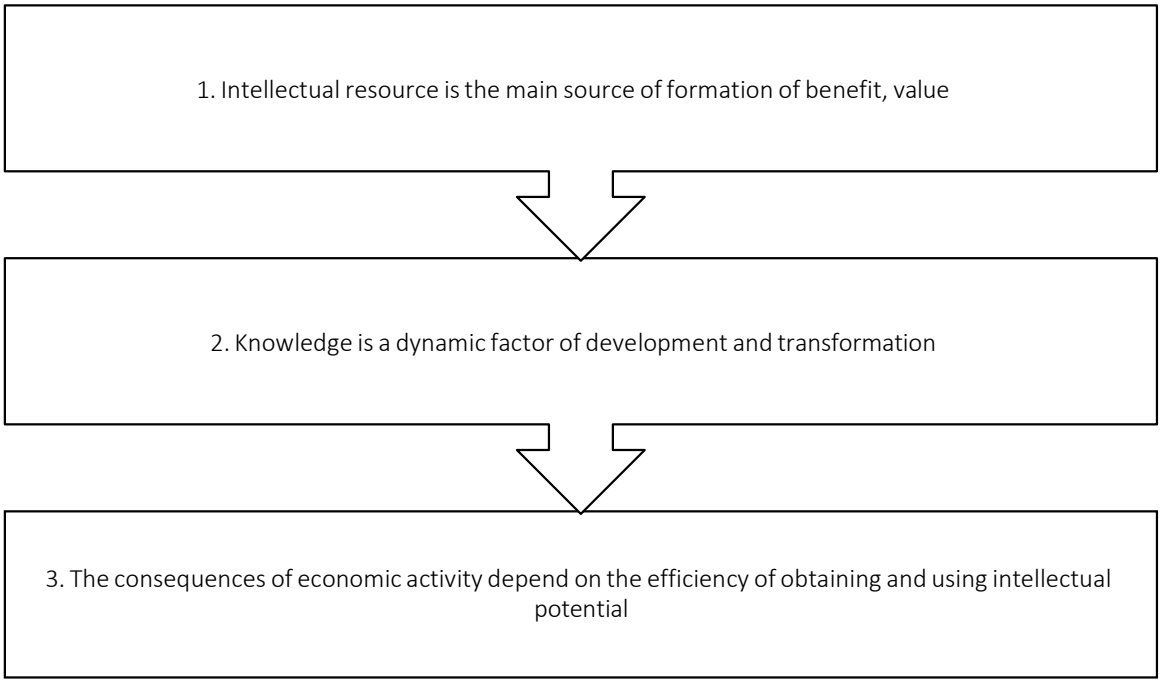
Research Results

Most modern researchers believe that the intellectual economy represents a new development period of modern society (Chekina et al., 2020). The main feature of this type of economy is the transformation and development of intellectual capital and its combination with other key factors of production, fundamentally distinguishing this economy from all previous ones.

The concept of intellectual economy is based on some key principles (See Figure 1).

Figure 1

Key Fundamentals of the Intellectual Economy



Author development

The term "smart economy" was first used by F. Machlup in 1962 (Machlup, 2012). In his book, "Knowledge Production and Dissemination in the United States" F. Machlup depicted the future economy as a separate sector including: educational factor, communication, and information. Note that he explored this area in terms of changes in humanity's intellectual potentials (Machlup, 2012). F. Machlup's explanation of the intellectual economy initially had a synthetic character because his concept united the idea of "four disciplines or directed research". The author included here: philosophy (epistemology), mathematics (cybernetics), economics (informatics), and statistical analysis. Later the American scientist Drucker (2016) expanded the interpretation of this term.

Note that the phenomenon of the intellectual economy can be studied in a broad and narrow sense. Under the broad meaning, it is interpreted as a separate type of economic organization of mankind, in which the main source of resource is intellectual potential (knowledge). In turn, this affects the transformation of the entire economic system, the nature, and technology of production, the entire system of economic relations, etc. At the same time, in a narrow sense, the economy of intellectual potential is understood as such a branch of economic activity, which contributes to the production and dissemination of knowledge.

The Intelligent Economy and the Concept of a New World Order

The emergence of the intellectual economy is a key vector of global economic development and is characterized by certain features associated with the period of development of the new world economic order (Dennison, 2018b). Note that the world economic order that existed before the XXI century was characterized by a number of negative trends: instability, chaotic development of economic and production processes, fluctuations, weakening of global institutions, instability, weighty dominance of developed countries. This, in turn, manifested itself noticeably in the efficiency of national economic models and did not help to overcome the gaps between different countries (Goczek, 2021). This order was characterized by an intensification of forceful confrontation and geopolitical fragmentation. These negative features generally contradict the further development of the world economy and require the formation and creation of a new order conducive to the transition to an intellectual economy.

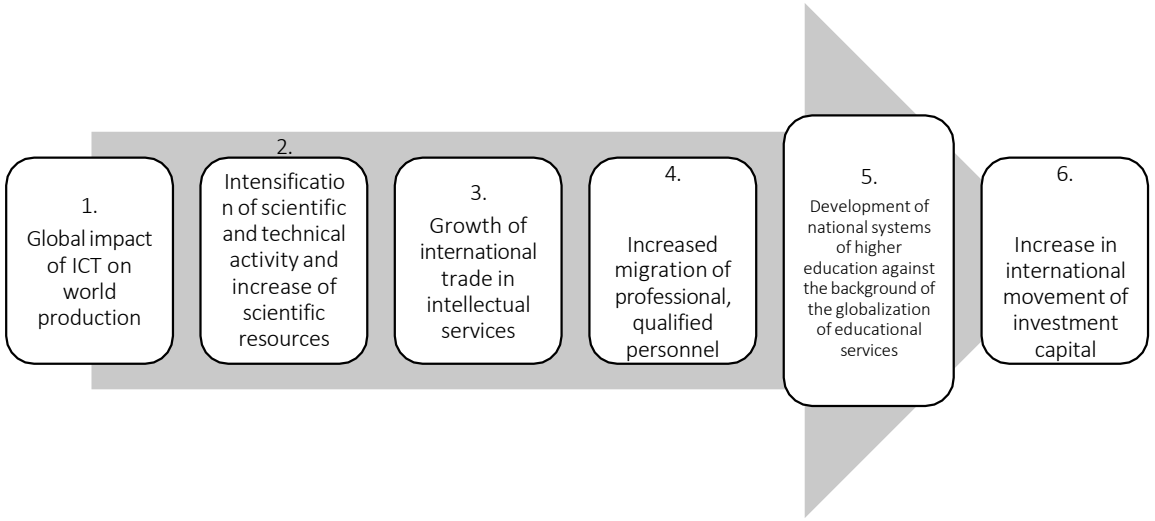
We believe that the concept of a new world order corresponds to the determinants of economic knowledge because in this case the key accents in ensuring socio-economic transformation and relations of exchange and cooperation in the field of science and technology are supported (Picchio & Santolini, 2020). The above factors also influence the emergence of the economy of the future, in which the main role will play knowledge and technology. Current research predicts that the elimination of all possible barriers to the free dissemination of knowledge, the movement of highly skilled professionals,

technology, and the provision of intensive information exchange will contribute to the formation of a new type of world economy (Marquez-Ramos & Mourelle, 2019).

However, a number of global trends in economic development should be taken into account in the large-scale transition of world economies to the phenomenon of intellectual production. First of all, we are talking about the intensification of scientific and technological work and the increase in the number of scientific resources, the global influence of information and communication technologies, the growth of international trade in intellectual services, the increase in the international movement of investment capital, focused on the sphere of intellectual innovation, etc. (See Figure 2).

Figure 2.

Global economic development trends



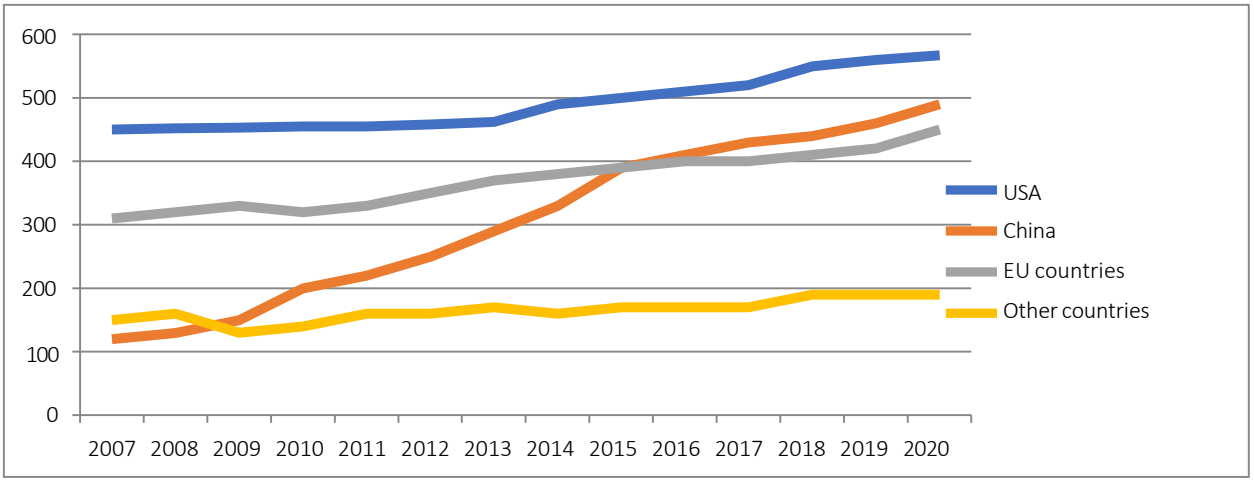
Author development

Each of the above-mentioned trends is influenced by the key New Year trends and vectors of science and technology development, however, the results of robotics, artificial intelligence, alternative energy, medicine, nano- and biotechnology, ecology, new materials, chemistry, aerospace, etc. should be taken.

An important condition for the development of the intellectual economy is the wide use of intellectual potential. Recent trends have demonstrated the dependence on the growth of investment in science and education to increase the level of knowledge-intensive production capacity in the economy (See Figure 3).

Figure 3

Trends in spending on the science industry



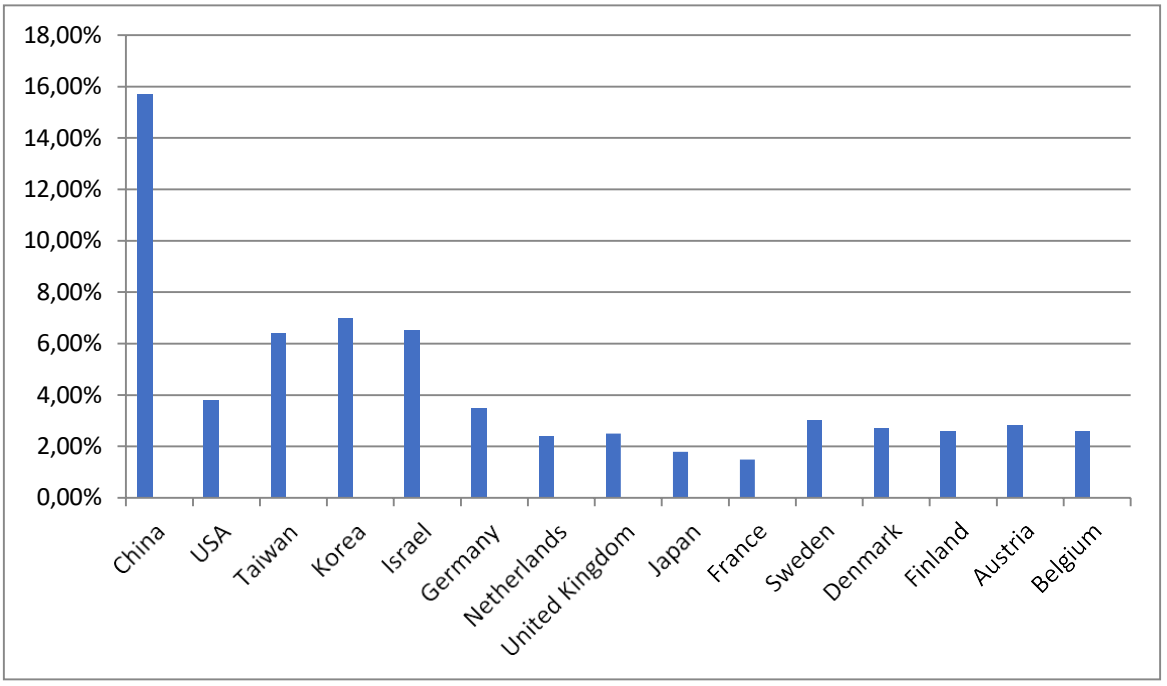
Note. Adapted from *China is closing the gap with the United States on research spending by G. Viglione, 2020. (https://doi.org/10.1038/d41586-020-00084-7)*

Figure 3 shows that the trend of spending on the science industry in the developed world is noticeable. Consequently, these countries will be the first to be able to adapt quickly to the new intellectual economy. Despite the effects of the 2008-2009 crisis, these nations continued to actively develop the S&T industry. China has increased its spending on science by 15% annually since 1995, and subsequently even more (Viglione, 2020).

An important indicator of the further development of an intellectualized economy is the possibility of spending on science and education, which depends on the overall indicators of GDP (See Figure 4).

Figure 4

Structure of expenditures on science in the system of general indicators of GDP



Note. Adapted from R&B Global funding forecast, 2019. (https://www.rdworldonline.com/2019-rd-global-funding-forecast/)

Figure 4 shows that China's spending in 2020 was 15.8% of GDP, up 0.04% from 2019. The EU as a whole spent 2.22% of GDP on scientific research in 2020. The highest intensity of scientific research in 2019 was noted in Germany, Sweden, and Austria, where the figure exceeded 3% of GDP. At the same time, in Denmark, Finland, Belgium the level of spending on Research and Development (R&D) is about 3% of GDP.

The level of globalization of the country is an important condition for the development of the intellectual economy of knowledge. It is calculated by the Index of Globalization, developed by the Swiss Economic Institute, taking into account the indicators of social, economic, and political globalization. In this ranking for 2019, Poland ranked 25th, Germany 16th, and the Netherlands 1st.

The 2018 Education Subindex covered 189 countries. Germany led the study, followed by Australia, Denmark, Ireland, New Zealand, etc. (Education index by country, 2018). The Netherlands is in 9th position. Regarding the innovation subindex, it was calculated for 129 countries. Switzerland is in the

first place, Sweden second, the United States third, followed by the Netherlands and the United Kingdom (See Table 1).

Table 1

Indicators of educational development (according to the education index).

Country	Level	Indicator
Germany	1	0.940
Australia	2	0.929
Denmark	3	0.920
Ireland	4	0.918
New Zealand	5	0.917
Norway	6	0.915
England	7	0.914
Iceland	8	0.912
Netherlands	9	0.906
Finland	10	0.905
Sweden	11	0.904
USA	12	0.903
Canada	13	0.899
Switzerland	14	0.897
Belgium	15	0.893

Note. Adapted from Education index by country, 2018. (https://rankedex.com/society-rankings/education-index)

The information and communication technology sub-index was determined for 175 countries. As a result, the first position was taken by Iceland, second - South Korea, third - Switzerland, then - Denmark, Britain, Hong Kong, and the Netherlands. At the same time, Ukraine was ranked 79th.

The Global Knowledge Index (GKI), which has been updated annually since 2017, also holds an important place. Its results for the last year are important for understanding the role of industry leaders (See Table 2).

Table 2

Key indicators of global intelligence capabilities

№	Country	Technical education	Higher education	Research development and innovation	Information and communication technology	Global knowledge index
1	Switzerland	77,5	68,6	65,7	82,7	73,6
2	USA	63,2	57,8	64,3	86,5	71,1
3	Finland	78,5	56,1	57	81,9	70,8
4	Sweden	76,4	57,9	65,5	84,6	70,6
5	Netherlands	71,2	56,2	58,4	85,3	69,7

Note. Adapted from Global knowledge index, 2020. https://www.undp.org/publications/global-knowledge-index-2020

The Global Knowledge Index is a composite indicator for tracking countries' knowledge at the level of seven domains. These are pre-university education, technical, vocational, higher education, research,

development and innovation, information and communication technologies, economy, and enabling environment (Global knowledge index, 2020). Given the variations in its application and meaning, the GKI seeks to introduce a more systematic awareness of knowledge, dividing the core concept into its components, recognizing the multidimensional nature of knowledge systems in all contexts and applications related to economic structures (Dennison, 2018). . This will allow us to explore more meaningfully and in detail the context of the implementation of the intellectual economy, identifying the top 5 countries that are leaders in many educational categories: Switzerland, USA, Finland, Sweden, and the Netherlands. We believe that it is these countries that have ample opportunities for the total introduction of the type of intellectual economy and the spread of this practice to other countries.

Discussion

We should agree with researchers Oliinyk et al. (2021) that the intellectualization of economic processes is not only related to the digitalization of economic activity. The spread of informative processes and the increase in the rate of intensive information flows than significantly accelerates the intellectualization of economic development (Nordin et al., 2019). At the same time, the economy throughout its development acquired informativeness, with informatization proper being a function of the intellectualization of economic processes, and not vice versa. A fundamental approach for making generalizations about the beginnings of the intellectualization of the economy can be considered the recognition of innovative ideas as derived from the products of the productive sphere (Marquez-Ramos & Mourelle, 2019).

Production becomes more efficient through increased output. Profits from this increase, especially this phenomenon becomes tangible when workers gain some positive experience under their direct duties (Groll et al., 2021). The mechanism of improvement of production processes functions using the principle of "learning-by-doing", that is, obtaining the necessary skills, abilities, and knowledge directly in the performance of practical work.

The innovation of such a system was that both private firms, businesses and companies, and national economies worked on a large scale and benefited directly from it, growing accordingly. Such a pattern persisted according to the Ricardian theory of downward productivity, and primarily for those industries dominated primarily by elements of simple labor (Giesenow et al., 2020). On the contrary, in production processes where there was a greater percentage of applied knowledge and abilities of workers, profitability rose steadily. Therefore, the growth of economic power was solely due to the introduction of new knowledge and scientific approach. According to Goczek et al. (2021), knowledge and new capabilities were spread through the general development of educational processes. However, the aspect of global economic development trends directed along the production-worker axis remains understudied in contemporary scientific publications.

In particular, the rate of technological progress and economic growth has been extremely high over the past few centuries. It is fair to assume that this has been possible due to the use of the products of human mental activity, but also due to the increase in population density and the growth of interpersonal relations, which have formed a suitable environment to facilitate the improvement and replication of technology, the use of ideas (partly alien) and general development. human. This environment, through its advantages and comprehensive globalization, has realized an effective diffusion of knowledge and technology for the entire world economy. The spatial and forced integration of professionals from many countries ensured the creation of synergies between science and the productive sector, efficiencies that increased the productivity of both industries. Thanks to these processes, the effect of increasing returns to scale has become relevant.

Under such conditions, we can argue that the general institutional environment has in practice acted as the next intangible mode of production after the human mind. At the present stage of scientific development, from a subjective and functional point of view, knowledge can be divided into socially new, that is, not known to society, and subjectively new, which act as innovation for individual societies, countries, national economies, etc.

Currently, socially new knowledge is formed by scientific institutions around the world, institutions of higher education, giant corporations and leaders of the digital industry, as well as knowledge-intensive industries of economically developed countries. Therefore, the gradual abandonment of the "learning-

by-doing" principle in many countries of the world can be considered a characteristic feature of modern production. One consequence of this process may bring certain negative trends.

In particular, the transition to the intellectual economy of the future will be characterized by asymmetry, has different manifestations (different types of economy, different levels of development, potential, uneven transformative changes, uneven use of intellectual resources, etc.). In addition, the new world economy is also heterogeneous: it finds countries at different stages of production, industrial, agrarian, industrial, digital development. In order for the intellectualization of the economy to become a lever for economic development, it is necessary to change the relations between the participants in this process, to expand their potential.

For this reason, in the realities of the intensification of the innovation and information race, the economic asymmetry between states will increase. We should also take into account the fact that a new dimension may emerge - the global unevenness in knowledge. It may become super-high and diverse as a result of the expansion of the components. Economically developed countries are leaders and show positive dynamics in all elements of economic knowledge. However, some other countries are also dismantling science and technology capacity building and innovation capabilities. The key problem is that the concept of intellectualization of the economy is complex. The U.S., the EU, Japan, and China have partly overcome the contradiction of the intellectualization of the economy as an innovative progress, which allowed these countries to be leaders in the science and technology industry.

Conclusions and Implications

Therefore, modern processes of development of the world intellectual economy are in permanent motion - for this reason, its research refers to the current scientific challenges. It can be assumed that the current intellectual economy can be considered a system in which knowledge is both the basis and the result of the activity. At the same time, information flows in modern society are growing at a high rate, so the obvious task should be its separation and isolation of important elements, which will become a relevant resource of the intellectual economy in the near future. Current investment in science and education demonstrates China's advantage in this area, but the figures of recent years should not be deceiving. European countries and the United States have been investing in this field for a long time, so the current figures point more to the constancy of the process than to regression.

At the same time, the challenge of further introducing the smart economy is also relevant to the workforce. The "learning-by-doing" principle that was hastily applied in many countries of the world is gradually losing its relevance, as refined scientific novelties are becoming the basis of technological production even now. It is therefore important for the structure of the world's modern intellectual economy that workers acquire knowledge and information. For this reason, it is important to develop scientific and educational potentials in conditions of further development of intellectual economy, to promote the realization of the acquired knowledge and skills in practice. It should be noted that not all countries of the world can afford to maintain the pace of development properly. It is predicted that in the future the difference in the economic development of countries with high rates of innovation and intellectualization of the labor force and the rest of the world will significantly worsen.

The next increased attention will require the problems of characterizing the participants of the economic structure, the assessment of intellectual economy indices through the prism of the development of individual trends, the analysis of industries related to the sphere of knowledge and coming from the cooperation of participants of intellectual production. All the indicated problem moments are the basis for the prospective search of vulnerabilities in the national economies of developing countries. The world experience of the EU member states, the USA, and Asian countries will allow to update the idea of the key principles of formation and functioning of the intellectual economy, identification of the weak points in its use.

References

Bahamonde, H., & Trasberg, M. (2021). Inclusive institutions, unequal outcomes: Democracy, state capacity, and income inequality. *European Journal of Political Economy*, 102048. https://doi.org/10.1016/j.ejpoleco.2021.102048

Chekina, V., & Olena A. Vorhach, O. (2020). The impact of education expenditures on economic growth: Empirical estimation. *The economy of Industry*, *3*(91), 96–122. https://doi.org/10.15407/econindustry2020.03.096

Dennison, W. F. (2018a). The costs of education. In *Educational finance and resources* (pp. 1–12). Routledge. https://doi.org/10.4324/9781351041188-1

Dennison, W. F. (2018b). Education and the economy. In *Educational finance and resources* (pp. 13–60). Routledge. https://doi.org/10.4324/9781351041188-2

Drucker, P. (2016). *Post-Capitalist society*. Taylor & Francis Group.

Education index by country. (2018). Retrieved from https://rankedex.com/society-rankings/education-index

Giesenow, F. M., de Wit, J., & de Haan, J. (2020). The political and institutional determinants of fiscal adjustments and expansions: Evidence for a large set of countries. *European Journal of Political Economy*, *64*, 101911. https://doi.org/10.1016/j.ejpoleco.2020.101911

Global knowledge index 2020 | United Nations development program. (2020, December). Retrieved from https://www.undp.org/publications/global-knowledge-index-2020

Goczek, Ł., Witkowska, E., & Witkowski, B. (2021). How does education quality affect economic growth? *Sustainability*, *13*(11), 6437. https://doi.org/10.3390/su13116437

Groll, T., O'Halloran, S., & McAllister, G. (2021). Delegation and the regulation of U.S. financial markets. *European Journal of Political Economy*, 102058. https://doi.org/10.1016/j.ejpoleco.2021.102058

Hayes, A. (2021, January 22). What is the knowledge economy? Definition, criteria, and example. Retrieved from https://www.investopedia.com/terms/k/knowledge-economy.asp

Machlup, F. (2012). *The Production and Distribution of Knowledge in the United States* . Literary Licensing

Marquez-Ramos, L., & Mourelle, E. (2019). Education and economic growth: An empirical analysis of nonlinearities. *Applied Economic Analysis*, *27*(79), 21–45. https://doi.org/10.1108/aea-06-2019-0005

Messacar, D., & Frenette, M. (2019). Education savings plans, matching contributions, and household financial allocations: Evidence from a Canadian reform. *Economics of Education Review*, *73*, 101922. https://doi.org/10.1016/j.econedurev.2019.101922

Micevska, M. (2021). Revisiting forced migration: A machine learning perspective. *European Journal of Political Economy*, 102044. https://doi.org/10.1016/j.ejpoleco.2021.102044

Nordin, M., Heckley, G., & Gerdtham, U. (2019). The impact of grade inflation on higher education enrolment and earnings. *Economics of Education Review*, *73*, 101936. https://doi.org/10.1016/j.econedurev.2019.101936

OECD (2020). Educational finance indicators. Financial resources invested in education. Education and Training. OECD. Retrieved from: https://stats.oecd.org/Index.aspx?DataSetCode (accessed: 22.05.2020).

Oliinyk, O., Bilan, Y., & Mishchuk, H. (2021). Knowledge management and economic growth: The assessment of links and determinants of regulation. *Central European Management Journal*, *29*(3). https://doi.org/10.7206/cemj.2658-0845.52

Picchio, M., & Santolini, R. (2020). Fiscal rules and budget forecast errors of Italian municipalities. *European Journal of Political Economy*, *64*, 101921. https://doi.org/10.1016/j.ejpoleco.2020.101921

R&B Global funding forecast. (2019, October 18). Retrieved from https://www.rdworldonline.com/2019-rd-global-funding-forecast/