New trends in the economic systems management in the context of modern global challenges

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INTRODUCTION

Modern global economic challenges caused by the COVID-19 pandemic and various changes in the structure of the world market of goods and services require the developing of new models of economic systems management based on appropriate strategic management methodology, implementation innovation, use of prospects for various risks caused by the pandemic, implementation mechanisms for ensuring the security of economic systems. Ensuring effective management of economic systems in the current global challenges is impossible without the introduction of a new concept of functioning and sustainable development of economic entities.

To ensure effective management of economic systems in the context of modern global challenges it is necessary to determine the state of the economic process of entities and explore the impact of risks on current activities, justify and developing a system to overcome negative effects on economic activity and obtain a positive economic result. The effectiveness of developed conceptual provisions to ensure effective management of economic systems is determined by the ability of the management system to withstand the destructive effects of the external environment and due to the strengths to direct the resources of economic entities to maintain the economic process, able ensure to save resources and cover current costs economic entities, etc.

The purpose of writing this collective monograph is to substantiate the theoretical and methodological foundations and the formation of new models of management of economic systems, taking into account pandemic changes in the market environment of economic entities.

The object of the author's research was the process of formation and implementation the models of economic systems management of economic entities in destabilizing the market environment, reducing the business activity of actors under the influence of pandemic changes, closing borders of countries, various restrictions by governments.

The subject of the study were socio-economic, organizational and institutional processes of formation and effective implementation of new models of economic systems management of economic entities; formation of mechanisms for preserving the resource potential of economic entities; introduction of scientific achievements and development of innovative potential of economic entities; consideration of the practice of economic systems management using world experience in various sectors of the economy.

Chapter 1

THEORETICAL FOUNDATIONS AND METHODOLOGY OF THE ECONOMIC SYSTEMS MANAGEMENT

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STATISTICAL ANALYSIS OF STOCK MARKET INDICATORS IN UKRAINE AND WORLDWIDE

Cyclic development and permanent variability of the stock market determine the need of systematic research of its state, that is carried out with the use of arrays of statistical information, which is the basis for the calculation of the generalizing indicators. Processes that arose in the stock market have extensive nature and a quantitative assessment, in accordance they are the objects of research in statistics of stock exchanges. Data of the national Securities and Stock Market Commission (NSSMC) is the base of research and substantiation of the situation in the stock marke.

The subject of statistics of stock exchanges are quantitative characteristics of mass processes of securities turnover and redistribution on this basis financial resources and risks in activity, as well as indicators of exchange infrastructure and the functioning of exchanges as business entities

The purpose of statistics of stock exchanges is to study the state and development of stock trading securities, and its tasks are presented in Figure 1.1.

The system of statistical indicators of stock exchanges consists of indicators that are formed directly as a result of exchange trades, during this process value and natural values of applications for purchase and

offers for sale, as well as other important parameters of the concluded exchange agreements are continuously registered. One of these indicators are the indicators of market quality, which are divided in the characteristics of the capacity and liquidity of the market (Figure 1.2).

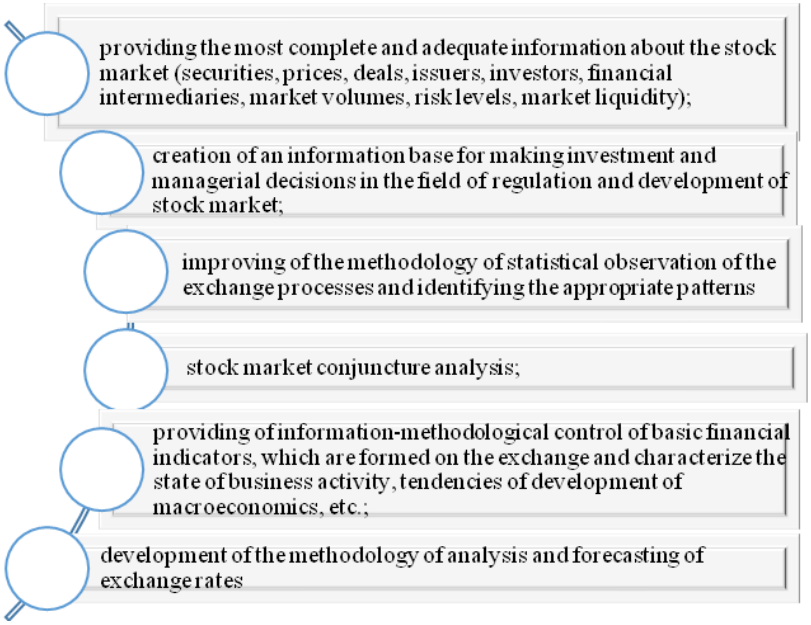


Figure 1.1 The tasks of stock exchanges statistics

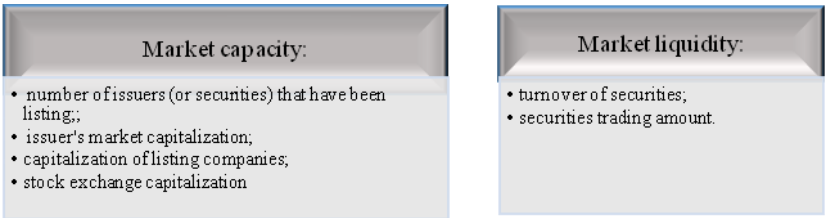


Figure 1.2 The composition of statistical indicators that characterize the quality of the stock market

Market capacity shows the market saturation of financial instruments and its participants. The NSSMC reporting includes information on the number of issues of securities included in the Stock Exchange lists

(Figure 1.3), but there is no information about the number of issuers that have passed the listing. Information on individual issuers, whose securities have passed the listing, can be found on the websites of the relevant stock exchanges.

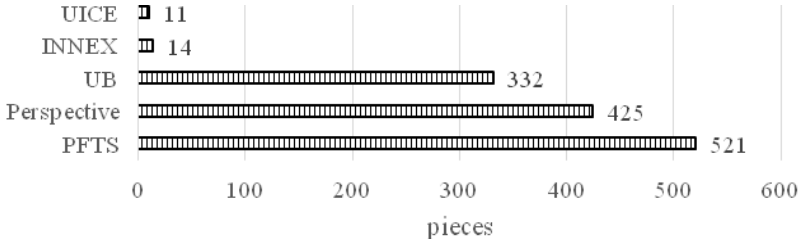


Figure 1.3 The distribution of the number of securities issues that are included in the exchange lists of trade organizers in 2018 [1]

The total number of listed companies is the traditional indicator, which is used by analysts for the condition characteristics of the national financial markets, which cover all domestic companies whose securities who passed the listing [2, p. 101]. Capitalization in the stock market reflects the size, market capacity for investments, the level of market development and economics. It can be calculated in three variants: market capitalization of issuer (individual indicator), capitalization of listing companies (macroeconomic index) and capitalization of stock exchange (local figure).

During 2010 – 2016, NSSMC pointed out the value of the aggregate capitalization of listing companies in Ukraine and the correlation to GDP in each report. However, since 2017, only the amount of capitalization was published (Figure 1.4). This situation is not surprising, because the aggregate market capitalization is currently calculated on the basis of 7 listings in the whole country and equivalent to 0.2% of the GDP in 2018 (500 times worse than the mid-world rate of 112%). This situation is not surprising, because the aggregate market capitalization is currently calculated on the basis of 7 listings in the whole country and is equivalent to to 0.2% of the GDP in 2018 (500 times worse than the mid-world rate of 112%). Such a low value of capitalization ratio to GDP in Ukraine shows inefficient use of stock market mechanisms for financial support of the real sector of economy.

The absolute value of capitalization decreased by 34 times (from UAH 272 billion in 2012 to UAH 8 billion in 2018). Extremely

inaccurate information in the World Bank database shows the skeptical perception of the statistics of the Ukrainian: For the whole time of Ukraine's independence, the ratio of listing companies capitalization to GDP is available only for 2010 – 2011 [3, p. 44].

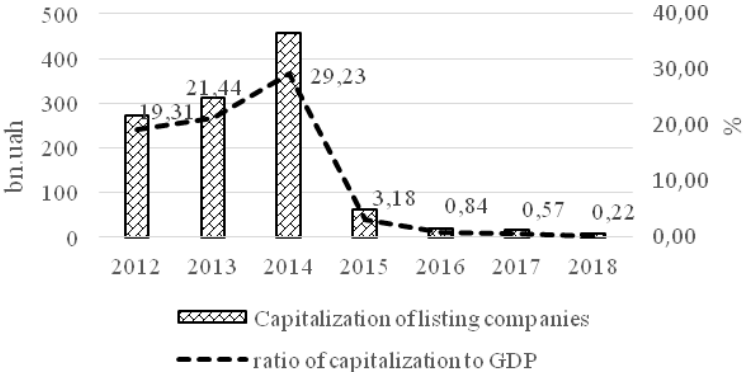


Figure 1.4 Capitalization of listing companiesin Ukraine for 2012-2018 [1]

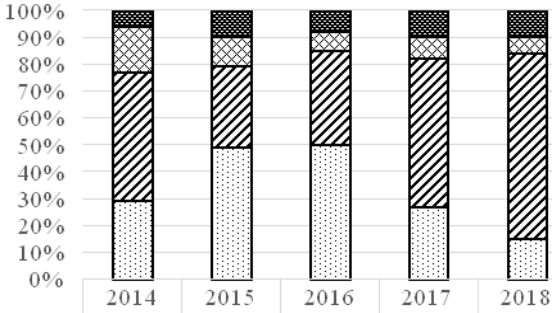
We can conclude that an important indicator of the stock market of Ukraine, as its capitalization, cause doubts because of the bias prices of shares, the absence or unrelevance of available statistics for investors and administratively limited number of listing companies

Liquidity is the ability of the stock market to absorb a certain amount of securities for provided by changes of their price, which is based on change of capital turnover in the market and attracting new participants. It characterizes the possibilities of successful securities trading. Indicators that characterize the liquidity of the market, should be calculated by the types of securities. Securities transactions are one of the characteristics of the market that have the ability to change their demand and supply. But in this direction Ukraine has been behind the European countries for 18 years [4, p. 97].

In average he world's turnover of shares is 1.37. The leaders are: USA (NASDAQ) – 3.3, China (Shenzhen) – 2.5, Turkey – 1.74. The indicator of Ukraine (0.0336) is almost 40 times smaller than the middle world and is compared to the markets of Malta, Kazakhstan, Croatia, Namibia, and Bermud. Bonds turnover in Ukraine is higher than the turnover of shares in seven times and equals 0.25 [3, p. 45].

The structure of trading volume on the securities market in Ukraine

is shown on Figure 1.5, whith other securities that include promissory notes, corporate bonds, derivative securities, etc. So, despite the existence of a dozen thousand Ukrainian issuers, investors have the real interest mainly to the state bonds of Ukraine, where the Ministry of Finance of Ukraine is element.



	2014	2015	2016	2017	2018
Other securities	6	10	8	10	10
Investment certificates	17	11	7	8	6
Ukrainian government bonds	48	30	35	55	69
Promotions and shares CIF	29	49	50	27	15

Figure 1.5 The structure of trading amount in the securities market in 2014-2018 [1]

Reliability, maximum liquidity, predictability, listing, regular allocation of new releases, diversification (both in terms and on the currency), the maximum amount of operational and public information – these are the main reasons of attractiveness of Ukraine's state bonds. One of the indicators that defines positive and significant correlation of securities with current and future rates of economic growth, capital accumulation and productivity growth is the ratio of trades on types of securities to GDP (Figure 1.6).

Comparison of obtained results with world's indices is interesting. In Hong Kong (Hong Kong Exchanges and Clearing) stock trading exceeds GDP six times in the UK (LSE Group, BATS Chi-X Europe) – in 4,7 by Times, in the USA (Nasdaq US, NYSE, BATS Global Markets) – in 3,2 by Times, in Switzerland – 1,6 by Times, in China (Shenzhen SE, Shanghai SE) and Taiwan (Taiwan SE) – in 1,4 by Times [3, p. 45]. In Ukraine, the ratio on stocks in a hundred times less than the average

value. The ratio of bidding amount of government bonds to GDP is somewhat higher, that indicates greater liquidity of government securities.

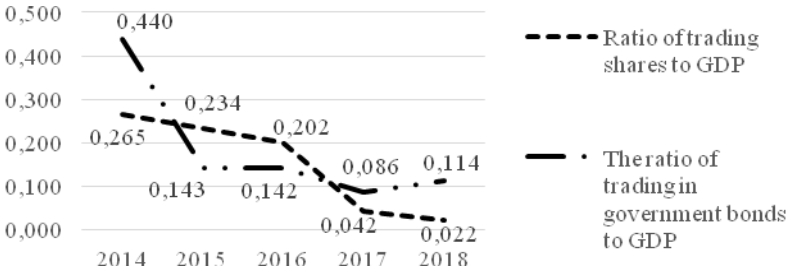


Figure 1.6 The ratio of trading of securities to GDP in Ukraine in 2014-2018 [1]

Description of the price level of shares that are rotating on stock exchanges is determined by number of indicators, where stock indexes are main for statistical dimension and research of the general state of stock. They are indicators of the stock market business activity, that characterize the price change of a certain securities group ("index basket") and allow investors to assess the state of the economy in the country. Stock indexes are calculated by exchanges, information agencies, international investment banks and other infrastructure entities

For the analysis of stock indexes, the change of index over time is taken into account more than the absolute values of indexes at a specific point in time. The dynamics of the index allows to determine the overall direction of the market even in cases where the prices of shares in the "index basket" moves in different directions. The use of indixes is based on the reasonable assumption that mouvemenst of prices of several dozen leading enterprises correspond to the mouvements in prices for all other stocks, which are based on general mouve and change in demand and securities in general on the market [5, p. 114].

More than 200 stock exchanges function in countries with market economy. Almost each of them has its own system of stock indices that reflectes the level and dynamics of the prices for shares, which are included in the listing. Information on stock indices the significant number of exchanges is regularly published in the media, which forms a significant part of their revenues. The USA publishes regularly data on 20 indices, in Europe – by 25, in Japan – by 3.

In the financial circles the most common are the indexes developed in the USA. This is due to the fact that the daily turnover only the New York Stock Exchange is half the world's turnover of securities. The indixes calculated in the US include the Dow Jones (Dow Jones Average), Wilshire 5000-Equality Index, the standard and the 500 (S&P 500 Stock Index), the index of the National Association of Dealers of Securities (NASDAQ Index), etc. Currently the most popular is the Dow Jones Industrial Average, which is calculated by the 30 largest companies in industry, their list is is viewed according to the development of the situation in the stock market.

Significance of world's stock indixes for 21.04.2020 and their change compared to 20.04.2020 is in Table 1.1.

Table 1.1

World stock indexes for 21.04.2020 [6]

Indexe	Value	Asolute change	Relative change, %
Dow Jones	23018,88	-631,56	-2,67
S&P500	2736,56	-86,6	-3,067
NASDAQ	8263,23	-297,5	-3,475
Nikkei	19137,95	-142,83	-0,741
FTSE	5641,03	-171,80	-2,956
Euro STOXX	2793,77	-108,15	-3,727
DAX	10249,85	-426,05	-3,991

The index changes can conclude the economic situation in the country. On April 20, the US petroleum market the historical "Black Monday" happened because of a substantial decrease in the price of the U.S. petroleum of the WTI brand, which immediately led to the reduction in the capitalization of the companies that are in the Dow Jones index (Figure 1.7).

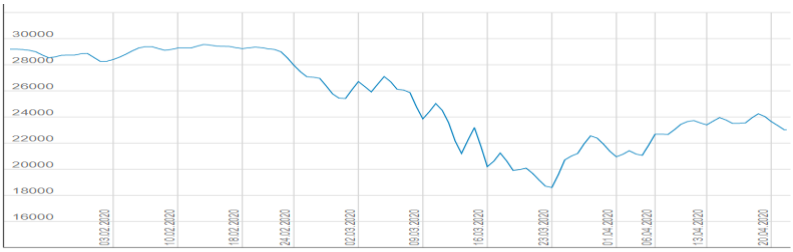


Figure 1.7 Dow Jones Index for February-April, 2020 [6]

At the beginning of the analyzed period (Figure 1.7), the Dow Jones index had an unchanged dynamics and acquired high values. Starting from February 21, 2020. Due to the warning of the American authorities on the probability of spreading the coronavirus in the country index began to fall. It was significantly reduced after the World Health Organization called a situation with the spread of Coruvirus infection COVID-19 pandemic. On March 12, 2020 the Dow Jones has demonstrated a record fall for 30 years. However, the next day, after the US President's declaration on state of emergency in the country and measures to counteract the coronavirus, the index partly restored its position. In addition to quarantine measures, the negative impact on the index had a petroleum pice reduction at the background of confrontation between Russia, Saudi Arabia and other OPEC countries: the price of Brent has dropped below 33 dollars per barrel. Similar is the tendency of other indixes shown in a chart 1: S&P 500 (USA), NASDAQ (USA), Nikkei (Japan), FTSE (United Kingdom), Euro STOXX (eurozone countries), DAX (Germany). Integration of Ukraine's stock market into the world's economic processes is at the stage of intensive development, despite the significant differences in values world's and domestic indixes, react equally to certain important events occurring within the country, the continent or the whole world.

Ukrainian stock indixes appeared at the beginning of 1997. PFTS-index – is the first to appear and the only one that is domestic, is also included in the list of indixes of the world. The Ukrainian Exchange (UX) index appeared in 2009, starting from 2011 The Ukrainian Exchange (UX) index together with PFTS index became the main indicators of the stock market of Ukraine. The most popular indixes in Ukraine are calculated based on the dynamics of the six (Ukrainian Stock Exchange index) up to seven (PFTS index) shares, while five of them are duplicated in both indixes. The index basket of the Ukrainian exchange includes Raiffeisen Bank Aval, Centrenergo, Donbassenergo, Turboatom, Ukrnafta, Motor Sich, and PFTS-list includes the first five companies and the Kriukivsky Wagon Works and ukrtelecom. The calculation of indexes occurs daily (Figure 1.8).

At the beginning of the analyzed period (Figure 1.8), the values of stock indexes in Ukraine did not yxperience significant mouve ments, which is associated with the movement of funds of foreign investors on the domestic market and the stability of the national currency of the country. The processes that took place on the exchanges, starting from mid-March, became a barometer, which registers negative changes in

the business activity of the country's economic life through the quarantine conditions. Adverse factors in the world economic also have significant influence on the domestic economy. Starting from March 12, 2020, when the quarantine in Ukraine was officialy announced, PFTS and UX indixes tend to decrease. Starting from March 25 the UX index, , has partly restored its position due to the increase in prices for shares of individual issuers in certain periods of time. So, qualitative indexes of the stock market development, which consist of capacity to form fair market prices for financial instruments, still remain at a low level, which is proved on the basis of comparison of Ukraine's statistical indicators with world values. Closed issues dominate in the structure of securities issues (as most of the joint stock companies in Ukraine are private), they have limited turnover and cannot be considered as a full financial instrument. The Ukrainian stock market develops in parallel with world markets according to the main indicator- an index that gives an estimate of the impact of positive or negative, internal or external factors in the economic situation in the country. The regulation of a number of stock market issues on the legislative level will ensure the solution of existing problems, contribute the economic development of the country, increase competitiveness of the domestic economy and enhance Ukraine's investment image in the world.

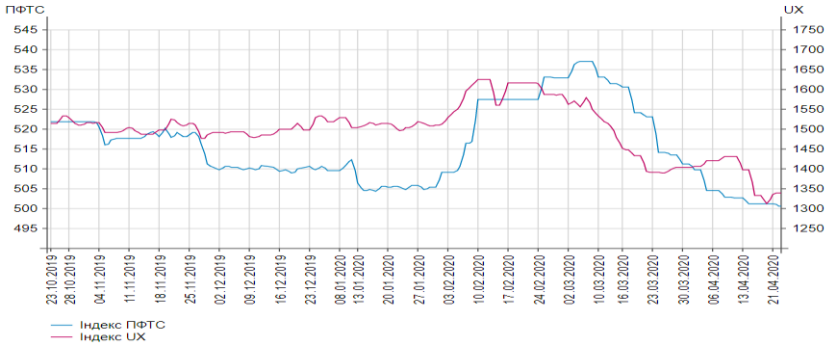


Figure 1.8 Dynamics of indixes PFTS and UX in Ukraine for October 2019 – April 2020 [6]

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METHODICAL APPROACH TO THE OPTIMIZATION MODELING THE SMART GRIDS DEVELOPMENT CONSIDERING THE FINANCIAL, RESOURCE, GEOSPATIAL AND TIME PARAMETERS[1]

Today it is impossible to achieve a high level of social and economic development without taking into account the environmental factor in the territorial management system. The prospect for humanity is primarily determined by the state of environmental safety that influences the development of all components of social, environmental and economic development. Despite the growing attention being paid to the problems of irrational use of natural resources, their relevance does not decrease. It is due to the environmentally unsustainable management of the economy, in particular in energy industry.

[1] *This work was supported by the Ministry of Education and Science of Ukraine (Project No. 0119U100766 «The optimization model of smart and secure energy grids building: an innovative technologies of enterprises and regions ecologisation»).*

In economic science, there is a constant scientific interest in studying the issues on ensuring the energy efficiency of countries.

Theoretical and applied aspects of ensuring energy efficiency have been highlighted by such scientists as F. Greddy, J. Jewell, J. Jensen, K. Denchev, D. Yergin, J. Mitchell, M. Nilruh, T. Rau, V. Smil, J. Spite, A. Cherp.

A large contribution to the study of the economic development of renewable energy sources was made by following foreign scientists: D. Jacobs, A. Klein, M. Mendons, M. Netzhammer, B. Pfluger, M Ragwitz, G. Resch, A. Held, T. Faber and other.

In the modern scientific literature, the issue of Smart Grids construction and transforming the electricity sector into renewable energy sources were studied by M. T. Burr, Paul Komor, Anderson Hoke, Rainer Baher, Melissa Chan and Ruud Kempener.

In addition, research on the implementation of Smart Grid technologies in the context of the use of renewables are reflected in such documents as the Report "Smart grids and renewables. A Guide for Effective Deployment" of the International Renewable Energy Agency (IRENA) [20], "Strategic research agenda of EPoSS – the European Technology platform on Smart Systems integration" [8], Strategic Deployment Document (SDD), that is a guide for implementing Smart Grids; Report on the global importance of Smart Grids of the international research center VaasaETT [10]; Transforming our world: the 2030 Agenda for Sustainable Development (Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all) [26].

In turn, based on search in Scopus database by key words "Smart Grids" and "renewable", the authors who pay special attention to this topic were identified. They are as follows: G.B. Giannakis, M. Robba, X. Wang, J.P.S. Catalao, T. Chen, J.H. Holbrook, K.W. Hu, C. J. Huang, W. C. Leighty, R. Minciardi.

Among the organizations which study the issues related to "Smart grids" and "renewables" are as follows: University of Minnesota, Aalborg Universitet, the University of Hong Kong, Universita degli Studi di Genova, Universidade da Beira Interior, National University of Singapore, Massachusetts Institute of Technology, Austrian Institute of Technology, Delft University of Technology, Fudan University of Technology and other (Figure 1.9).

The aspects of "Smart grids" and "renewables" are actively explored by such countries as Italy, the United States, Germany, the United Kingdom, India, China, Portugal, Canada, Spain, the Netherlands,

Australia, France, Denmark, Austria, France, Brazil, Greece, Switzerland, Finland, Sweden, Japan, Turkey, Ireland, Romania, Taiwan, Iran and Poland (Figure 1.10).

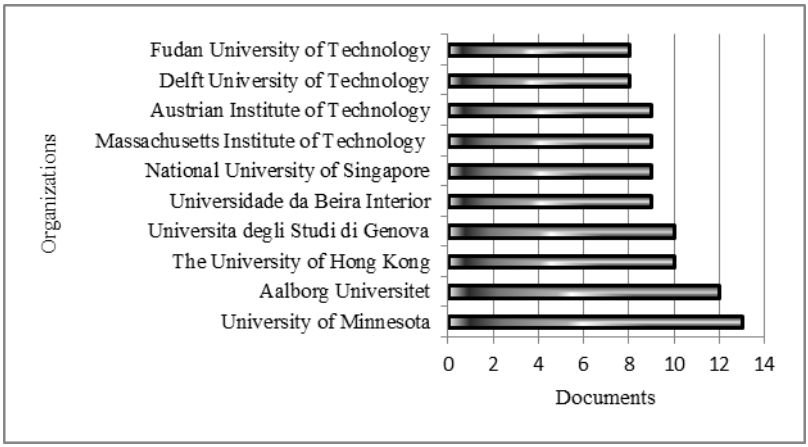

Figure 1.9 Organizations which study the issues related to "Smart Grids" and "renewables" (constructed based on search in Scopus database, analysis of 2007-2020)

Source: developed by the author

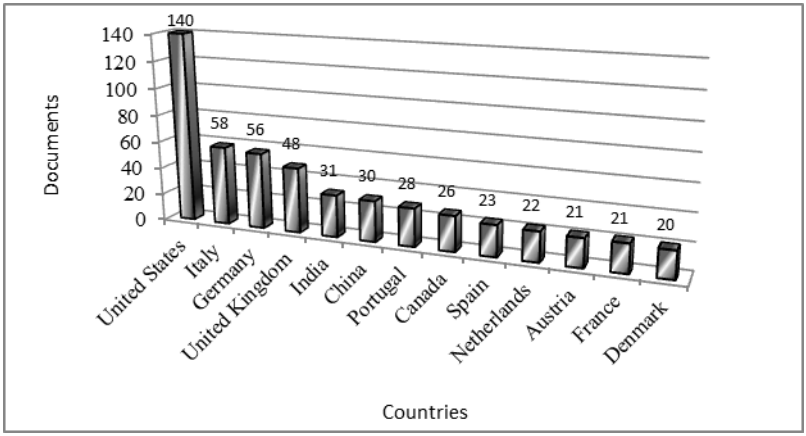

Figure 1.10 Countries which study the issues related to "Smart Grids" and "renewables" (constructed based on search in Scopus database, analysis of 2007-2020)

Source: developed by the author

Also the results of an analysis of the data generation of the Scopus database of key concepts that are studied by scientists along with the concepts of “Smart Grids” and “renewables” are of great interest (Figure 1.11).

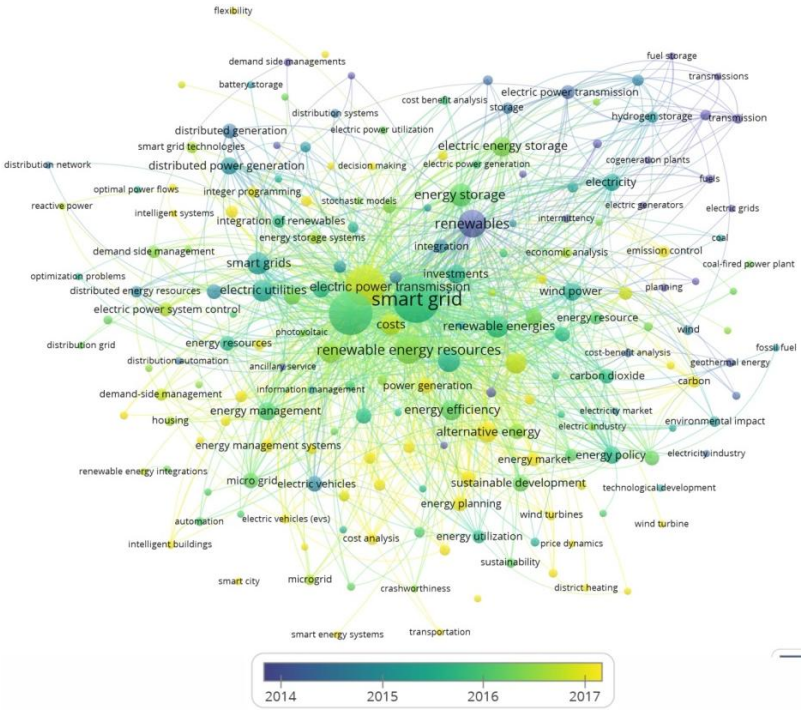

Figure 1.11 Key concepts which are studied along with concepts of “Smart Grids” and “renewables” (constructed based on search in Scopus database)

Source: developed by the author

The conducted analysis shows that along with concepts of “Smart Grids” and “renewables” the scientists explore such categories as electric power transmission, investment, costs, power generation, energy efficiency, alternative energy, sustainable development, microgrid, distribution grid, energy management systems, economic analysis, wind power, environmental impact, electric utilities, energy planning, wind turbine, optimal power flows, intelligent system, district heating.

According to the results of the analysis of the search in Scopus database, the researchers were very interested in studying concepts of “Smart Grids” and “renewables” in 2017 (Figure 1.12).

Figure 1.12 Dynamics of research in the field of “Smart Grids” and “renewables” (constructed based on search in Scopus database)
Source: developed by the author

Over the past 2 years, there has been a dynamics in reducing the number of researches in the field of “Smart Grids” and “renewables”. However, according to the results of Figure 1.11, such dynamics is explained by the increased interest over recent years to such phenomena as “Smart Grids” and “renewables” in the context of electric power transmission. That is, in modern conditions the issues of the methodology for the transmission and distribution of electric power are of great relevance (Figure 1.13).

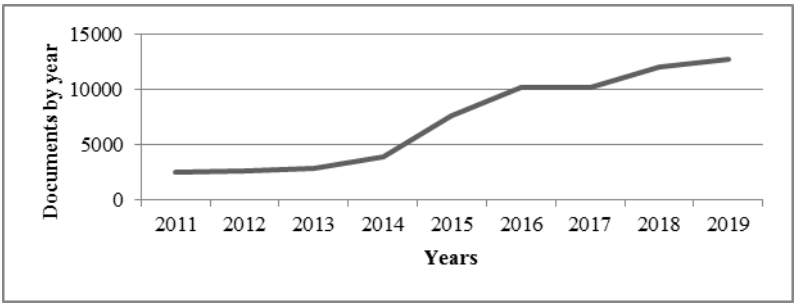

Figure 1.13 Dynamics of the research in the field of electric power transmission (constructed based on search in Scopus database)
Source: developed by the author

It should be noted that research in the context of the implementation of Smart Grid technologies is reflected in various fields of knowledge (Figure 1.14).

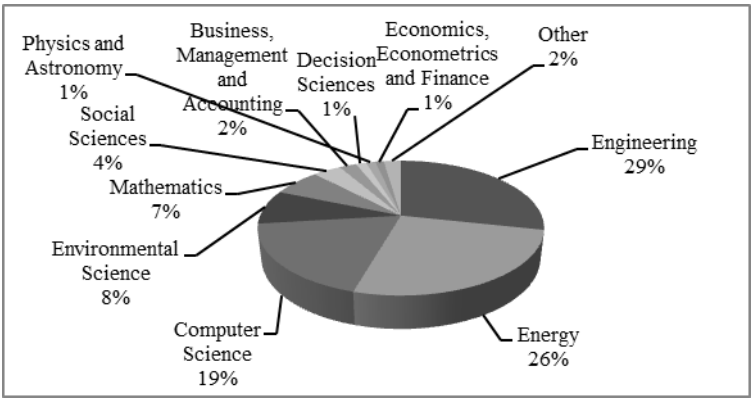

Figure 1.14 Documents which deal with "Smart grids" and "renewables" in various fields of knowledge (constructed based on search in Scopus database)

Source: developed by the author

In modern conditions, the development of Smart Grids with the use of renewables is of particular relevance. According to [20], it is a model that can work effectively in modern conditions as well as in the future (Figure 1.15).

The problem of developing Smart Grids by countries, taking into account their financial, resource, geospatial and time parameters of the implementation of Smart Grid technologies are not fully explored.

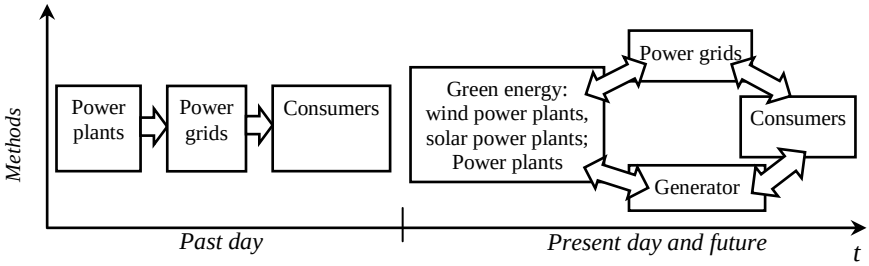

Figure 1.15 The model for functioning of electrical systems (constructed based on [20])

Source: developed by the author

The term “Smart Grid” has been known since 2003, when it appeared in an article of M. T. Burr “Reliability demands will drive automation investments” [17].

There are different interpretations of the concept of “Smart Grids” in the global energy industry. There is currently no universally accepted definition of “Smart Grid” in the world.

The English abbreviation SMART stands for Self-monitoring, Analysis and Reporting Technology, that is, a technology that provides self-monitoring and the possibility of transmitting the results of monitoring. In particular, the concepts of Future Grid, Empowered Grid, WiseGrid, Modern Grid, IntelliGrid are also used in foreign practice.

The United States Department of Energy considers Smart Grid as a fully automated energy system that provides for a two-way flow of electrical energy and information between power plants and devices everywhere. Smart Grid due to the use of the latest technologies, tools and methods ensures the energy industry with “knowledge”, which can dramatically increase the efficiency of the energy system [27].

The government structures of most countries of the world define Smart Grid as the ideology of national programs on the development of enegry industry.

Smart Grids are considered to be a priority in the development of enegry industry for the coming period in the EU countries. Smart Grid technologies are of particular importance in the United States, China and other countries of the world.

Indeed, according to the data of Zpryme Research & Consulting in 2010, some countries have made large investments into Smart Grid projects, namely China (7.32 billion US dollars) and the United States (7.09 billion US dollars).

The five countries that are also characterized by rather large investments include: Japan (849 million US dollars), South Korea (824 million US dollars), Spain (807 million US dollars). Figure 1.16 shows 10 countries in terms of investment into Smart Grid technologies [6].

It should be noted that the abovementioned countries are actively implementing measures to develop the renewable energy technologies, as evidenced by global world ratings. For example, the Renewable Energy Country Attractiveness Index is developed by Ernst & Young [18].

This index shows the level of investment attractiveness in the field of alternative energy of a particular country.

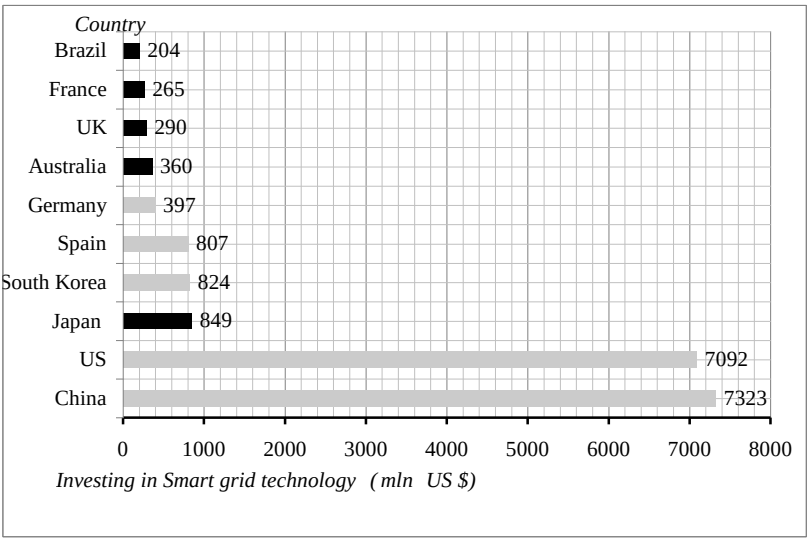

Figure 1.16 Amount of investments into Smart Grid technologies in 2010 (constructed based on [6])

Source: developed by the author

Experts of Ernst & Young take into account such factors as macroeconomic conditions, the country's overall energy needs, the level of implementation of renewable energy projects, the country's technological potential and government support for renewable energy.

It should be noted that there is a direct relationship between the data on the level of investment into Smart Grid and the renewable energy country attractiveness indices (Table 1.2).

The results of the analysis indicate the existence of a correlation relation between studied components. The correlation coefficients *r* are greater than 0.68. In addition, China and the United States are the leaders in the RECAI ranking just as in the ranking of Investments in Smart Grid technologies. The latest statistic data of the 2018 RECAI report confirm the fact that leading positions of the abovementioned countries in RECAI and Investments in Smart Grid technologies rankings are stable (Table 1.3).

According to Ernst & Young research [19], such countries as China, the USA, Germany, India and Australia became leaders in terms of the RECAI indicator in the ranking, which includes 40 countries of the world in 2018.

Table 1.2

The relationship between indicators of the level of investment into Smart Grid and the renewable energy country attractiveness indices (RECAI)

No.	Country/Economy	Amount of investment into Smart Grid technologies (*Y*)	Renewable Energy Country Attractiveness Index (*X*)
1	China	7323	71
2	US	7092	66
3	Japan	849	48
4	South Korea	824	46
5	Spain	807	56
6	Germany	397	63
7	Australia	360	50
8	UK	290	62
9	France	265	58
10	Brazil	204	46
The results of correlation and regression analysis of studied dependence Y=f(X)			
Equation of pairwise regression		y = 24,88x2 - 2630,1x + 69235	
Correlation coefficient, r		0,685	
Determination coefficient,r^2		0,7616	

Note: Compiled by authors based on: [6], [13] data of 2010

Table 1.3

The full EY ranking of Renewable Energy Country Attractiveness Index (RECAI), May 2018)

Rank/Country		Rank/Country		Rank/Country		Rank/Country	
1	China	11	Chile	21	Philippines	31	Finland
2	United States	12	Mexico	22	Portugal	32	Taiwan
3	Germany	13	Argentina	23	Sweden	33	Peru
4	India	14	Canada	24	Spain	34	Greece
5	Australia	15	Morocco	25	Ireland	35	South Africa
6	France	16	Italy	26	Pakistan	36	Poland
7	United Kingdom	17	Turkey	27	South Korea	37	Norway
8	Japan	18	Brazil	28	Jordan	38	Indonesia
9	Netherlands	19	Belgium	29	Israel	39	Kenya
10	Denmark	20	Egypt	30	Thailand	40	Kazakhstan

Note: Compiled by authors based on: [19]

Also, it should be noted that China and the USA have not lost their leading position during last 8 years.

Indeed, for the period from 2016 to 2020, investments into the development of alternative energy in China amounted to about 343

billion EUR. China is a world leader in the development of wind power generation, solar power generation and the solar thermal power generation. It is worth to mention that only during 2017, the Chinese government rejected more than one hundred projects on power generation by burning fossil fuels. However, at the same time the amount of investments in the construction of green generation facilities increased.

The United States ranks second in the development of energy industry using renewables. According to experts, about 35 billion EUR are invested into projects on the generation of "clean" energy in the United States annually. In turn, the country is a world leader in the production of bio-fuels. At the same time, the country has great potential for the development of wind power generation.

In Germany, the share of renewables in total gross electricity consumption is about 32%. According to the data of Industry Leaders Magazine, the country annually invests about 8.9 billion EUR into the construction of facilities, which use renewables.

In India, the amount of investment in the development of alternative energy has been varying from 5.11 to 11.19 billion EUR per year since 2010. The country implements the projects on creating facilities that operates by transforming the solar energy.

In turn, Australia can occupy a leading position on the generation of solar energy until 2040. The country's government launched a project on building the world's largest solar thermal power plant.

Australia has vast amounts of renewables. According to the latest data of the Guardian magazine, more than 50% of the energy from the sun, wind and water in the country is recorded using the online tool OpenNEM, which monitors the state of the energy system in real time. Solar energy on the roofs provides 23.7% of the total electricity demand, wind – 15.7%, large solar power plants – 8.8%, hydropower – 1.9% [2].

In modern conditions, the experience of many countries evidences that ensuring a high level of renewable energy sources is technically and economically feasible.

In particular, such countries as Denmark, Jamaica, the Netherlands, Singapore, the United States and Puerto have proven that Smart Grid technologies provide a large share of renewable energy.

Case in point – The Smart Grids and renewables. The experience of countries of the world:

The continuous integration of winds is a feature of using Smart Grids in Denmark. Denmark has been using several Smart Grid technologies to support the world's highest wind penetration for rather long period

yet. About 30% of the electric energy is generated by the wind. In addition, the links of direct current and high voltage connect Denmark with neighboring countries, allowing one region with vast amount of wind energy share it with other regions. In particular, other Smart Grid technologies, which are used to manage Danish wind energy, include smart charging of electric vehicles and control of the response to heating.

According to sources [20], [5] Denmark plans to increase wind energy penetration up to 50% by 2025. In addition, these researches compare the cost of using Smart Grid technologies with the cost of traditional grid upgrades to achieve this goal. Thus, the net cost of the necessary updates of Smart Grids will make 1.6 billion US dollars and 7.7 billion US dollars for traditional upgrades.

The energy system of Jamaica, more than 90% of all electric energy is produced by diesel a generator that leads to high electricity prices, the cost of scarce capital of the country, losses in the transmission and distribution system, and theft of balances. In this regard, the government of country aims to increase the number of renewable, to increase energy efficiency and reduce the losses. To achieve this goal, an integrated set of Smart Grid technologies is being formed. Indeed, the country annually invests 50 million US dollars into the researches, spends 10 million US dollars for Advanced Metering Infrastructure and installed a new monitoring and data collection system that will facilitate the integration of renewables, support Demand Side Management and will help to reduce losses [20], [21].

It should be noted the practical experience of the Netherlands on using Smart Grids and renewables. Indeed, the high-tech Power Matching City project in Hoogkerk provides 25 interconnected households and a number of advanced technologies, some of which have combined heat for houses and power units that use natural gas to generate electricity and heat. These units have a maximum electrical power of 1 kW. Each household has a Photovoltaic system with a maximum electrical power of 1.6 kW.

At the same time, the experience of Singapore on the use of Smart Grid technologies is quite interesting. The country's energy grid is known as one of the most reliable in the world by its system average interruption duration index ($I_{Interruption\ duration}$<1,5 – it means that on average the consumer won't have electricity for less than 1.5 minutes per year). This result is largely due to the use of sensing and automated control in energy transmission and distribution systems.

Since 2010, Singapore has begun to expand its high standard Smart

Grids. Indeed, created with the support of the Energy Market Authority (EMA), the Intelligent Energy System (IES) Pilot project was launched to test and evaluate new applications and technologies within Smart Grids.

The experience of the USA (New Mexico) also deserves special attention in the context of providing a combination of renewable energy sources and traditional ones with increased efficiency, an optimized and integrated system using Smart Grid technologies. Indeed, Mesa del Sol presented the nation's first Smart Grid. The Smart Grid system, combined with the energy storage project, is the first solar storage device in the country that is fully integrated into the public utility network and is a showcase for future Smart Grid projects. The goal of this project is the innovation of Smart Grid Controls to overcome the challenges arising from interruptions in energy supplies connected with renewables. It should be noted that installed micro grid uses solar and fuel cells, natural gas and battery backup equipment to power the 78,000-square-foot Aperture Center in Mesa del Sol. Mesa del Sol's partners in developing Smart Grid technology are Japan's New Energy and Industrial Technology Development Organization (NEDO), PNM, Sandia National Laboratories, the University of New Mexico and 9 Major Japanese companies including Shimizu Corporation [22].

The experience of Puerto Rico on the development of Smart Grids based on the use of solar energy is of practical interest.

After a natural disaster (Hurricane Maria, which destroyed the system of electricity supply) in Puerto Rico, it was decided to create new Smart Grids. A model of photovoltaic panels using artificial intelligence was developed. However, the development of the new network should be difficult due to the geographical position of the island. For example, delivery of necessary equipment, such as cables, poles and transformers to the continental USA was simple task but another situation was with Puerto Rico, like other islands, because the delivery of all necessary equipment was possible only by plane.

The goal of creating new Smart grids is to ensure more distributed generation of electricity, reduce the dependence on imported oil and implement a smart digital grid that allows workers to find problems in real time.

Today, about 20 % of the island's energy is generated by renewables, while the development of Smart Grids is in process. Congressional Research Services estimates that to complete the creation of Smart Grids by 2030, the US will spend up to 46 billion US dollars. Other investment requirements range from 260 to 526 billion US dollars [22].

Today, about 20 percent of the island's energy is generated from renewables, while the development of smart grids continues. According to the estimates of Congressional Research Service the USA will spend up to 46 billion US dollars to complete the construction of a smart grid by 2030. The amount of other necessary investment range from 260 to 526 billion US dollars [22].

Demand for environmentally friendly energy sources continues to grow in the world, in particular due to a decrease in their cost. Indeed, in 2018, the demand for renewables increased by more than 4 % and amounted to about a quarter of all demand in the primary energy market.

The increase in the production of renewables is caused by the decrease in the cost of photovoltaic solar energy and wind energy.

Taking into account the abovementioned, it can be concluded that the implementation of Smart Grid system requires the attraction of financial, labor and time resources. At the same time, geospatial factors also play an important role in the development of Smart Grids.

We consider it appropriate to conduct a correlation and regression analysis according to the relationship between environmental performance index and indicators characterizing financial and labor resources with purpose to conduct a systematic and comprehensive analysis of factors affecting the development of environmental policy, in particular in the field of energy industry.

It is suggested to choose the Environmental Performance Index (EPI) as an indicator of environmental performance.

From 2000 to 2006, this index was presented by the Yale Center for Environmental Law and Policy, together with Columbia University and the World Economic Forum, as an index of environmental sustainability. Since 2006, the index has been revised by researchers and finalized. Thus, it has become a tool for determining policy priorities.

The EPI index is based on two groups of indicators: ecosystem vitality (natural resource management) and environmental health (environmental impact on human health). In general, it includes the indicators as follows: environmental health; air pollution that affects human health; air pollution that affects the state of ecosystems; water (that affects human health); water resources (that affects the ecosystem); biodiversity; forest; fishing; agriculture; climate change and energy industry. The latter indicator includes CO_2 per capita, CO_2/GDP ratio, CO_2 emissions per kilowatt hour, percentage of renewable electricity in total generated electricity.

Thus, EPI is considered as a function of the financial and economic

parameters represented by Investment Environment Index (IE/LPI), Index of Economic Freedom (IEF), Gross Domestic Product per capita (GDP), Global Innovation Index (GII), Global Green Economy Index (GGE) and labour resources Social Progress Index (SPI) (formula 1.1).

The index of the investment environment is a component of prosperity index (Legatum Prosperity Index), which is policy-focused. The Investment environment Index measures the extent to which investments are adequalely protected and are readily accessible.

In particular, a necessary condition for the resarch should be the determination of the relationship between financial and economic parameters and labor development parameters. The indicators of investment potential are of particular importance. That is why the relationship between the indicators of investment potential and socio-economic parameters is also determined (formula 1.1).

$$\begin{cases} \mathrm{EPI}(t) = f(P\mathrm{fin}\&ec(t), P\mathrm{social}(\mathrm{t})) \\ P_{\mathrm{fin}\&ec}(\mathrm{t}) = f(i_{nvest}(t)) \\ P_{\mathrm{social}}(\mathrm{t}) = f(i_{snvest}(t)) \\ P_{\mathrm{fin}\&ec}(\mathrm{t}) = f(P_{\mathrm{social}}(t)) \end{cases} \tag{1.1}$$

where: EPI – Environmental Performance Index, which reflects the state of the country's environmental state during the first period of time; $P_{fin\&ec}$ – parameters, which indicate the financial and economic state, during a certain period of time, P_{social} – parameters, which indicate the state of labour potential of a country during a certain period of time, i_{nvest} – parameters, which indicate the investment environment of a country during a certain period of time.

At the same time, the value of the objective function EPI (t) ($P_{\mathrm{fin\ \&\ ec}}$ (t), P_{social} (t)) is maximum. The statement of the problem is reflected in formula 1.2.

$$\mathrm{EPI}(t)((P\mathrm{fin}\&ec(t), P\mathrm{social}(\mathrm{t}))) \rightarrow max \tag{1.2}$$

In order to determine the relationship between the environmental, social and economic situation, it is suggested to use the method of correlation and regression analysis.

The research used statistics data of 40 countries of the world, which were included in the RECAI rating in 2018 (Table 1.4).

Table 1.4

Parameters of the environmental, financial and economic states of the countries which are included in the RECAI ranking

Order number according to rating RACI	Country	Environmental Performance Index (*EPI*)	Global Innovation Index (*GII*)	Social Progress Index (*SPI*)	Investment Environment/ The Legatum Prosperity Index(*IE/LPI*)	Gross Domestic Product per capita (current US$) (*GDP*)	Global Green Economy Index (*GGE*)	Index of Economic Freedom (*IEF*)
1	China	50,74	53,06	64,57	62,54	9,77	0,55	57,8
2	US	71,19	59,81	84,78	80,34	62,79	0,54	75,7
3	Germany	78,37	58,03	89,21	78,49	47,60	0,68	74,2
4	India	30,57	35,18	56,26	53,58	2,01	0,53	54,5
5	Australia	74,12	51,98	88,32	80,47	57,37	0,42	80,9
6	France	83,95	54,36	87,88	77,02	41,46	0,64	63,9
7	UK	79,89	60,13	88,74	82,49	42,94	0,62	78
8	Japan	74,69	54,95	89,74	78,31	39,29	0,59	72,3
9	Netherlands	75,46	63,32	89,43	78,77	53,02	0,59	76,2
10	Denmark	81,6	58,39	89,96	79,59	61,35	0,68	76,6
11	Chile	57,49	37,79	80,61	66,93	15,92	0,53	75,2
12	Mexico	59,69	35,34	70,42	60,12	9,673	0,52	64,8
13	Argentina	59,3	30,65	74,98	50,65	11,68	0,43	52,3
14	Canada	72,18	52,98	88,62	78,24	46,23	0,59	77,7
15	Morocco	63,47	31,09	66,51	56,54	3,237	0,51	61,9
…	…	…	…	…	…	…	…	..
36	Poland	64,11	41,67	81,21	68,67	15,42	0,41	68,5
37	Norway	77,49	52,63	90,26	84,94	81,69	0,70	74,3
38	Indonesia	46,92	29,8	63,26	60,1	3,89	0,45	64,2
39	Kenya	47,25	31,07	55,55	56,76	1,71	0,58	54,7
40	Kazakhstan	54,56	31,42	67,26	60,66	9,81	n/a	69,1

Note: compiled by authors based on: [7], [4], [16], [24].

It should be noted that the data gathered for one year by a geographical basis were used in the research for calculations. Indeed, it is impossible to use time series because of the methodological improvements of each next version of the indicators of the financial, economic and social states of countries.

It is also advisable to note that investors quite often focus on the indicators of investment attractiveness in the form of indices, in particular the index of economic freedom. That is why this index is considered in this research.

The index of economic freedom is based on such indicators as business freedom, trade freedom, tax freedom, government spending, monetary freedom, freedom of investment, financial freedom, protection of property rights, freedom from corruption, freedom of labor relations.

In turn, the GDP Index is one of the basic in international statistics. This indicator is considered as an index of living standards or welfare in a country or region.

As for GII 2018, it analyzes the landscape of energy innovation, identifies the potential of industries such as production, storage, distribution and consumption [4].

The research takes into account one more index – the Global Green Economy Index (GGE). It includes the following four parameters: leadership and climate change; efficiency sectors; markets and investment; and environment.

Such parameter as political leadership has a decisive role in implementation of the concepts of green economy and green growth. It is explained by the fact that the heads of state have powerful communication platforms, as well as fiscal and political instruments that shows to the world market that their country is serious about promoting green investment and industrial development.

The Social Progress Index does not include indicators of the economic development of countries of the world (such as the level of GDP and GNI), but it is intended to assess the social welfare in a particular country. The fact that the index measures achievements in social field separately from economic indicators allows to deeply study the relationship between economic, social and environmental development.

Based on formula 1.1, we conducted a correlation and regression analysis of the relationship between the country's EPI and financial and economic parameters and social development parameters. At the same time, the correlation and regression relationship between investments, the economic, social and environmental states of the country is

established (Table 1.5).

Table 1.5

The results of the correlation and regression analysis of EPI and financial and economic parameters and the parameters of social development

Studied dependence *Y=f(X)*		The results of correlation and regression analysis		
		Equation of pairwise regression	R	R^2
EPI(t)((Pfin&ec (t),Psocial(t))	EPI = f(GII)	$-0{,}0095x^2 + 1{,}6782x + 10{,}659$	0,75	0,56
	EPI = f(SPI)	1,0077x - 12,756	0,90	0,82
	EPI = f(IE/LPI)	$0{,}0118x^2 - 0{,}6708x + 55{,}633$	0,75	0,58
	EPI = f(GDP)	9,6361ln(x) + 38,423	0,79	0,74
	EPI = f(GGE)	$11{,}88x^2 + 79{,}507x + 17{,}987$	0,60	0,36
	EPI = f(IEF)	0,9503x + 1,4192	0,60	0,36
P_(fin&ec)(t)= f(i_nvest (t))	GII = f(IE/LPI)	37,489ln(x) - 73,654	0,91	0,84
	SPI = f(IE/LPI)	$0{,}0132x^2 - 1{,}123x + 73{,}347$	0,86	0,77
	GDP = f (IE/LPI)	$-0{,}0061x^2 + 0{,}845x + 51{,}847$	0,86	0,82
	GGE = f (IE/LPI)	87,377x + 19,312	0,65	0,42
	IEF = f(IE/LPI)	1,1598x - 10,64	0,85	0,72
P_(fin&ec) (t)= f(P_social (t))	GII= f(SPI)	0,8468x + 39,718	0,84	0,71
	GDP= f(SPI)	9,6946ln(x) + 50,419	0,84	0,92
	GGE= f(SPI)	82,258x + 32,378	0,57	0,33
	IEF = f(SPI)	1,0318x + 8,1423	0,71	0,51

This table, formed according to the data of Table 1.4, provides the grounds to assert the presence of a correlation between the studied components.

Considering the data of Table 1.5, it is possible to conclude that the highest relationships were formed between the environmental and social components ($R_{EPI(SPI)}$ = 0,90), between the indicators of innovation and investment ($R_{GII(IE/LPI)}$ = 0,91), the parameters of social development and investment ($R_{SPI(IE/LPI)}$= 0,86), the parameters of gross domestic product and investment ($R_{GGE(IE/LPI)}$= 0,86).

As for the impact of the social factor on the environmental one, it should be noted that a significant number of scientific articles and reports contain relevant research devoted to the importance of taking into account the impact of the development of Smart Grids on the labor market, in particular the problems of technical labor shortages, new qualification requirements, safety issues as well as organizational and managerial problems [1].

Indeed, in the USA, social effects were achieved in the form of the creation of new 280 000 direct jobs (over the period 2009-2012) after the implementation of Smart Grid technologies. In turn, the creation of jobs provides an annual benefit of 215 million US dollars. The energy industry forms the primary market for engineering jobs in the USA. According to [25], the energy industry of a country needs to hire thousands of new engineers by 2030.

Due to the development of Smart Grid technologies, some countries invest into training of students, postgraduates and professionals in order to ensure the labor potential of specialists in energy engineering. For example, the biggest number of students in energy engineering graduates in China (600 000 in 2009). Annually 500 000 students graduate in energy engineering in India and 70 000 in the USA. As for Europe, this indicator is 100 000 graduates.

The innovative effects of Smart Grids are associated with the emergence of new power system features, new markets and types of businesses.

One of the most important innovative results of the development of Smart Grids is the wide-scale implementation of renewables.

The impact of Smart Grids on the state of the economy is also very important. For example, its impact is observed on the development of breakthrough technologies in energy and transport industries, an increase in numbers of facilities of renewable energy sources, hybrids and electric vehicles, an increase in employment, and an increase in energy and fuel storage. The implementation of Smart Grids stimulates the emergence of new types of business.

The positive external effects of the development of Smart Grids include the growth of environmental friendliness and energy security, which is achieved by reducing the need for mineral fuels, etc.

In particular, the internal and external effects from the implementation of Smart Grid technologies were identified and presented in the form of SWOT analysis based on the analysis of researches (Table 1.6).

To date, the United States has the largest experience in the field of the effects of Smart Grids development. The country is working on the development of technologies, standards, evaluating the effectiveness of the implementation of Smart Grids. At the same time the researches on the impact of the implementation of Smart Grids on the country's economy and security in the future are being carried out.

Table 1.6

SWOT – analysis of the use of Smart Grid technologies

Internal effects	
Strengths	Weaknesses
- quick response to the experience of the countries and the ability to adapt to the latest technologies; - reduction in operating costs; - implementation of Smart Grid technologies is more cost effective than using only conventional technologies; - opportunity to expand the capabilities of consumers, making them more aware of energy use issues.	- each country forms its own vision of the expected results from the implementation of Smart Grids; - requires significant investment are required for new technologies; - lack of experience and uncertainty concerning the cost and effectiveness of technology, costs and benefits, non-technical issues such as confidentiality; -large-scale implementation of Smart grids is very expensive.
External effects	
Opportunities	Threats
- implementation of Smart Grid technologies will contribute to more efficient use of energy; - increase in the share of renewable energy sources in the energy balance is possible; - reduction in energy infrastructure is possible due to distributed generation and reduction in total energy consumption; - growth of environmental friendliness and energy security by reducing the need for mineral fuels, etc.; - provides an opportunity to respond to price signals of the energy market; - possibility to distribute energy in grids for industries at more reliable prices using a “smart transformer”.	- while financing something new and large-scale, it is necessary to understand for what these funds will be spent and what results are expected. To date, there is uncertainty on this issue; - significant differences between the system of electricity distribution of the countries add more uncertainty. Also, the electricity distribution system itself is developed differently in different countries depending on geography basis, the demand profile and mixture of energy resources.

It should also be noted that in addition to financial, economic and social factors, geospatial and time parameters have a significant influence during the development of Smart Grid technologies

For example, in China, Smart Grid technologies with a contribution of 7 billion US dollars were implemented during 5 years. The Cell

Controller project had an implementation period from 2004 to 2011 and its budget amounted to 13.4 (€ million). The Virtual Power Plant project was being implemented from 2008 to 2010 and its budget amounted to 0.8 (€ million). The budget EcoGrid EU project amounted to 8.3 (€ million) and its implementation was carried out during 2011-2014. In particular, according to the International Energy Agency, Europe needs 1.5 billion US dollars investment during 2007-2030 in order to restore the electricity system: from implementation to transmission and distribution [30]. The indicated amount includes investments for the implementation of Smart Grid technologies, as well as maintaining and expanding the current electricity system. Thus, the period of the project implementation related to Smart Grid technologies depends on many factors, namely: the state of the energy system of the country, investment opportunities and strategic goals of government.

Special attention should be paid to the consideration of geospatial data of a country during the development of Smart Grid technologies. Indeed, optimal modeling of the development of Smart Grids involves the formation of a complex of high-quality information base on the territory, which includes spatio-temporal data (coordinates of the territory), information about the geographical location of the territory, data characterizing the natural and climatic features of the territory. The availability of these data allows to make managerial decisions by public authorities.

In particular, geospatial parameters play an important role in the development of Smart Grids in terms of data visualization. It can be interactive maps, investment, financial and economic profiles of the territories.

The geospatial aspect is one of the tools that is used in the construction and operation of Smart Grids. This aspect helps to determine the issues on the placement of equipment, design of substations and is a key factor in the successful run of the grid.

Despite the fact that almost every country has places which are attractive for the use of a wide variety of renewable energy types based on geospatial data, optimal decisions are made on the selection and use of renewables in the context of the implementation of the construction of Smart Grids [3].

For example, in France, 19 nuclear power plants with 58 reactors should give way to wind generator, solar panels and a biogas plant, because the country plans to reduce the share of nuclear power plants in electricity production from 75% to 50% till 2025.

In Japan, the main source of renewables is hydraulic power industry. In addition, Japan is one of the largest hydroelectricity producers in the world.

Germany ranks third in the world by the capacity of wind power sector and the second by size of solar power market.

Wind power sector is leading one in the United Kingdom. Also, the UK is one of the few countries, which has the opportunity to invest in ocean energy.

Thus, different countries use their geospatial parameters in different ways. However, the investment potential, financial and economic conditions play an important role in supporting important energy decisions.

In turn, according to the data of the US National Renewable Energy Laboratory, the efficiency of implementing the provisions of the Smart Grid concept can be assessed by the following parameters: electricity consumption, GDP energy intensity, reduction of electricity demand during peak loads, CO_2 emissions, increase in productivity, real GDP growth and economic damage for business (Table 1.7).

Table 1.7

Parameters assessing the efficiency of the provisions of the Smart Grid concept

No.	Parameters assessing the efficiency of the provisions of the Smart Grid concept	Vector of development
1	Electricity consumption, billion kWh, (A_1)	↓
2	GDP energy intensity, kWh /$GPD, ($A_2$)	↓
3	Reduction of electricity demand during peak loads, %, (A_3)	↑
4	CO_2 emissions, million tones, (A_4)	↓
5	Increase in productivity, % per year, (A_5)	↑
6	Real GDP, (A_6)	↑
7	Amount of economic damage for business, (A_7)	↓

It is suggested to use the index method in order to determine the effectiveness of implementation of the provisions of the Smart Grid concept on the basis of the abovementioned parameters in Table 1.6.

In our opinion, it is advisable to use the index method based on static and dynamic indices.

The calculation of the static territory development index on the basis of Smart Grid technologies is based on a comparison of the indicators of the territory chosen for research with the territory indicators, taken as a

reference one. The reference territory can be a specific territory that has positive experience in implementing Smart Grid projects (e.g. the territory of the United States). At the same time, the best parameters of the *n*-th number of territories can also be chosen. In this case, the virtual territory with the best possible values will serve as a reference territory.

It is suggested to define static and dynamic indices, which reflect the level of implementation effectiveness of the provisions of the Smart Grid concept as the geometric mean value of partial parameters evaluating the implementation effectiveness of the provisions of the Smart Grid concept. The scheme for the formation of static and dynamic territory development indices is presented in Figure 1.17.

Period / Territory	t	t+1	
Territory under study	$\sum A_t$	$\sum A_{t+1}$	dynamic index that indicates the level of implementation effectiveness of the provisions of the Smart Grid concept
Reference territory	$\sum A_{ET}$	$\sum A_{ET_{t+1}}$	
	static index that indicates the level of implementation effectiveness of the provisions of Smart Grid concept		

where: A_t, A_{t+1}, A_{ET} – parameters which reflect the level of implementation effectiveness of the provisions of the Smart Grid concept during t -th, t+1 periods on reference territory

Figure 1.17 The scheme for the formation of static and dynamic territory development indices

Source: developed by the author

Dynamic territory development index is calculated by the following formula 1.3:

$$I_{SmartGrid(dyn)} = \sqrt[n]{x_1 \cdot x_2 \cdot \underset{\dots}{\cdot} \cdot x_n} \tag{1.3}$$

where: $I_{SmartGrid(dyn)}$ – dynamic index of administrative territory development.

In turn, partial parameters (x_1, $x_2 \ldots x_n$) are determined by the ratio of the corresponding individual parameters ($A_1, A_2 \ldots A_n$) of the development of this territory in next and previous periods, formula 1.4:

$$x_i = \frac{A_{t+1}}{A_t} \tag{1.4}$$

The algorithm for determining the static index, reflecting the level of implementation effectiveness of the provisions of the Smart Grid concept, is shown in Table 1.8.

Table 1.8

The algorithm for determining the static index, reflecting the level of implementation effectiveness of the provisions of the Smart Grid concept

Static parameters of the territory which assess the implementation effectiveness of the provisions of the Smart Grid concept	
Stimulating parameters	Destimulating parameters
$x_{ij}^{cmam} = \frac{A_{ij}}{A_{ij_{ET}}}$	$x_{ij}^{cmam} = \frac{A_{ij_{ET}}}{A_{ij}}$
where x_{ij} – i-th standardized parameter, which assess the implementation effectiveness of the provisions of the Smart Grid concept of j-th territory; aij – value of i– th parameter, which characterizes the implementation effectiveness of the provisions of the Smart Grid concept of j-th territory; aij_{ET} – reference value of i-th parameter, which characterizes the implementation effectiveness of the provisions of the Smart Grid concept	
Static index which assess the implementation effectiveness of the provisions of the Smart Grid concept $I_{SmartGrid(stat)} = \sqrt[n]{x_1 \cdot x_2 \cdot \ldots \cdot x_n}$	

Static index reflects the level of deviation of base values from optimal ones.

However, the dynamic index reflects the dynamics of the energy development of the territory over time.

Thus, the suggested approach can be used to assess the energy state of a territory (country), as well as to compare the energy state of territories before and after the implementation of Smart Grid technologies based on

the use of dynamic index. In particular, the use of static index will allow to compare the energy state of territories that have implemented Smart Grid technologies with those that have not done it yet.

Summarizing the abovementioned, it can be concluded that in modern conditions, issues related to the implementation of Smart Grid technologies in the context of the use of renewables are of particular importance. In particular, according to the results of the search in Scopus database, many recent researches were devoted to the issues on the analysis of the mechanisms of transmission and distribution of electricity.

In order to take into account financial and resource parameters, it was suggested to use the method of correlation and regression analysis and to determine the relationship between environmental, social and economic states. Thus, the results of the research showed the existence of a correlation relationship between the studied components. The highest relationships were formed between the parameters of the environmental component and the social component (REPI (SPI) = 0.90). The case studies of such countries as India and the USA serve as confirmation of such relationships.

While analyzing the financial and economic parameters, it was found out that investment indicators are of particular importance. Indeed, the investment potential gives the opportunities for the launch of Smart Grid projects, determines their scale and timing of implementation.

However, it should also be noted that taking into account geospatial parameters plays an important role in making decisions on the use of renewable energy sources.

In our opinion, the suggested methodological approach that is based on the use of the index method which takes into account the parameters proposed by the US National Renewable Energy Laboratory, will allow to determine the effect of the implementation of the Smart Grid concept by different countries.

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ANALYSIS OF THE COMPANY BUSINESS PROCESS MANAGEMENT IN THE FRAMEWORK OF MODERN MANAGEMENT CONCEPTS

The article focuses on the analysis of the company process management in the framework of modern organizational and economic concepts: the advantages, disadvantages, main differences and focuses in the opinions of scientists have been determined, the necessity of the systematization of the company process management scientific

problems has been substantiated, which consequently contributes to creating an extraordinary possibility of leveling out the negative influence of the environment factors and achieving a stable position for the company in the services market. The paper offers the system vision of the company's process management problems as a set of interconnected and interacting elements of the system. As a result of the research, the process management of the enterprise has been analyzed in the framework of modern organizational and economic concepts, namely, the process approach has been considered in the concept of strategic management, in the concept of logistics, in the concept of quality management and in the concept of project management. It has been determined that process management researchers are turning to the other sciences resources because, on the one hand, a scientific discipline needs relying on their potential to make it academically sound, and on the other hand, due to a multi-disciplinary nature of its problems. The interdisciplinary nature of the process management theory is constantly gaining volume and becoming one of its distinct competencies.

In present time economic reality, this county's companies' performance is entirely dependent on the ability to transform the key company processes into strategic initiatives aimed at maximizing customer satisfaction and the company's ability to react and forecast market changes. At the same time, the environment unpredictability and rapid dynamics constantly change the conditions under which companies operate. In view of this, the urgent task of operational response to various kinds of change arises, since the timely reaction of the company management of to changes in the environment can provide a long-term sustainable development of the company. Bringing the level of companies business process management up to meet the requirements of the internal and external environment will contribute to improving the overall level of efficiency of its business activities.

The consideration of business process management issues is many economists' subject of research. This, above all, is due to the strategic orientation at winning a dominant position in a significant market niche and maintaining it. The modern scientific works contain a complex of tools and strategies of the company process management, as evidenced by the results of scientific research by leading world-class scientists: A. Bayorn, I. Borgianni, V. Broke, M. Veske, R. Gardner, T. Davenport, E. Deming, J. O'Shawnessey, K. Shewhart, M. Hammer, N. Harrington, J. Champy.

At the same time, in spite of the wide variety of available researches

there is a certain polarization of scientists' ideas concerning the business process management problems. Also some issues of the company process management, in particular, concerning the business process management in modern organizational and economic concepts have remained unexplored.

Despite the large number of publications and diverse approaches to the problems of business process management, there is no comprehensive approach to these issues in the scientific literature. In view of this, the problems associated with the companies' process management in modern organizational and economic concepts under the competitive conditions and globalization of the economy needs further study and development. The purpose of the work is to diagnose the issues related to the business process management in modern organizational and economic concepts.

The current stage in the process management theory development is largely based not so much on achievements in management, but on borrowing ideas and methods of analysis mainly from the economic theory, computer science and other sciences, which themselves are currently undergoing transformation. The interdisciplinary nature of the process management theory is constantly gaining volume and becoming one of its distinct competencies.

The process approach in the strategic management concept. The emergence and further development of process management as an independent theory is largely determined by the evolution of the theory of strategic management. Thus, shows that "the turn of the 1980s and 1990s, the evolution of the scientific concepts of the development of firms was a stage characterized by, first, the search for sustainable competitive advantages and, secondly, a new understanding of the sources and mechanisms for their creation. The dominant paradigm was the resource paradigm of strategic management, the main idea of which is the recognition of the internal organizational capabilities and resources of the firm as the determining sources of its competitive advantages "... The rise of a new vision of the company strategies has been promoted by ... the accord of the resource concept with the general trend in the development of the management theory in the direction of ever more decisive recognition of the priority of organizational factors of firms' competitiveness". V.S. Katkalo also names the concept of organizational culture, the concept of integrated quality management, the concept of "lean manufacturing", as well as the reengineering of business processes among the concepts that "radically changed the idea

of effective management in the late 1980's in the early 1990's.

At the end of XX and beginning of the XXI century researchers form an understanding of strategic management as a "content-process-context" triad. The context is a set of circumstances in which the content and process of strategies are determined (that is, there is a search for the answer to the question "what?" and "how?"). The ratio of the organization's goal and the three aspects of strategic management are presented in Figure 1.18.

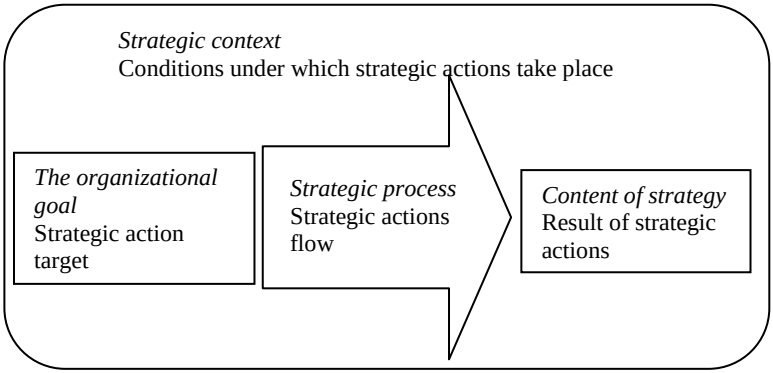

Figure 1.18 The ratio of the organization's goal and three aspects of strategic management

It should be noted that this is not about the three separate parts of the strategy, but about its three interrelated aspects, beyond which the analysis becomes fragmentary. Meanwhile, let's focus on one aspect of the strategy when taking into account the other two [1]. The presented approach demonstrates the decisive role of the process as such in management, its place in the strategic context, as well as the ability to "isolate" management processes.

The process approach in the concept of logistics. A significant contribution to the development of the methodology of process management was made by the theory of logistics, the use of principles of which laid the foundations of the methods of modeling business processes, as well as the formation of methodological tools for improving the individual business processes in the companies – Figure 1.19.

While considering the issues of interaction between the process management theory and logistics, we proceed from the theoretical

premise of the logistic approach scrutinized by V. Nikolaichuk. The basic postulates of this approach are summed up by the following ideas.

1. The concept of logistics is expressed through a definite set of actions that have a specific orientation in the management of production and economic activities.

2. This set of actions goes into action through the formation, operation and further improvement of specific logistics systems.

3. Any logistics system belongs to the sphere of economic systems and has its own structure and content.

4. The task of logistics is a comprehensive management of the end-to-end flows of material, financial and other resources.

5. Despite the complexity and unique target of the incalculable set of heterogeneous components, the logistics system can be conditionally divided into traditional areas of management: logistics, production, sales, warehousing, transport, information support, etc.

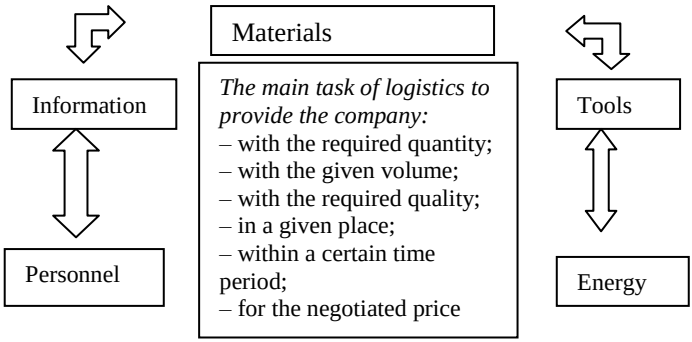

Figure 1.19 The main goals of logistics

The English word “logistics” stands for “rear and supply”. And in this county’s recent years science terminology, especially in the economic science, it is this particular meaning that is given to the term "logistics". In stresses the importance of logistics as the science of planning, control and management of transportation, storage and other material and intangible operations that occur in the process of bringing raw materials to a production enterprise, processing raw materials, materials and semi-finished products, bringing finished goods to the consumer in accordance with the interests and requirements of the latter, as well as the transfer, storage and processing of relevant information. The main objects of research in logistics are logistics costs, the

information flow, the logistics system, the logistic function, the logistics chain, logistics operations, the material flow, etc. Logistics covers a number of interrelated sections, including logistics of supply, production, marketing, transport. Within the framework of logistics systems a number of tasks are solved, including forecasting of demand for products, transport, stock status monitoring; collecting and processing orders, determining the sequence of material flow along the logistics chain. Logicism (or logisticism) is one of the areas of the philosophy of mathematics, the essence of which the attempt to identify mathematics with logic, thus transforming the latter into a purely symbolic calculation. The term “logistics” is sometimes used to refer to mathematical logic when solving economic problems and optimizing managerial functions.

Logistics is also interpreted as “the science of managing ecological, socio-economic systems by optimizing the flow processes that occur in these systems. Regarding enterprises “... such a definition involves managing the efficiency of movement and the use of limited material, energy, information, labor and financial resources, the flow of fixed assets and finished products” [2].

By its content, logistics acts in three qualitatively different forms - in the form of a section of science, in the form of economic process and as a subsystem of management.

Logistics, which has the aim of increasing the efficiency of the functioning of organizations and the economy as a whole, is concerned with managing flows, especially the ones of material resources. The subject of study is not the material resources themselves, but their movement in space and time. Here the movement means a continuous change in the state of material resources by quantity, quality and location. It is the movement as the subject of research that allowed logistics in the XX century to take up the place of a fully fledged independent science.

The process approach in the concept of quality management. Quality management in the modern world is commonly referred to in terms of Total Quality Management (TQM) and ISO 9000 Quality System (ISO 9000), which is based on the TQM methodology. Of particular importance are quality system standards, as they are approved as state standards in many countries, in particular in Ukraine, and are most supported informatively and methodically.

In accordance with the quality system standards (ISO 8402 standard), quality is a set of characteristics of an object that is relevant to

its ability to satisfy the established and foreseeable requirements of the consumer. In this case, the object of quality can be understood as the actual product (goods or services), the process of its production, and the producer (organization, system, or even a separate employee).

The quality system is a collection of organizational structure, techniques, processes and resources required for the general quality management.

Currently, the ISO Series 9000 family (series) includes:

– all international ISO standards with numbers 9000-9004, including all sections (which can be modified separately) of the ISO 9000 standard and the ISO 9004 standard;

– all international ISO standards with numbers 10001-10020, including all sections;

– ICO 8402 and, in some cases, some other standards that determine the specific activities of the supplier.

Three ICO standards from the 9000 series (ISO 9001, ISO 9002 and ICO 9003) are fundamental quality system documents, define the methodology for quality assurance, and represent three different models of functional or organizational relationships between the participants in the quality system (typically, the “supplier”, “consumer”, “subcontractor” or “sub-supplier”). Actually, according to these standards, the “supplier”, which is the main object of quality management, is being certified.

In addition to the standards of ISO 9000, the family includes so-called support (auxiliary) standards (document and process standards) that define the general elements of ISO 9000, or vice versa, divide them into specific production and commercial situations.

The system of standards (ISO 9001-9003) has a certain interaction, that is, each subsequent standard defines a quality system for a narrower field than the previous one. The ISO 9000 and 9004 series of standards define the general requirements for the quality system and quality management model.

The ISO 9000: 2000 International Standards of Company Management maintain the model of the overall quality management system, based on the process approach and presented in Figure 1.20.

This scheme successfully illustrates the main ideas of organizing a quality management system, as well as the role of process management in it. It should be noted that a number of ideas and methods of the process management theory (in particular, the idea of the continuous improvement of processes, the Deming-Shewhart cycle) were first used

for practical application and were expressed in international standards ISO, DSTU and others in the framework of the implementation of the TQM methodology provisions [3].

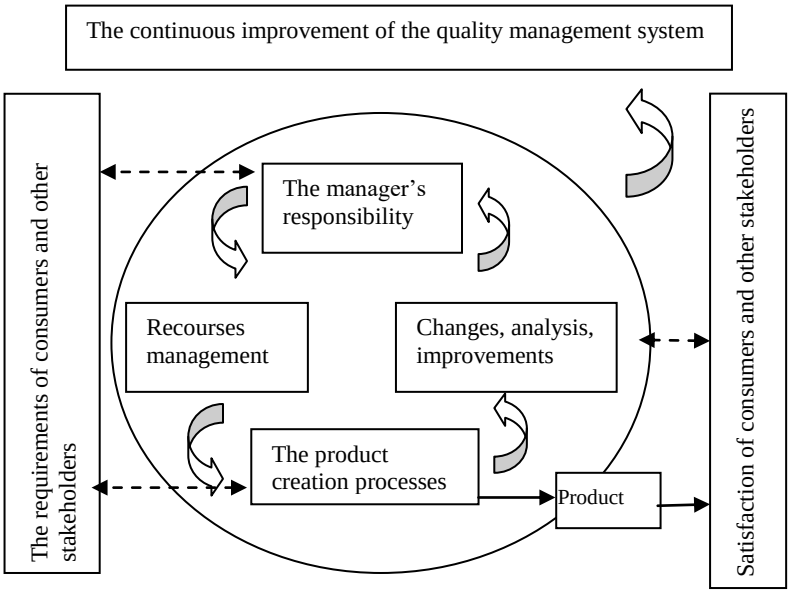

Figure 1.20 The model of the quality management system based on processes (from ISO 9000: 2000 standard)

Meanwhile, the focus of process management on increasing the efficiency of business in general leads to an understanding that its purpose and mechanism have to do with a much larger range of the company management issues, and not just the provision of quality management. This vision is confirmed by the mechanism of company process management proposed in this paper, according to which the improvement of quality is one of the results of the process management implementation.

The process approach in the project management concept. The main task of management is to ensure the successful achievement of the company's goals at a minimum cost. In order to achieve the set goals, a certain sequence of actions over the object of management must be performed. Performing these actions is a process that continues over a period of time. The actions that ensure achieving one and the same goal can be performed by different employees from different functional units.

Thus, another goal of management is to coordinate the actions of all employees involved in the process of achieving the goals of management.

The coordination of employees' actions is carried out on the basis of the following approaches: administrative, functional, process and project. The sequence of these approaches represents their ordering in terms of the increasing complexity of the tasks to be solved. At the same time, each subsequent approach does not override the previous, but is its evolution, addition.

Project management is based on the principles of a process approach and aims at achieving complex goals, such as the development, organization of production of new products. In general terms, the project management cycle can be represented as a cycle of management of the PDCA process (Deming-Shewhart cycle), with the addition of the stages of initialization and completion.

The methodology of project management is elaborated in detail in the articles [4, 5], which allows to indicate some of its fundamental features. The project-oriented management implies that the process of achieving the set goal is planned in detail before the work on it has begun and there is a responsible person (project manager) for the execution of works. The plan of project implementation involves some assumptions that may later prove to be erroneous. In this case, the plan is changed.

One of the peculiarities of the project management, which distinguishes it from the process one, is that the result of a project implementation is often expressed in the creation of some product that is a physical object. The degree this product completion serves a good reflection of the current state of the project, which reduces the need for the development of specific indicators for assessing the level of achievement of management objectives.

As a result of the research performed, the company process management has been analyzed within the framework of the modern organizational and economic concepts, namely, the process approach has been considered within the concept of strategic management, within the concept of logistics, within the concept of quality management and within the concept of project management. It has been determined that process management researchers are turning to other sciences' resources because, on the one hand, there is a need for a scientific discipline to rely on their potential to be academically sound, and on the other hand, it is the multidisciplinary nature of its problems. The interdisciplinary

nature of the process management theory is constantly gaining volume and becoming one of its distinctive competencies.

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SOCIALLY-ORIENTED ECONOMY AND SOCIAL STATE AS A NEED FOR ORGANIC DEVELOPMENT

A number of global crises have cast doubt on the effectiveness of economic systems in the face of historical challenges to humanity.

The purpose of the text is to sum up the intermediate results of the analysis of ways to optimize the state role and the structure of regulation of economic processes.

The methodology is based on the unity of theoretical research and practical structuring, analytical generalizations and historical specifics.

The analysis of anti-crisis measures is not isolated, not isolated, but in combination has allowed to identify and consider the dominants of transformations. Thus, the illusory nature of the recipes of liberal democracy, obviously not coping with a series of cardinally important crises, is already obvious. At the same time, the world itself has changed. On the one hand, it is becoming more important for mankind socially-oriented development and implementation of purely individual giftedness complexes of each. On the other hand, the models of “free pricing”, “market competition”, and “private property” now play the role of exclusively means of ideological apologetics and divert attention from real economic processes. The transition from hopes on the regulatory capabilities of the market element to focus on marketing planning, as well as new models of incentives and management. At the same time, the orientation toward egoism, the foundation of liberal democracy, does not provide not only social development, but also general security [1-5].

Many civilizations, sociocultural stylistics, united in the cultural worlds, coexist in the world. Their fates are determined by the strength of the initial impulses, the results of competition, geopolitical circumstances (external challenge, the ratio of allies and opponents and others), and the quality of management. Cultural and civilizational integrity often acts as an independent and indivisible further sociocultural value with its own will, tasks, and habits. Accordingly, the study of the institutional and value principles of the organization of different types of economic communities allows us to overcome hard

production determinism, abandon the analysis and evaluation of economic situations and processes exclusively from the standpoint of a pragmatic interpretation of the urgency of benefits. It also helps to move on to the study of behavioural economics and social relations, taking into account a rich palette of historical-cultural, moral-psychological, religious and ethical traditions, plural models of personal and group choice.

It is the supra-individual, super-egoistic and other transcendental factors, combined and structured by the Super-project, which often turn out to be decisive at the macro and micro levels. There is an embodiment in the system of informational interactions of an ideal, over individualistic, over egoistic understanding of a person and society. And the collapse of the personality to the level of an individual, victory by the biological principle of the social, triumph of animal instincts – this, in fact, is the degradation of man and the cultural and civilizational world. Accordingly, organic progress is embodied in the ascent from the social type of "economic man" to the spread of the model of "creative man". Regression is realized in degradation to biological instincts and the state of an "economic animal", "a skilled person", with individual reduction to animal instincts and social chaos – it is stimulated by an environment of "twilight consciousness" that focuses on consumption and accumulation, rejects the essential forces of man in favour of the fetishization of things and capital. At the same time, progress can carry some features of regression – and vice versa.

Mankind is undergoing a paradigm shift in its life and development models. In particular, if previously organizational and managerial art was manifested in the most complete development of the "most advanced" model for its time, now the task is to cultivate the "specialty" as the basis for the competition of completely different models. At the same time, the paradigm of transformations means, first of all, the opportunity to "overtake without catching up" with the use of universal human experience and the characteristics of a specific cultural and civilizational world. The transition period is the time of strategic maneuvering. The essence of the processes filling the transition period is related to the confrontation of various options for further changes, and not just the withering away of past strategies and the emergence of future ones. The importance of transitional inter-paradigm is connected, first of all, with going beyond the "corridor of freedom", and, therefore, a cardinal increase in the range of both opportunities and risks. The drift of the resource-methodological impact range is associated with a radical

increase in social value and the need for creativity of everyone (primarily in labour and management).

At the same time, the tasks of maximizing creative activity (in particular, ensuring socially oriented development and unlocking the abilities of the population) require an adequate state course. On the one hand, participation in labour should guarantee material well-being and ensure a high social status. On the other hand, only personal work, individual participation in the general creativity can be a factor of differentiation in well-being and prestige. Adequacy to the era of the systems of organization and management of labour relations, the synthesis of elements of controllability, self-governance and uncontrollability is a prerequisite for achieving an advanced, especially avant-garde, level of industry. Successful shaping of the image of the future, including strong social standards, serious social guarantees, the revival of the basic value-sense complexes of the cultural and civilizational worlds, increasing the responsibility of the state and state top managers, expanding the public sector and state regulation, creates elements of the concept of society, state and economy common good, increasing the socio-economic toolkit of justice [6-10].

Obviously, this is not about arbitrary charity of entrepreneurs and non-profit organizations, but about a systematic change in the entire economic policy. Thus, the history of overcoming crises has already clearly demonstrated the sluggish nature of social assistance from self-serving oligarchic groups, and the global challenges that have arisen require a completely different level of coordination for large-scale political and economic maneuvering. On the contrary, a radical increase in the level of democracy (as a practical humanization) requires putting it at the base of socio-economic integrity, above all a systematic increase in the role of the mechanisms of the influence of the masses on important decisions. Undoubtedly, strengthening of national control and national representation in government and administration is required. Consequently, the agenda includes issues of strengthening the state of the training system: both professional and general methodological, including self-education and lifelong learning. The transition of creativity from a purely individual to the social plane, giving it a mass character also puts forward completely new demands on the quality of both social pedagogy and organizational and managerial culture.

New development horizons are opening up to states in which the social structure maximally contributes to the realization of everyone's creative potential, where the super-project can consolidate, structure,

stimulate and mobilize to solve creative problems. The internal structure of the cultural and civilizational worlds is determined by the historical series of super-projects, which concentrate the core of their outbursts of historical creativity. The essence of the super-project of development of each cultural and civilizational world is in the public understanding of justice in it (first of all, in the realization of equality and freedom); and his super-task is to provide new forms and devices adequate to the era and the environment, ensuring its implementation. Super-project stimulates the development and consolidation of the desired transformations.

The development of resource bases of development and their combination of organizational and managerial art allows us to optimize the path of transformation. Organizational and managerial culture predisposes to a certain quality of choice. The transition period to the implementation of radically new models of life and development requires: – maintaining harmony between economic growth and social standards of life, – realizing the tasks of both strengthening the foundation (in particular, value and semantic) for the future, and preserving the present, regulating the balance of strategy and tactics, – mutual strengthening of the Super-project and numerous small projects. Effective organizational and managerial innovations are focused on socially-oriented disclosure of individual giftedness and are associated with mechanisms for the realization of public and private interests in the form of collegiality and partnership around basic social value-meaning complexes. Accordingly, for socio-economic success, the transition from the predominance of habits and stereotypes of directive administration to humanized practices and technologies of incentives becomes urgent: on an individual level – activities, on the public – desirable transformations.

Moreover, it is precisely the value-sense complexes of cultural and civilizational worlds, turning into matrices of mental codes of peoples, affect the state and vector of transformations of the emotional intelligence of society, and predetermine social preferences, behaviour and historical choice. Accordingly, on their basis there is an opportunity to clarify the development model and create a more organic idea of the desired future. Accordingly, the development of ecumene is a partnership and competition of Super-projects of cultural and civilizational worlds.

The sharp deepening of the systemic crisis, which globally embraced political, economic, cultural, civilizational integrity, brought to the core

of the main internal contradiction the clash of interests of the comprador oligarchy (often under liberal nationalist slogans) and peoples in determining the leading thrust of the complex of issues of transformation of the state, science, industry, technology and communications, law, education, the social sphere, political ideology and psychology. The "life" of this type of organization of the social organism is ending, suggesting parasitism on the external resources of the "colonies" and the subjugation of markets: primarily raw materials, creative activity, connected consumer goods. Moreover, a rush in the conveniences and comfort of some directly involves parasitism in the distress of others. Antagonisms carried out widespread separation, touching upon the problems of waste accumulation and utilization, the state of standards and quality of life, the possibilities of creativity, the socio-economic conditions of the demographic crisis, and so on – up to the repeated threat of the destruction of civilization and the slide into the dictatorship of one country (organization, corporation, etc.). Accordingly, the world faces the general task of harmonizing public order and cultivating a new reality on more equitable principles, allowing a combination of the maximum growth of everyone's rights with patriotism. Modelling of the future and programming of the corresponding political and economic processes should also be based on the basic value-sense complexes of the cultural and civilizational world, and clothe them in new forms that are organically inherent in peoples under changing conditions.

At the same time, the polystructure of world economic relations as an integrity, based on developed and mutually acceptable standards of relations, and not at all a block of identical atomic elements, takes on the form of a formed reality. When there is no stable external support in the form of a common ideology, a unified culture, a universally recognized science, then one should be tolerant of everything, recognize the right to exist unlike. In this context, the very concept of development needs to be updated: in addition to stable and balanced growth, it should be guided by such maxims as solidarity, freedom of choice, beliefs and words, tolerance. The concept of peripheral culture disappears: they are equal and equal in rights. Accordingly, it is necessary to move from the habit of imposing global standards on extremely diverse cultural and value worlds to an orientation toward cultivating their own conditions of productivity and long-term stability of life. At the same time, strategies for socio-economic recovery that bear the risks of deterioration in the quality of life of broad strata or socio-demographic indicators must

obviously be excluded. It is characteristic that those who requested assistance in the face of an attacking epidemic in different countries were immediately provided with help by China, Russia, and Cuba. In general, the doom of egoism, cultivated by liberal democracy, pushed the population of Western countries to a range of behaviour from pogroms of shops to army thirst on the streets. Naturally, it is the innovative synergetic properties of post-global management that sharply strengthen the role of the game character and social networks in the correction of social relations, including at the institutional level. At the same time, there have been attempts by some states "to pull" from anywhere the means of testing, protection and treatment into their own country at the expense of others.

Thus, a series of crises clearly confirmed the need not only for the state as a form of ensuring integration and protection of interests, but also for strengthening the social orientation of the state course. The strategies that have manifested themselves and / or are in suspended animation may turn out to be the delayed death of the ecumenical community, and may be fraught with the development of the creative power of clusters of further prosperity. The ability to strengthen the vector of social responsibility is a significant factor in the formation and realization of political and economic strategies. A socially-oriented state is a lever for combining the forces of society's self-regulation with conscious initiatives to radically modernize the conditions of business activity. However, not only acutely relevant, but also fundamental processes exact the potential of the state. So, moving to the core of public interest the maximum expansion of the area of socially-oriented development and the implementation of purely individual combinations of creative talents of the population requires the release of a person by the state from documents of minor troubles of a routine nature, as well as state guarantees of quality and affordable education, health care, etc. At the same time, a cardinal change in production, in particular, is by no means an orientation toward the "invisible hand of the market" in pricing, correlation of supply and demand, but a transition to marketing computing; a radical increase in interdependence in technological chains, etc. – all this requires adequate transformations in public communications, first of all, decisive democratization and humanization of system-forming relations of labor, property and management, fixing public ownership of natural resources, ensuring a developed system of social protection, raising the level of social guarantees. In particular, it is necessary to improve the quality of economic growth based on the

principles of a socially-oriented economy and state [11-18].

An active role of the state in maintaining social harmony is manifested not only in ensuring the safety of its cultural and civilizational world, but, in particular, in such effective means of ensuring and developing it, as the formation and direction of the Super-project. Moreover, the more relevant the solution becomes the richer arsenal of opportunities it opens up. The more grounds the region and society have, the more complex the internal structure is, the more stable it is during periods of relative stability and forced changes, and the more it is capable of development. The sharp deepening of the systemic crisis, which globally embraced political, economic, cultural, civilizational integrity, brought to the core of the main internal contradiction the clash of interests of the comprador oligarchy (often under liberal nationalist slogans) and peoples in determining the leading thrust of the complex of issues of transformation of the state, science, industry, technology and communications, law, education, the social sphere, political ideology and psychology. For example, the World Health Organization, the Red Cross and other supranational structures not only missed the epidemic, but actually turned, predominantly, into "statistical agencies". Demonstrating their global leadership and concern for humanity as a whole, China, Russia, Cuba were the first in helping other countries to overcome the pandemic in the world. Moreover, a rush in the conveniences and comfort of some directly involves parasitism in the distress of others. Antagonisms carried out widespread separation, touching upon the problems of waste accumulation and utilization, the state of standards and quality of life, the possibilities of creativity, the socio-economic conditions of the demographic crisis, and so on – up to the repeated threat of the destruction of civilization and the slide into the dictatorship of one country (organization, corporation, etc.).

At the same time, one must learn to change the situation for the better without betraying oneself, one's cultural and civilizational world and humanity, and transform without betraying the past, present and future. Adequate development of the way of thinking and thinking and action requires not only a broad fundamental educational program, but also the development of every habit of conscious responsible choice and reasonable initiative. Modeling of the future and programming of the corresponding political and economic processes should also be based on the basic value-semantic complexes of the cultural and civilizational world, and clothe them in new forms that are organically inherent in peoples under changing conditions.

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CHOICE OF PRINCIPLES OF ECONOMIC THINKING OF MODERN SOCIETIES: ALTERNATIVES TO MEETING VIABLE CHALLENGES

Introduction

In the late twentieth and early twenty-first centuries, humanity has faced global challenges that encompass the economic, social, environmental and other aspects of modern societies. Today, the total impression of the planets COVID-19 is increasingly attracting the attention of the world community and every earthling to the actualization of challenges – both those that arose before and now.

Environmental challenges are becoming increasingly unacceptable to the world community. The information "bomb" was the Report of the International Scientific and Political Platform on Biodiversity and Ecological Systems (IPBES), published by UNESCO in May 2019. Although in fact the report only documented the destruction of the environment: they show inaction as a result of unprecedented neglect of natural life support. Hence, the world media called the generation of earthlings we represent "the era of suicides" [1].

The destruction of nature is accompanied by a significant destruction of the essence of today's man. By affecting man in person, the mass manifestations of destructive processes testify to the destruction of the depths of the human essence. Perhaps the most undesirable manifestations of the anthropological crisis are the change in the gene pool of mankind. The growth of stress on a person leads to the tendency to reconstruct its biological (physiological, mental and other) foundations – until the emergence of the so-called "posthuman" [2, p. 95-96].

The destructive effects of these problems, complemented by the bifurcation effects of COVID-19, require additional guarantees for the safe development of the planetary community. At the same time, only Homo sapiens, not the "posthuman", is the subject of the intellectual wealth of the modern world, the value of which lies primarily in its ability to provide societies with a way out of the omnicide trap.

Understanding the ecological and anthropological crises and the threatening manifestations of COVID-19 infection, which complements these problems, puts humanity in an urgent need to answer questions that are not painful today. At the same time, overt or covert threats and dangers, becoming manifestations of destructive challenges, must meet with adequate counteraction, motivated by opposing, i.e. constructive actions.

Current and future generations are faced with an alternative to counteracting the destruction caused by humanity itself to planetary biodiversity, ecological and socio-economic systems of the world. Mankind is becoming more and more aware: "everything depends on how and where the economic process is directed – the immortality of civilization or its destruction" [3, p. 142]. This orientation necessitates a change in social thinking, especially economic. From the point of view of protecting the interests of present and future generations, the direction of economic thinking for the immortality of civilization becomes unalterable.

The economic thinking of modern societies finds priority in economics and education, which is a science-derived means of social communication of new knowledge. Taking into account the course of the economic process, the direction of which is unalterable, it becomes increasingly important to correspond to modern science. Modern education, in turn, relies on the dissemination of economic knowledge in the relevant field. Therefore, when talking about the adequacy of economic education to modern science, we should take care of this compliance. The adequacy of education in economics implies their joint compliance with the outlined direction.

The worldview of this, as our previous research, is to clarify, identify and disclose the completeness, structure and essence of knowledge, especially economic, the substantive content of which is favorable and not destructive to the lives of modern generations and their own and universal descendants [4].

Results of the research

1. Critical analysis of the principles of economic thinking of modern societies

Clarification of the state of modern economics and education shows that the attraction of the post-communist legacy over them makes it difficult to choose economic thinking that is adequate to the ability of societies to respond to current global challenges. Published in Ukraine, professional sources on economic issues under the guise of scientific

innovations suggest the renaissance of political economy. The authors of these publications argue about the transformation of political economy into political neo-economy, which seems to lay the foundation for a renewed paradigm of economic knowledge [5]. It should be noted that such publications are consistent with the persistent positioning of the authors of the humanistic dimensions of Marxism [6].

The more than 1,000-page monograph by authors representing the views of academics and university professors in Ukraine and Russia also affirms political economy, moreover, not so much in the past as in the future. Professional reading of the monograph and reviews of it allows you to understand what the future is about. After all, the book is named after the slogan of the inspirer mentioned on p. 8 prefaces [7]. And the tireless inspirer under the guise of prospects for civilizational development continues to position the slogan "Marxism yesterday, today, tomorrow".

Upholding the novelty of political economy can be found in modern foreign literature on economic issues. Social scientist of German origin Ulrich Beck, known to experts as a researcher of globalization and global society, advocates a new world political economy [8]. He carries out his intentions to approve it from openly declared cosmopolitan positions. This makes it difficult to clarify the pragmatic meanings of his book for the Ukrainian specialist: after all, according to the existing dictionary definition, cosmopolitanism (from the Greek kosmopolites – citizen of the world) "justifies the rejection of national traditions and culture, denies state and national sovereignty".

The insufficiency of theoretical economy, due to the dominance of political and economic principles, is accompanied by a lack of historical and economic knowledge. It does not adequately reflect the achievements of European physiocracy, which even respected historians of world economic thought attribute to political economy. And the unorthodox economic legacy created by Ukrainian ascetics over the past 140 years has not yet been included in the history of either world or national thought. To this day, experts are not provided with the possessions that determine the assertion of earthly immortality, which are the quintessence of historical and economic knowledge.

An uncritical study of the state of economics on the basis of results similar to the above may lead to the erroneous conclusion that "the idea has really won in the world: there is a single science called political economy, it covers all scientific trends without exception relate to economic problems" [3, p. 386]. After all, based on the provisions of

these monographs, their authors continue to talk to this day, if not about the overt or covert declaration of the political economy of Marxism, then at least about its "renaissance". Instead, in the textbook on the History of Economics, called "classical university", claiming the status of the most respected in Ukraine, we read that the methodology of modern historical and economic analysis is based on the rejection of dogmatically one-dimensional understanding of the history of economics universal economic theory…" [9, p. 31].

Naturally, the question arises: what is proposed for study today instead of the "only correct" economic theory or "dogmatically one-dimensional" understanding of the history of economics? The authors of this textbook point to the need to recognize the "pluralism of forms of theoretical reflection of economic reality": therefore, it should be regarded as one of the leading theoretical and methodological foundations of modern economics [Ibid].

In view of this, there is a need to clarify the acceptability of pluralism as a component of the methodology of historical and economic analysis for the study of the origins and development of economics. Impartial reading of the textbook requires tracking the content and sequence of coverage of key provisions of the history of economic thought. Given the importance of the issues raised for further research, it is necessary to verify compliance with the principle of pluralistic principles in order to comparatively analyze the achievements of the classics of European economic thought.

Symptomatic in the mentioned textbook is the text about the economic doctrine of physiocrats: it states that A. Smith – … is "the founder of economics, a bright representative of classical political economy" [9, p. 191]. It is further noted that the young A. Smith "respected the teachings of the Physiocrats, although he did not agree with all its provisions" [Ibid]. At the same time, in the same textbook, the same author in a text on the peculiarities of A. Smith's methodology points out that the young scientist's interest in economic problems was facilitated by his acquaintance with physiocrats (F. Quesnay, A. Turgot), which took place during a trip abroad scientist…" [9, p. 209]. The question arises, what were for A. Smith his trip to the continent and acquaintance with the Physiocrats: the beginning of growing interest in economic problems or the assertion of the status of a classic of political economy?

Unorthodox Ukrainian economic literature contains the answer to this question since the second half of the 80s of the twentieth century. However, this is literature that has been neglected by the above-

mentioned researchers of the theory and history of national and world economic thought for more than three decades. But it says that when Versailles, home to the famous economist and his followers on the continent, was visited by a future critic from England, "Quesnay did not argue with him – the doctor saw that the Englishman was too far from understanding the foundations on which his theory is based. … He was sure that the theory, which is not a reflection of the laws of nature, will inevitably remain outside of science" [3, p. 389].

Along with the raised, open question about A. Smith as the "founder of economics". After all, the same textbook indicates both the formation of the first in the history of economic thought of a real scientific school, which "later became known as the school of physiocrats" and the fact that the young A. Smith attended "meetings of the school of physiocrats" [9, p. 191]. Based on the above provisions, the question remains relevant: is it appropriate to consider A. Smith the founder of economics, if during his trip to the continent and acquaintance with physiocrats there was already the first real scientific school in the history of economic thought, which was attended by a young scientist?!

Thanks to the works of Ukrainian ascetics of unorthodox economic thought, the solution of this issue was introduced into scientific circulation in the first half of the 80s of the twentieth century. "… In Quesnay, Turgot, and their followers, the economy was purely physical". "Adam Smith and then Ricardo laid the foundations of the science, which was called the actual political economy" [3, p. 354].

A critical examination of the above provisions shows that this is the end of the pluralistic approach proclaimed in the mentioned textbook as one of the foundations of historical and economic methodology. This examination reveals that the dominance of political economy is actually hidden under the guise of a declared pluralistic approach. Obviously, the pluralism under study should provide for the possibility of choosing the most acceptable of the comparable economic doctrines. The impossibility of choice testifies to the declarative pluralism of forms of "reflection of economic reality".

The comparison of economics by F. Quesnay and A. Smith in the textbook testifies to the inadequacies that are unacceptable for science and education of the third millennium. It is not an excuse that they continue to exist in the Western world, where F. Quesnay's theory is not just forgotten (and long forgotten), but causes an ironic smile. Adam Smith won "…, because" F. Quesnay is still not understood – the vast majority of Western economists still put him below Smith" [3, p. 424, 461].

… Education – the most important area of conveying scientific knowledge to the public, especially to the youngest generations – is designed to promote and implement the achievements of economics. According to the results of the study it is necessary to state the incompleteness of the existing volumes and distortion of the structure of economic science. Since the country's independence, young people have been doomed to study economic disciplines based on the same principles that led to the collapse of the USSR. Although Ukraine is almost the only country in the modern world that is able to offer studies the scope and structure of universal economic thought, which it really is for more than two centuries.

Thus, the political and economic dominance that characterizes the current state of economics is doomed to be disseminated through educational publications of theoretical and economic content. Economic theory is interpreted in these publications as political economy: and the "tone" set by the capital's professors is forced to support the professors of regional universities [10].

As a result, the scientific schools of Ukraine's leading higher education institutions continue to impose on young people the belief that apart from political economy in the world, there really is no science that is acceptable for solving economic problems. With the appearance of declared pluralism, they confirm both the "renaissance" and the dominance of political economy.

But the usual essence of political economy is not changed by arguments such as that it is built on the principles of neoclassicism, neoclassical synthesis (P. Samuelson), neoliberalism and monetarism (M. Friedman), supplemented by the concepts of Keynesianism (J. M. Keynes), neo-Keynesianism. (R. Harrod, E. Hansen) and post-Keynesianism (Joan Robinson, P. Sraff), "or retains at its core the deep structural elements of the subject of classical political economy, finds its manifestation and development in concepts: neo-Marxism, neo-orthodox political economy, radical political economy; K. Polanyi's substantive political economy; new political economy; international (or global) political economy; middle-class political economy; political economy of transformational states of economic systems, etc." [11].

The results of the studied state of economics and education indicate the importance of exposing the "renaissance" and the dominance of political economy. This is only then "it would be true if we agreed to throw a death blanket on the physiocracy" [3, p. 386].

Continuing the idea of the unjustified "rehabilitation" of political

economy requires answers to the questions raised several decades ago, namely: why “Marxism could not grow out of F. Kene’s scientifically sound theory” in any way? Why is “physiocratic theory” not suitable for the creation of so-called proletarian political economy? And why “on the physiocratic theory of pure product Marx could not develop the doctrine of the dictatorship of the proletariat”, and “the teachings of Quesnay are by no means given to destructive experiments” [3, p. 469, 387-388, 459]?

On the other hand, if Smith’s “labor theory, which is still dominant in the West, has won”, why did Smith and Marx’s inadequacy and erroneous determination of the substance of value “make the twentieth century the bloodiest period in earthly history” and now threaten planetary decline or even destruction civilization?” What is most important about Smith’s teaching, “if it could be used so apocalyptically?” Why “on his bright and spiritually pure work grew the poisonous toadstools of Marxism?” [3, p. 482, 477-478, 459, 470]

Due to the lack of unbiased answers to these questions, socially conscious young people, especially students, are unable to make adequate choices of economic knowledge to modern challenges. Because it is deprived of access to theoretical and applied economic disciplines other than political economy or developed on the basis of its scientific principles. Economic thought remains hostage to the described political and economic “renaissance” and dominance. Incomplete volumes and distorted structure, which contradict the realities and capabilities of Ukraine, deprive the mastery of the fundamental basis of applied economic disciplines.

Deprivation of modern generations of access to unorthodox economic heritage, primarily created by Ukrainian ascetics, is caused, on the one hand, by the worst kind of idealism – economic idealism, “which grows not from philosophical beliefs, but from scientific helplessness and laziness of thought” [3, p. 360]. On the other hand, it deprives teachers and future economists of not giving them the professional skills to meet non-alternative goals. As a result, the possibilities of ensuring the manageability of socio-economic processes, adequate to global challenges, are significantly impoverished. Instead of enriching modern generations with life-giving knowledge and educating the defenders of the interests of descendants, their intellectual theft takes place.

And instead of self-affirmation of countries that preserve the intellectual heritage of ascetics, whose possessions are saving for all mankind, they are forced to disseminate and consume knowledge that

has the status of insufficient. Particularly dangerous is the fact that this knowledge is positioned and imposed under the slogans of market economy and democratization. They fit into university textbooks, are introduced into student audiences, becoming part of the pipeline of formation of hostages of deadly ideas.

Lack of economic knowledge is caused by the lack of humanistic foundations in modern economic education. This inadequacy turns economic education into a criminal sphere. Designed to form a generation of "descendant lawyers", it disseminates knowledge, the threat of which is to train "descendant executioners". The staffing of the economy created by the current education determines the training of blind performers for the sphere of management, which from the point of view of sufficiency in the studied sense develops meaninglessly. Economic education is moving away from its most important purpose – to serve universal goals, designed to convey to descendants the saving meanings of economic knowledge.

2. Giving economic thinking compliance with viable challenges

The starting point for this study is adequate to global threats vision of the volume and structure of economic wealth of mankind. There is a widespread opinion about the multitude of economic theories, schools, trends and directions of economic science. Thus, the representatives of the mentioned scientific school of modern political economy hold the opinion that after the publication of the fundamental work of the founder of the neoclassical direction in economic theory Alfred Marshall (1842-1924) "Principles of political economy" (1890) classical political economy finally splits into two almost independent currents" [11]. As shown above, these representatives continue to consider it essential for the mentioned "renaissance" that one of the currents embodies neoclassical economics, while the other retains at its core the deep structural elements of the subject of classical political economy.

Contrary to this opinion, in the unorthodox Ukrainian economic literature several decades ago it was proved that in fact there are only two of these theories: one of them was created by F. Quesnay, the other by A. Smith [3, p. 381-382]. Metaphorically, they are depicted in the form of trees of universal knowledge. It is shown that the further emergence of economic theories created by numerous scientists (for example – P. Samuelson, M. Friedman, J. M. Keynes, R. Harrod, E. Hansen, Joan Robinson, P. Sraff, which are given by representatives of the already mentioned scientific schools of modern political economy),

represents only some branches of these trees. Trees “will remain two and only two” [3, p. 381-382]. The studied theories of F. Quesnay and A. Smith “should have developed in interaction, complementing and illuminating each other. But it happened differently ...” [3, p. 354].

The question of what happened then remains relevant to this day. But what is important today is not so much what academic paradoxes occurred then, as the urgency of the unmistakable choice of a theory adequate to universal goals. Therefore, the formulation of the answer to the question should begin with finding out where the battle of economic theories began, how these theories became rivals and why the enmity between them continues to this day [3, p. 378, 381, 383, 385].

F. Quesnay was mentioned as the founder of the first direction of economic science, called European physiocracy. Uniting numerous like-minded people, he created the French scientific school of physiocrats. In the XVIII-XIX centuries there was a noticeable spread of physiocratic ideas on the European continent, in particular, the emergence of Italian (F. Paoletti), German (JF Schmaltz), English (R. Jones) and other schools.

The founder of the second component of the universal economic heritage was A. Smith should take into account the existing in Ukrainian unorthodox economic thought since the mid-90s of the twentieth century impartial elucidation of the “strength and weakness” of Smithianism [3, p. 457]. Because the comparative analysis of the component of the economic heritage of mankind, which was asserted by A. Smith, and which is still perceived as the pinnacle of scientific knowledge, shows: in fact “it was knowledge of the relative” [3, p. 461].

Examining the views of the Physiocrats and their predecessors, J. Schumpeter once noted that R. Cantillon and then F. Quesnay were the first to show economic life from a bird’s eye view, and therefore the first to portray the “economic picture” (tableau economique). The play on the word “tableau” in French means both “picture” and “table”. J. Schumpeter noted that the word “picture” conveys meaning better than the usual translation of the word “table” (table) [12].

The affinity of the teachings of physiocrats with the “economic picture” significantly deepens the statement of Ukrainian thinker, writer and human rights activist M. Rudenko that F. Quesnay “managed to rise above the human vortex, managed to see humanity as a single organism where each person acts as a separate cell and each group of cells unites into organs, which F. Quesnay calls classes. That is, the classes are physical, not political. At the same time, F. Quesnay’s theory should be seen as a perfect reflection of the physiology of society” [3, p. 391]. In

the philosophical work “Gnosis and modernity”, which should be considered as a continuation of his “Economic Monologues”, the thinker set out his intentions to “create a holistic picture of Being: from human society through the Sun to the World Monad” [3, p. 515].

The combination of the above provisions, in particular, the emphasis on attention from the socio-economic dimensions of Genesis, allow further argumentative talk about the scientific picture of world economic heritage. The image of the theories of F. Quesnay and A. Smith in the form of trees of universal cognition significantly confirms the relevance of these analogies [13]. Accordingly, the new content of the picture requires the latest approaches to solving these problems.

The scientific and applied value of the proposed picture lies primarily in the fact that its structure is able to reveal the components of human economic wealth that allow choice and point to just the one that is relevant to solving global problems. The ideological “key” of this choice is the definition of modern world economics, corresponding to the violated criteria.

We follow the approach according to which it is defined as a science “on which life on Earth depends” [3, p. 481]. We emphasize that it is radically different from the Marxist scheme of judgments, according to which “being determines consciousness”. It is this difference that is fundamental to the implementation of the choice we study.

Very important in this definition is also the interpretation of the verb “depends”. The dependence of life on science indicates the deep substantive meaning of the studied definition. Because “when we point out the inadequacy of a theory, we do not encroach on its life, but only clarify the extent to which this theory can be considered fair” [3, p. 458].

Let us emphasize that this limit was definitively stated in unorthodox Ukrainian economic thought in the early 2000s. Since then, this pioneering contribution has been present in the world scientific community. Ignoring this dichotomy prevents us from determining the extent to which the theory is applicable or dangerous to prolong life on Earth.

The worldview disclosure of this definition deepens the understanding of the essence of both the economy itself and its reflection in economic thinking. After all, both Ukrainian and foreign experts continue to talk about economic thinking in the Marxist perception – usually as “superstructures” (over the “basis”).

Such inferences are threatening given the doom of seeing a way out of the current crisis – and the economy itself, and its mental reflection.

After all, according to the Marxist scheme of judgments, economic thinking cannot change until the “basis” changes. In fact, this is the wrong approach.

The studied definition suggests the need for a different approach. Ontological, substantial, not Marxist-philosophical, spiritual-material, not dialectical-materialist, metaphysical and at the same time – physical-economic. The worldview of the approach is revealed through its inherent deep meanings. Thanks to them, you can read what was in the beginning, and to whom it belonged, and what it meant.

It is becoming increasingly necessary to study the definition of world economics by modern means of mathematics: after all, it is appropriate to talk about the relationship between sets. Moreover, the determinants are sets that reflect the achievements of economics, covering subsets of favorable for life extension (life-affirming, saving) and/or unfavorable and hostile to life (deadly) theories.

In turn, the dependence of the sets that embody life on Earth is associated with the paradigm of non-destructive economic development of the living sphere: after all, this sphere was and will remain the substantial source of human life. Further modeling of these dependencies involves the assimilation of the economy of nature and the “integration” of management into the environment.

Thus, the dichotomy of (in) sufficiency of theories is determined by the extent to which they are applicable. This limit is the definitively established dependence of life on Earth on economics. It opens up the possibility of an unambiguous division of theoretical and economic knowledge, namely: scientific theories conducive to the continuation of life on Earth should be considered life-affirming, saving, and unfavorable or hostile – deadly. This division is confirmed by the given metaphorical characteristics of trees, which conditionally depict the studied scientific picture, in particular.

It is clearly proved that “one of the trees will bear nutritious fruit”; the second… endows humanity with poisonous fruits” [3, p. 382]. And if there is no doubt to which of the trees belong the achievements of the above-mentioned P. Samuelson, M. Friedman, J. M. Keynes, R. Harrod, E. Hansen, Joan Robinson, P. Sraffy, which are only separate branches, then the true essence of the work of apologists of neo-Marxism, post-Marxism, etc. becomes clear, especially considering that Marxism and its doctrines are metaphorically depicted not even as branches, but as “poisonous toadstools” growing under a tree with poisonous fruits.

… The ideas of physiocrats were further developed when Yu.-R.

Mayer substantiated the law of conservation and conversion of energy. Although “an in-depth study of this question reveals that the law of conservation and conversion of energy was discovered not by Mayer but by Quesnay. He енер calculated energy not in joules, but in livres – that is, just as it can and should be calculated in the economy” [3, p. 271].

The application of set theory allows us to better understand the need to combine “Quesnay’s discovery with Mayer’s discovery”. Because in this way “we will get what S. Podolinsky got” [3, p. 272]. Descriptive set theory makes it possible to combine the paradigms of Quesnay and Mayer, the result of which intersects the paradigm of Podolinsky. Further application of the theory makes it possible to deepen the statement that “F. Quesnay plus S. Podolinsky is no longer a partial, but a complete truth” [3, p. 440].

In the context of F. Quesnay’s achievements, it is important to see the ideas of the founder of European physiocracy, the already mentioned M. Rudenko. The Ukrainian intellectual showed that “extrapolating the achievements of the Great Doctor to modern science, it is possible to raise his ideas to the level of the Space Age” [3, p. 460]. In the same context, the assessment given by Acad. V. Vernadsky to the achievements of Yu.-R. Mayer and S. Podolinsky as pioneers in the latest science of that time.

According to V. Vernadsky, the fundamental discovery of Yu.-R. Mayer, who “was the first to understand that green plants change the energy of the earth’s crust due to the fact of their existence, is of significant scientific importance. They transform the radiant energy of the Sun into a new form and capture it in a form favorable to the chemical processes developing on our planet. However, noted Acad. V. Vernadsky, these ideas of R. Mayer remained incomprehensible even much later after the penetration into scientific thought of his own ideas about unity and conservation of energy” [14, p. 356].

V. Vernadsky highly appreciated S. Podolinsky’s independent contribution to the study of “the boundary between living and inert matter”. After all, along with J.-R. Mayer, other prominent researchers worked on the solution of these problems – W. Thomson (Lord Kelvin) and G. Helmholtz. Their “brief but perfectly clear instructions, thoughts, and facts of the energy difference between the living and the dead” were not understood and appreciated. Even later and independently… SA Podolinsky understood the significance of these ideas” [14, p. 360].

Therefore, the pioneering contribution of S. Podolinsky was an independent study of thermodynamic problems, to the solution of which

only some intellectuals dared to devote themselves. S. Podolinsky's world priority was to apply the ideas of energy difference between the living and the dead to the study of economic phenomena.

Along with this, the young Ukrainian scientist set out a position that for 140 years experts has been silent about: in scientific research on human labor and its relationship to energy distribution, he exposed the theory of T.R. Malthus. S. Podolinsky saw the essence of this theory as an incentive to steal energy and therefore reasonably contrasted it with naturally and statistically sounds provisions [15, p. 276].

Without accepting T.R. Malthus's evidence that population growth should be stopped, and consciously, at the expense of social (and now – global) misfortunes (wars, epidemics, famines, etc.), S. Podolinsky proved the ability of the planet to provide life for tens of billions earthlings, while showing its resource constraints [15, p. 275]. The current assessment of T.R. Malthus's theory should be carried out through the prism of the above metaphor of "genetics" and the quality of branches that can grow on a tree with poisonous fruits. After all, it is known that just T.R. Malthus "his most prominent predecessor in the history of economics" considered J.M. Keynes [Cit. for: 9, p. 849].

Scientific research on human labor and the unity of power, published in the same 1880 in the form of a brief sketch, S. Podolinsky proved: "nothing is created by human labor" and thus exposed the labor theory of value [15, p. 284]. The Ukrainian scientist sent one of his works to Karl Marx, noting in the letter an attempt to "bring additional work in line with the prevailing physical theories" [16, p. 305].

The assessment of this attempt from today's point of view shows how difficult the process of becoming a science remains, the provisions of which are unalterable for solving modern economic, social and environmental problems. Experts know that F. Engels, whom K. Marx asked to express his opinion on S. Podolinsky's intelligence, rejected the leading idea of the young scientist, claiming that he had erred and "confused the physical with the economic" [15, p. 66]. Now it must be said: in fact, not "confused", but combined the physical with the economic, and not "lost", but created a unique symbiosis, called physical economy.

Ignoring the achievements of unorthodox economic thought is becoming a "desertion" of modern scientists and educators. Because it is their "escape" from the specific Ukrainian intellectual property, which is their own, not someone else's, their own, and before that – life-affirming, not borrowed – deadly. In turn, this "desertion" and "escape"

significantly impoverish the professional ability of our contemporaries, especially young people, to protect the interests of future generations, because they deprive their own and universal descendants of the opportunity to master saving rather than hostile knowledge.

3. Ensuring the manageability of economic thinking with life-affirming knowledge

S. Podolinsky's innovative approaches, which ensured him a world championship in the creation of physical economy as a fundamentally new direction of world economics and made the young researcher the founder of its Ukrainian school, found significant development of the already mentioned V. Vernadsky and M. Rudenko.

Acad. V. Vernadsky at one time came to the decisive conclusion for the continued existence of all living things, including the perspective of life of planetary humanity, that living matter exists "throughout geological time, ie geologically eternal" [17, p. 326]. The position proved by him remains a fundamental natural foundation, which should be the basis of current and future economic development. On the other hand, the economy of the XXI century is designed to be a harmonious symbiosis of living, inanimate and intelligent. Defining in this symbiosis is the sphere of living things. However, there is a danger of its destruction due to imperfect development of the inanimate sphere, which has repeatedly warned the eminent thinker and naturalist.

Pointing out that "a huge future opens before man", the scientist at the same time was forced to warn: "if she understands this and will not use his mind and his work for self-destruction" [17, p. 330]. Because man, as the bearer of the intelligent, who directs work for the preservation of the living, is responsible for the future.

An important scientific basis for economic development is the heritage of Ukrainian intellectuals of the XX-XXI centuries. In his economic and philosophical work there are a number of the most present provisions concerning the action and application of the law of conservation and conversion of energy. Our contemporaries had a deep understanding of the significance of this fundamental law of nature for the economic development of societies.

M. Rudenko also independently proved the provisions that confirm the truth of both the ideas of S. Podolinsky and the generalizations of Acad. V.I. Vernadsky on "the inalienable difference between living and inert natural bodies of the biosphere", "sharp, energy-material difference of living organisms from all inert bodies of the biosphere" [18, p. 508].

M. Rudenko developed their positions and argued that “the organic and inorganic worlds are distinguished by the fact that every organic substance, unlike mineral matter, is a carrier of solar energy” [3, p. 451].

M. Rudenko’s research is the latest continuation of the principles that S. Podolinsky first implemented in world science, when he pointed to the application of the idea of energy difference between the living and the dead to the study of economic phenomena. The study of our contemporaries is a logical continuation of the work of Acad. V. Vernadsky, who proved the insurmountability of the line between the living and the inanimate.

Based on the position of Ukrainian ascetics, we can talk about the economic and natural symbiosis, which today is the national scientific school of physical economy [3, p. 482, 487]. There is a need to outline its place and significance in the structure of world economic knowledge.

On the one hand, the synthesis of European physiocracy and the Ukrainian scientific school of physical economy form a phenomenon with more than a quarter of a thousand years of history – the continental scientific school of physical economics. Mathematical tools are extremely important here, designed to combine the above paradigms of Quesnay, Mayer and Podolinsky and prove their continuity. After all, the use of operations with sets allows to build scenarios of symbioses of continental physiocracy and the national scientific school of physical economy, by means of modern mathematics, to show the importance of scientific achievements of Ukraine and their prospects for the development of physical and economic achievements of Europe.

On the other hand, the achievements achieved on this basis are the basis of the latest universal phenomenon, which, like them, has a saving dimension – modern world physical and economic thought. The grounds for these allegations are the following arguments. World intellectuals who adhere to humanistic principles are recognized as the latest scientific field called ecological economics [19]. Among its most prominent founders – F. Soddy, K. Boulding, N. Georgescu-Regen, other scientists who are our contemporaries – G. Daley, R. Costanza, H. Martinez-Alier and others.

In the studied context, it is important to note that the only Ukrainian among them is S. Podolinsky: his name is at the head of the world cohort of devotees of the ecological economy [20]. The list of scientific achievements of the Ukrainian leader is limited to three works: although in fact there are six of them – during his life they were published in four European languages [21, p. 5-19].

The sign “physical” in the studied concept comes from the Greek “physis”, i.e. “nature” [22, p. 722-725]. Thus, physical economy as a direction of universal economic knowledge, designed to explore the interaction of socio-economic development of the spheres of living, inanimate and intelligent, naturally covers the ecological economy. Therefore, the cohort of the drivers of world physical and economic thought, along with the named devotees of the ecological economy, should include: the French Nobel laureate M. Alle, the American L. LaRouche, the German K. Schluppman and other famous researchers.

The inheritance of the paradigms of F. Quesnay and J.-R. Mayer, the organic combination of the achievements of European physiocracy with his own work, the establishment of the national scientific school of physical economy, open the achievements of S. Podolinsky, economic heritage. S. Podolinsky is the one whose work embodies the saving heritage of modern humanity.

… French economist M. Allé has repeatedly pointed out the importance of the segment of economic knowledge, which is based on the natural principles of socio-economic life. Ukrainian M. Rudenko called this segment physical economy. The validity of this definition is confirmed by the words of the French economist: “What is true for physics is true for economics” [23, p. 50]. Because in the second half of the 60s of the twentieth century he came to the conclusion that the scientific analysis of economic phenomena shows the existence of such striking patterns as in the physical sciences” [23, p. 30]. And in the Nobel lecture he confirmed that “this is the basis by which the subject of economics is a science and by virtue of which this science is subject to the same principles and methods as the physical sciences” [23, p. 66].

One of the most important developments of the Nobel Prize M. Alle is considered to be the economics of markets. The unique achievement of the Ukrainian M. Rudenko is the physical and economic substantiation of the role of grain in the creation and development of markets. It is time to combine the achievements of prominent Europeans: their innovations form the fundamental foundations of a paradigm adequate to the challenges of the XXI century as a free movement of surplus grain, able to guarantee earthly immortality. Behind the shoulders of researchers – the legacy of ingenious predecessors, in the “crossing” of which the work should be seen as a guarantee of Truth.

Among the most important developments of the Nobel Prize winner F. Soddy, who is the second after S. Podolinsky as the leader of the

world's environmentalists, along with the "Cartesian economy" and "value economy" are monetary innovations of the British Nobel Prize, including radical restructuring of global monetary relations from the gold standard and substantiation of the monetary system on a non-gold basis [24]. M. Rudenko's unique achievement is the substantiation of the significance of grain in the creation of a modern standard of value. Ukrainian intellectual argued that if the standard of value to make "a ton or quintal of wheat" – "hundreds of millions of earthlings would be saved from starvation" [3, p. 482]. The combination of the developments of the British and Ukrainian ascetics opens the prospect of creating a monetary theory of physical economy – a truly life-affirming knowledge for practical implementation with saving intentions.

The application of set theory allows to significantly developing the mentioned formula "F. Quesnay plus S. Podolinsky", supplementing it with the formulas: "M. Ale plus M. Rudenko" and "F. Soddy plus M. Rudenko". This will allow mastering the latest saving component of human economic heritage, based on natural principles, which is a symbiosis of continental physiocracy, the Ukrainian scientific school of physical economy and modern world physical and economic thought.

… It follows from the above that the related theories of F. Quesnay and A. Smith for over two hundred years were perceived as incompatible [3, p. 464]. Although, as noted, in fact, they "should have developed in interaction, complementing and highlighting each other ..." [3, p. 354]. The "sketch" of the proposed scientific picture provides grounds for a reasonable answer to the question of the interdependence of the theory of physiocrats and the labor theory of the English classics [3, p. 403-404, 458-459].

After all, the emergence of the distinction between physical and political economy "belongs to the cunning jokes of dialectics, which almost always first leads to the bifurcation of the one, and in synthesis inevitably connects them at the highest level" [3, p. 459]. Thus, "the theories of Quesnay and Smith come into conflict only when scientists stubbornly seek it." Hence, "from ... incompatible theories, a single economic theory must be born" [Ibid.].

Therefore, from the standpoint of choosing the principles of modern economic thinking and should be derived from their subordination. Guided by this idea of gradual ascent and unification, political economy must follow from physical economy, obey it and complement it.

Construction and structuring of the scientific picture in accordance with the above proposals will compensate for the asymmetry of

economic knowledge: its consistency will be achieved through the implementation of a component of economic thought based on natural principles. In turn, this will open the possibility to assert these principles of economic thinking and ensure the completeness and self-sufficiency of the structure of the scientific picture of universal economic thought.

Conclusions

Modern societies have faced the economic, social and environmental challenges facing modern societies, becoming global threats and dangers. Humanity in general and each individual are now faced with the choice of alternatives for further development. The choice requires constructive counteraction, adequate to the destruction caused by humanity itself to the ecological and socio-economic systems of the world. The danger of escalation of the destruction of planetary nature and human beings is explained by the ideological problems of the current Homo sapiens.

At the same time, an unbiased explanation of the causes of the existing threats to the world community testifies to the chances of saving opportunities that the intellect of modern man is capable of. The vital principles required by the economic thinking of modern societies are becoming increasingly apparent. Salvation from global dangers is seen in the choice of saving principles of economics and derived economic education, the purpose of which is the spread of life-affirming rather than deadly knowledge.

Sentences about the political and economic renaissance, presented under the guise of scientific innovations, in particular, the transformation of political economy into political neo-economy, the renewal of the paradigm of economic knowledge, etc., bring “confusion” to modern economic education. Because inheriting the insufficiency of economics, from which it is derived, this education does not provide young people with adequate saving knowledge.

The purpose and content of educational reforms follow from the stated provisions, which are unalterable for the choice of the principles of modern economic thinking. Education reform should provide life-sustaining economic knowledge. Access to this knowledge should be a priority of reforms. Future professionals should instill theoretical and practical knowledge of the fundamental laws of economic existence, opening access to knowledge based on natural principles.

Therefore, the promotion of life on Earth should become an unalterable criterion for the adequacy of modern economics and

education. Countering the threat of decline or destruction of civilization requires that a component based on the natural laws of economic existence be mandatory in their structure. The natural attribute is the most necessary for the construction of the latest scientific picture of universal economic and philosophical culture. It should take precedence in the structure of this picture.

The subordination of the universal economic heritage, through which political economy will flow from the physical, subordinate to and complement it, must be achieved through the dismantling of economic knowledge unfavorable for the continuation of life on Earth, the "disarmament" of deadly intellectual arsenals, and the elimination of enmity.

The origins of humanistic, based on the fundamental natural principles of economic knowledge can be found in historical annals. In order to prolong life on Earth, the saving paradigm of the ascetics of the continental physiocracy, the Ukrainian scientific school of physical economy, and modern world physical and economic thought requires approval.

Adequate to global threats, the vision of the volume and structure of the economic picture of the world requires the inculcation of the youngest members of modern societies professional skills to distinguish between the dichotomy of life-affirming and deadly knowledge. This will enable the ability of economics and education to provide relevant knowledge and manage the so-called sustainable development.

Future professionals should be encouraged to master the economic knowledge on which life on Earth depends. With this knowledge, they will be able to establish the saving principles of manageability. Granting a new generation of specialists the status of "descendant's lawyers" will mean mastering the sustainability of development, which will become manageable.

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DRIVERS, TRENDS AND RISKS IN INDUSTRY 4.0

Now enterprises and countries face. Industry 4.0 influences on different aspects of enterprises' activities: equipment choice, distribution process optimization, relationships establishment with partners – suppliers, intermediaries, transport companies and others.

In modern conditions, countries and enterprises face different challenges. And one of the biggest ones is the challenge of Industry 4.0. Industry 4.0 already pervades different spheres of human lives and changes the external environment rapidly and in a radical way. Therefore, countries and enterprises must adapt to all these changes as Industry 4.0 has an enormous influence on the economic, social and political environment. Industry 4.0 sets rules of the game and helps to find the right direction for countries and enterprises further development.

To understand possibilities, it is necessary to understand the current drivers and trends of Industry 4.0. So, first, we need to analyze them in detail (Table 1.8).

Table 1.8

Current drivers and trends of Industry 4.0

Drivers		
No.	**Driver**	**Description**
1	Data Challenge	The huge amount of information; need to use and gain the benefits from the data; lack of standardized approach for data management
2	Data Exchange with Partners	The need for data transparency between enterprise's departments; between enterprise and its partners to keep the process optimized; between enterprise and other enterprises that use infrastructure
3	Training and Skill Development	Need for highly skilled employees able to develop "future skills" and ready to jobs displacement and creation
4	Process Flexibility	Need to provide flexibility to deal with product life cycle shortage; products' individualization and customization
5	Privacy, Ethics and Security	Need to keep their people, products, and production facilities environment secure from security risks; need to develop new security and protection mechanisms for the faster and more flexible collaborative value networks and smart production systems
6	Innovation	Need to invest more in research and development to produce innovative products, provide business models and production techniques driven by technology
7	Societies' readiness	Need to increase people's e-readiness (e-skills and e-literacy); formation of smart society
Trends		
1	Advanced automation and robotics (including collaborative robots or "cobots")	Making production lines more efficient, making more effective use of resources, and improving productivity; create opportunities for manufacturers to improve production lines, increasing productivity while keeping employees safe

Table 1.8 (continued)

2	Machine-to-machine and human-to-machine communication	Integration of machines, platforms, and systems across all units of the enterprise. Human involvement with a machine or automated device
3	Artificial intelligence and machine learning	A synergistic collaboration between humans and robots in urban smart factories for mass customization
4	Sensor technology and data analytics	Ability to collect, share, analyze and visualize data.
5	Virtual, Augmented, and Mixed Reality	Bridge the gap between digital/cyber/virtual and physical worlds. Perfecting new products, management systems, communication techniques in the virtual world before real-world prototyping, production or implementation begins.
6	Digital Twin Technologies	Ability to simulate in real-time functioning of some physical object, process, or product
7	Digitalization	Using digital technologies to adapt or transform the business into a digital business
8	Small Batch and Mixed Manufacturing	Opportunities to compete in a wider range of activities and to offer customers individual product customization options

Source: compiled based on [1-7]

The link between the drivers and trends of Industry 4.0 we present in the form of a graphical model that demonstrates the relationship structure (Figure 1.21).

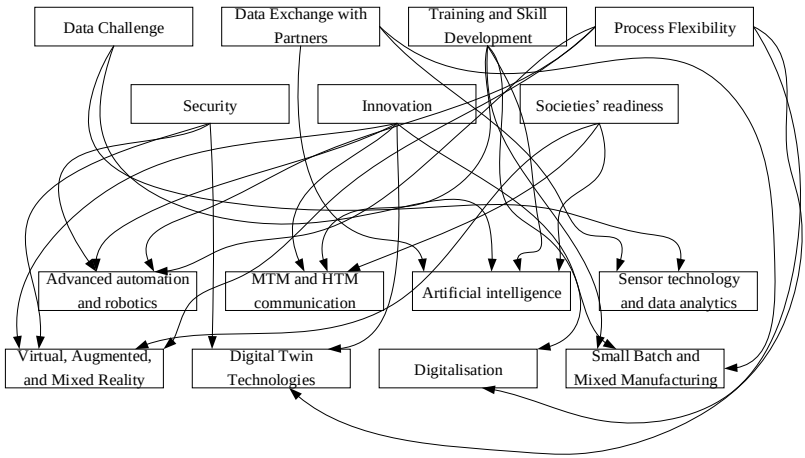

Figure 1.21 Relationship between the drivers and trends of Industry 4.0

As we can see from Figure 1.22, modern trends in Industry 4.0 are caused by drivers. Thus, it has significant importance for countries and enterprises to follow modern drivers and trends in Industry 4.0 to be up to time and increase self-competitiveness.

Just like any other activities and spheres Industry 4.0 also is influenced by risks and generates risks.

"Risk" is defined as anything – good or bad, big or small – that could prevent the achievement of a goal. Risk is a natural part of life and though we can list, measure and mitigate it, we can never eliminate risk [8].

Risks may be considered to be related to an opportunity or a loss or the presence of uncertainty for an organization. Every risk has its characteristics that require particular management or analysis. Risks can be divided into three categories: hazard (or pure) risks; control (or uncertainty) risks; opportunity (or speculative) risks [9].

Therefore, risk can have both positive and negative results. To achieve the best results of any hazard situation it is important to provide risk management.

The problem of risk identification is crucial for Industry 4.0 as it is a new and highly innovative sphere.

First, Industry 4.0 is highly influenced by global risks. A "global risk" can be defined as uncertain events or conditions that, if they occur, can cause a significant negative impact on several countries or industries within the next 10 years [10]. The influence of global risks on Industry 4.0 is shown in Figure 1.22.

As we can see from Figure 1.22, all five groups of global risks have an impact on Industry 4.0 and influence on the environment of Industry 4.0 formation – make some limits and difficult or oppositely provide some opportunities. At the same time, there is a reverse connection. Being impacted by global risks Industry 4.0 also can be one of the reasons for risks appearance.

Now we'll explore possible risks in Industry 4.0 more detailed.

Thus, Vitlinskyy V.V. and Skitsko V.I. [11] proposed to divide risks of Industry 4.0 into 3 groups:

– ultra-new (they will only emerge from the introduction of Industry 4.0 into real life, they are not inherent in the current economy): risks of cyber-physical systems; risks of the Internet of Things (or the Industrial Internet of Things); risks of Intelligent Products;

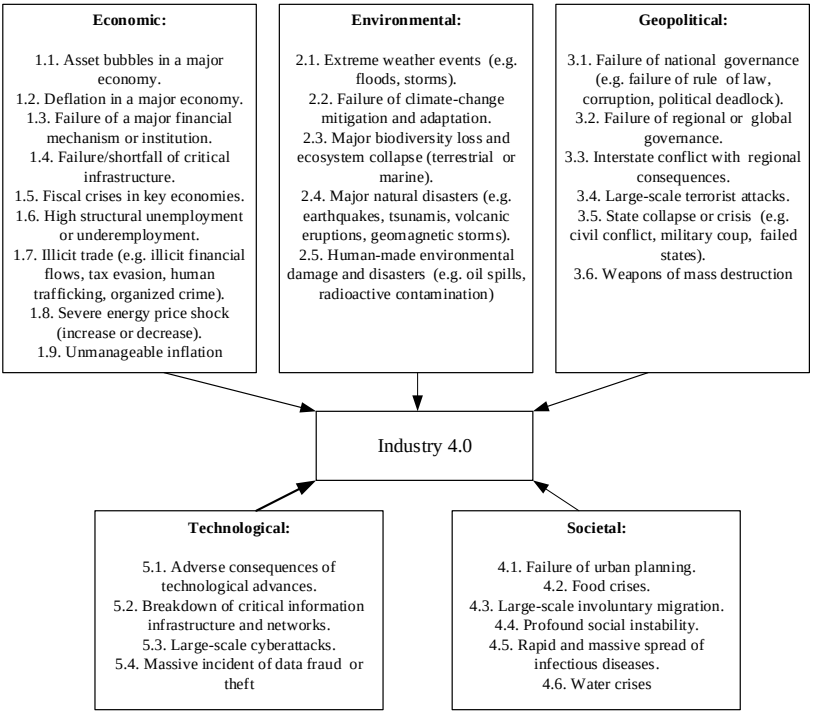

Figure 1.22 Influence of global risks on Industry 4.0

Source: compiled based on [10]

– new risks (they have only just begun to emerge at the current stage of global economic development and fully appear in Industry 4.0): Big Data risks, cloud risks; virtual reality risks and modeling; risks of additive production; information security risks; cybersecurity risks;

– traditional (or classical) risks (they were, are, and will be inherent in the development of the world economy and society): investment risks, risks of innovative activity; risks of industrial espionage and competitive intelligence; risks of intellectual and labor resources; administrative and legislative risks; risks of standards; risks of enterprise management; environmental risks; risks of resource provision.

Sandip Patel [12] highlighted the emerging risks in Industry 4.0:

– cyber risk: when technology fails or when there are security breaches, manufacturing and/or supply can be disrupted;

– risk of business disruption;

– macro environment risks;
– reputation risk;
– talent risk due to the skills and diligence required in a connected world.

Tupa J., Simota J., Stein Fr. [13] also mentioned that the concept of Industry 4.0 generates new categories of risks: risk manufacturing process management; maintenance; operation methods and tools used; machines and manufacturing technologies; human sources; machine environment.

Additionally, Birkel H.S., Veile J.W., Müller J.M., Hartmann E., and Voigt K.-I. [14] conducted the study (in-depth interviews with experts from business practice) to create a general and comprehensive overview of risks in Industry 4.0. The survey was conducted between October 2017 and January 2018 with 14 managers from German industrial companies from 13 different industries (all companies have already gained experience with Industry 4.0). As a result of the study, all risks were gathered into 5 big groups. In each group, the sub-risks were identified (Table 1.9).

Table 1.9

Risks of Industry 4.0 according to Birkel H.S., Veile J.W., Müller J.M., Hartmann E. and Voigt K.-I.

Risk	Description
Economic Risks	
Financial	Industry 4.0 technologies require large investments, with an unknown duration for amortization together with uncertain success
Time and Importance of Investments	the risk of false investments, for instance in poor and often immature technologies
Changing Business Models	Industry 4.0 changes the ways that enterprises work, as well as the required skills. Therefore, companies can lose vital core competencies, market success, or profitability
Competition	increased transparency of data; lower entry barriers on the markets
Dependencies	A high degree of dependency from external partners
Ecological Risks	
Consumption	consuming a larger amount of raw materials; the extraction, transport, and processing of raw materials have mostly negative effects on the environment
Pollution	increased waste generation and emissions
Lot Size One	standardized products can be reused while individualized products often cannot. It can cause increased waste and difficult in recycling

Table 1.9 (continued)

Social Risks	
Job Losses	not all workforce will be able to adapt quickly to new requirements
Organizational Structure and Leadership	the organizational structure needs to be adapted to the requirements of Industry 4.0. But some organizations can stick to existing organizational structures or transform existing organizational structures too radically
Internal Resistance and Corporate Culture	no supporting the necessities of organizational transformation by some employees
New Requirements for Training	the risk of skill shortages
Lack of Qualified Personnel	some employees don't have openness for training, advanced training, and new training programs
Stress and Overextension	the pressure to learn and change which can lead to overload and strain
Concerns Regarding Artificial Intelligence	giving power to Artificial Intelligence and losing human control
Manufacturing Relocation	employees' resistance or lack of qualified personnel could drive manufacturers to relocate their factories to areas of the world where both aspects do not play such a major role
Technological Risks	
Technical Integration	a high level of complexity
Dependency	high dependence on the functionality of the technical systems
Standards	unification of standards
IT Risks	
Cyberattacks	the gates to attacks from the virtual world
Data Possession	need to protect data from third parties and need to know which kind of data belongs to whom
Data Handling	the amount of data generated and handled must be controlled; appropriate data quality must be ensured across a multitude of data types
Cloud Computing	the security of data storage on a cloud, the dependence if it fails, connection speeds, place of cloud servers located in other countries
Legal and Political Risks	
Infrastructure	the need for an appropriate infrastructure
Legal Aspects	data protection, working time, jurisdiction, and the Occupational Health and Safety Act; the lack of standards, which hampers cross-border cooperation

Source: compiled based on [14]

Human resources and cyber risks in Industry 4.0 need to be

discussed more detailed.

The cyber risks appear as a result of Industry 4.0 intends to connect the digital world with physical action to drive smart factories and enable advanced manufacturing. As Industry 4.0 uses more digital-oriented technologies the danger of cyberattacks increases [15].

Moreover, Industry 4.0 can cause a huge impact on the social aspects. Industry 4.0 additionally includes collaboration between man and machine as with collaborative robots or cobots. Artificial intelligence, “smart products” and “smart factories” help manufacturers reducing the cost of production, as well as enhancing speed and performance [16].

But at the same time, not every sector will find an easy way to transition to Industry 4.0; not all workforce will be able to adapt to new working conditions and achieve all necessary skills.

Such sectors as IT and electronics, automotive, transportation and logistics, healthcare are “winner” sectors. Retail, telecommunications and media, finance (including insurance) are “loser” sectors. Besides the implementation of Industry 4.0 can have a serious impact on the following jobs: telemarketers, insurance underwriters, claims adjusters, watch repairers and accountants’ clerks [17].

Consequently, firstly, companies must pay more attention to developing their employees’ competencies; and secondly, people themselves must pay more attention to self-education.

Using all mentioned above, we can say that Industry 4.0 is influenced by risks and at the same time produces risks. They are caused by all processes inside Industry 4.0. They occur as a result of Industry 4.0 functioning and can influence its effective functioning (Figure 1.23).

As a result, all risks of Industry 4.0 can be divided into two big groups – traditional and new risks.

Traditional risks can occur in other industries too. They are common to other spheres as well. And new risks appeared as a result of Industry 4.0 implementation.

Thus, future-oriented countries and enterprises must follow trends of Industry 4.0 and be ready to face challenges and risks.

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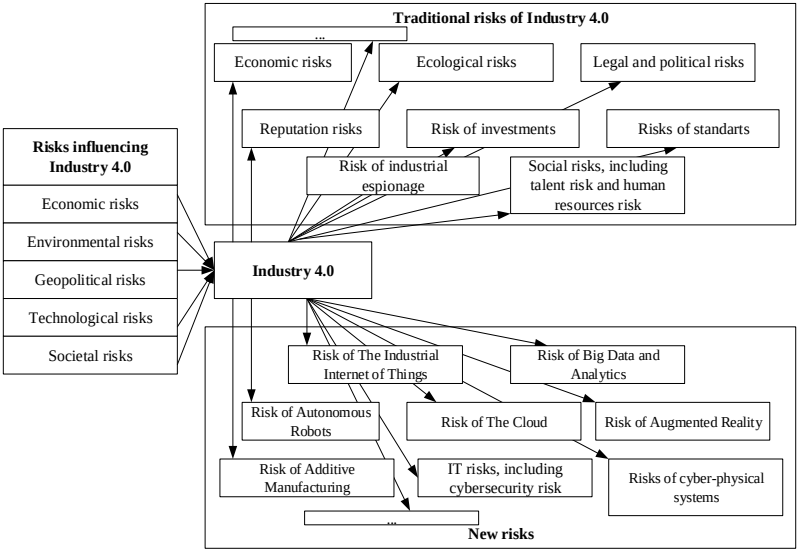

Figure 1.23 Risks of Industry 4.0

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Chapter 2

STRATEGIC MANAGEMENT AND DEVELOPMENT OF THE ECONOMIC SYSTEMS

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MECHANISM FOR IMPROVING THE FOREIGN TRADE COMPETITIVENESS OF THE NEW EUROPEAN UNION MEMBER COUNTRIES

The European Union is currently experiencing asymmetric trade integration, manifested in the possibility of allocating more economically developed kernel and less developed countries of the European periphery. This trend has developed historically. Confirmation of this was the earlier uneven development of the founding States of the European trade integration process within the framework of ECSC (European Coal and Steel Community), where there was a significant economic lag in Italy in terms of the per capita gross domestic product (Average value 30% less than other participating countries of ECSC) [1, p. 33-36].

During the expanding process of European economic integration joined the “first wave” of countries with weaker economies, so called “PIIGS” (Italy, Greece, Spain, Portugal, Ireland). The “second wave” also included the more poorly developed states that joined the European

Union in 2004-2013 (Hungary, Cyprus, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia, Czech Republic, Estonia, Bulgaria, Romania, Croatia). Based on this understanding, policies to reduce existing and emerging trade and economic imbalances within the EU are one of the conceptual bases of the European integration process.

"Methodological approaches to optimization intra-European trade flows, as a factor of equalization of the social and economic development of the European Union countries, are laid down in the basic EEC/EU agreements in the form of the EU's "cohesion policy". The main objective of such policy is to supporting socio-economic development processes at the regional level through comprehensive compensation resulting from the integration of selected national and regional economic systems into the Common European Economic Space. At the same time, the key mechanism for equalizing the socio-economic development of the European Union countries is the Accumulating and further reallocating of financial resources in the special supranational funds, whose activities are aimed at equalizing the relative trade advantages of the new EU member States" [2, p. 22].

Optimization of intra-European trade flows is the main factor in equalizing the socio-economic development of the European Union countries and affects simultaneously two main directions. The first area includes the adoption of "autonomous" unilateral trade regulation measures, as a tariff under the Common Customs Tariff for the European Union and non-tariff measures, which include anti-dumping measures, embargoes and others. The second direction includes the conclusion of bilateral and multilateral trade and economic agreements with non-EU member States and international trade and economic unions and organizations [2, p. 23].

The European Union therefore has a number of instruments to regulate trade flows, as a factor in expanding integration processes as shown in Table 2.1.

The need to improve the main institutional forms of improving the externel trade competitiveness of the new European Union member countries is due to the increasing degree of inequality in the EU, which makes it difficult to successful transition all integrated education to the new level of intra-trade cooperation.

The foundations of the EU "cohesion policy" were laid in 1988 by introducing into the practice of supranational regulation of mechanisms for increasing the foreign trade competitiveness of the new member countries.

Table 2.1

Tools for regulating trade flows in the EU

Regulatory tools	Characteristic
Regulation of the trade external tariffs	The pan-European nature of customs regulation implies that imported goods crossing the EU border once are subject to a single Charge, regardless of the number of internal borders crossed by States. If initially the total tariff was the arithmetic average of the national tariffs of European countries, then now it has an ad valorem nature.
Anti-dumping regulation	Regulation by the European Commission is based on statements by industry unions of commodity producers or large regional companies. The disadvantage of this tool is the long duration of the application (to one-and-a-half year), which is due to the detailed study of the problem (The Commission satisfies an average of 15 per cent of applications).
Protectionist measures	Protectionist policies provide structural restrictions on the entry of certain goods or groups of goods for a specified time period if their import significantly reduces the competitiveness of the respective producers in the EU member States.
Definition of goods localization	The State of origin of the goods in the European Union is the State in which the technological process essential for the economic nature of the goods was carried out. An exception, there may be countries of origin of high-tech goods, which is due to the economic interests of the European Union in attracting and testing innovative technologies and know-how.
Measurement of the customs value of goods entering the EU economic space	The customs value of imported goods is calculated on the basis of the real transaction price principle, which means the value actually paid for the goods imported into the EU. At the same time, the price of the transaction means a comprehensive estimate of the actual cost of the goods, which may include a number of additional costs (licensing costs, commissions, brokerage fees, packaging costs of the goods.

Table 2.1 (continued)

Establishment of administrative standards and requirements for the protection of the environment and public health.	The adoption of these rules and regulations, including those governing intra-European trade flows as a factor in expanding integration processes, may also have a protectionist context. It should be stressed, however, that in European practice, in most cases, through these measures, it is the declared goal of protecting the European market from poor quality and dangerous goods for citizens and the environment is being pursued and achieved.

Source: compiled based on data [3]

The annual budgets of the European Structural Funds now have been replaced by multi-year financial plans. An important organizational advantage of such plans is to guarantee the preservation of the necessary volumes of financing for long-term projects to optimize intra-European trade flows, the implementation of which in modern political conditions is threatened by a shortage of funds or a change of foreign policy relations. Since 1988 four multi-year plans have been implemented by the European Commission within the framework of strategic planning covering the next periods of economic integration: 1988-1993, 1994-1999, 2000-2006, 2007-2013. Now the strategic framework "Europe 2020" implements the long-term financial plan for 2014-2020.

Shifting the organizational and management tools of policies to improve the international competitiveness of the new European Union member countries from the national to the regional level has contributed to the reallocation of financial resources to regulate intra-European trade flows as a factor in expanding integration processes. These processes were caused by the following structural problems of European integration development:

– concentration of the economic development problems of the European Union within the territorial boundaries of certain regions;

– regional problems of economic integration of the new EU member countries are conditioned by the objective characteristics of geographical location and the historical structure of the regional economic system;

– insufficient concentration of financial resources in the most needing regions, need of targeted support to depressive regions.

A key factor in encouraging new European Union member countries to step up efforts to optimize intra-European trade flows is the

elimination of the quota arrangement for aid to member countries and the priority of the choice of funded projects by the country's leadership. The quota arrangement has been replaced by pan-European funding objectives based on common principles and criteria for all member countries on the effectiveness of social and economic development equalization policies.

At the same time, within the framework of the within the European Single Economic Area, the formation of a favorable climate for portfolio and foreign direct investment has emerged. The new member countries of the European Union have changed their external trade specialization, which has had an impact on the dynamics of gross foreign trade indicators, maintaining stable trade relations with traditional partners.

In order to justify the relationship between the process of trade flows optimization and the external trade conditions of socio-economic development of European Union countries, will analyses the change of individual indicators of its development after the accession of new States.

Figure 2.1 shows the growth of the gross domestic product of the new EU member states in 2019.

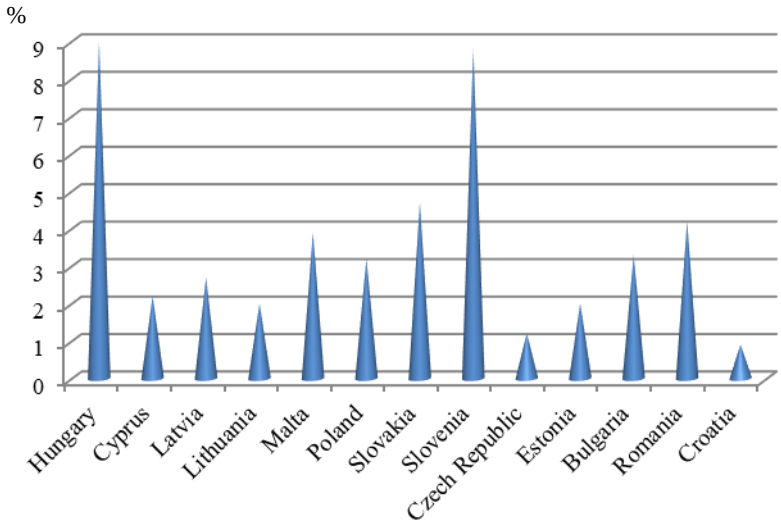

Figure 2.1 GDP growth rate of the new EU member states 2019

Source: compiled based on data [4, 5]

The data show positive steady growth in the gross domestic product of the new EU member countries. The considered dynamics makes it possible to state the relative effectiveness of the pan-European policy of equalizing the conditions of socio-economic development of optimizing trade flows.

To confirm the conclusions, consider the indices of industrial production refined on the basis of retrospective recalculation of the production indices on the basis of the 2005 base year. The dynamics of industrial production indices of the new European Union member countries are presented in Figure 2.2.

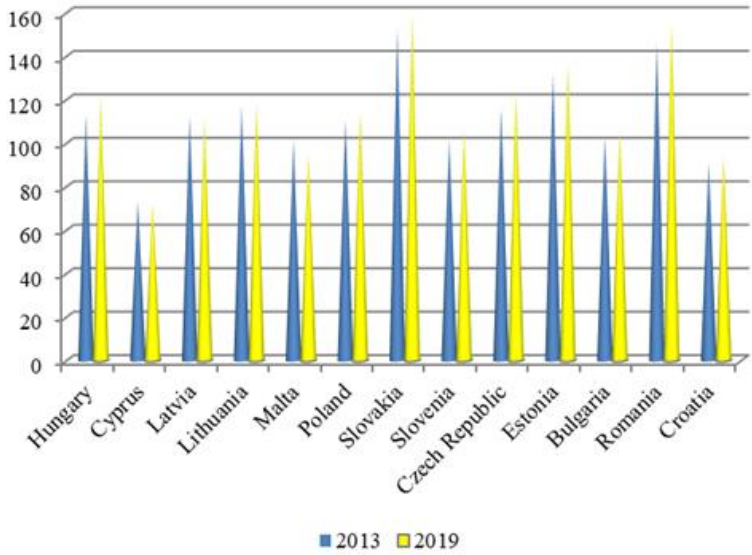

Figure 2.2 Industrial production indices of the European Union new member countries taking into account retrospective recalculations for 2013 and 2019

Source: compiled based on data [4, 5]

The figure shows the positive dynamics of industrial production indices for the new European Union member states.

An important task of the equalizing policy of the social and economic development of the European Union countries is the growth of the main indicators of living standards of the population, namely: unemployment rate, inflation rate, income concentration index. Comparison of the selected indicators of the new European Union

member countries is presented in Figure 2.3.

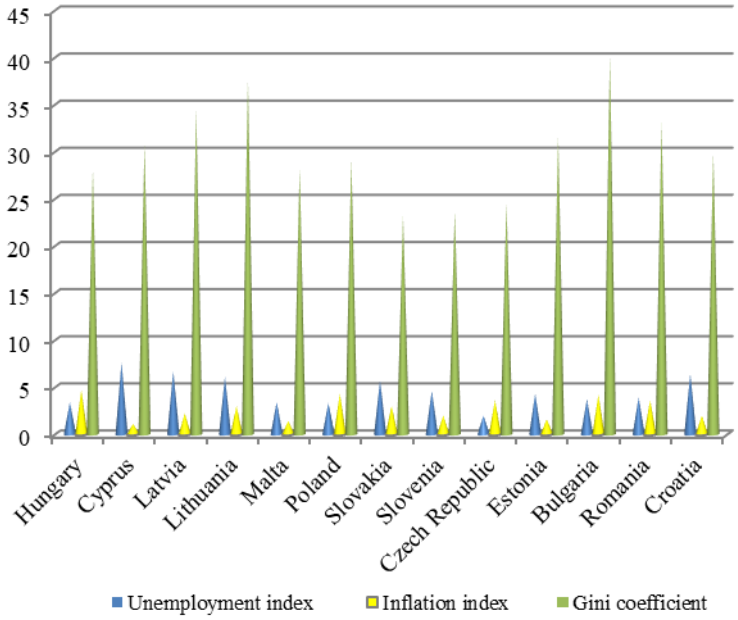

Figure 2.3 Main indicators of population living standards of new European Union member states in 2019

Source: compiled based on data [4, 6]

The results of the comparative analysis show that there are significant disparities and disparities in living standards among EU member States. The existence of these imbalances actualizes the problem of forming a mechanism to increase the foreign trade competitiveness of the new European Union member states, as a factor of equalizing the conditions of their social development, the feature of which is the compliance of quantitative criteria with the common goals for the European Union.

Policies to equalize the socio-economic development of EU countries are evolving according to the vector and pace of European integration. In 2006 the main methodological approach to optimizing intra-European trade flows and equalizing the socio-economic development of the European Union countries became the “convergence”.

With the entry into the European Union of new member countries that joined in 2004-2013, additional financial support was introduced during the transition period to equalize trade flows for European regions with gross domestic product per capita exceeding 75% of the EU-28 average and less than 75% of the EU-15 average. However, the "catching up" economies of the "first wave", which have a GDP per capita value of less than 90% of the European average, also received financial resources from the Cohesion Fund to accelerate convergence. This distinction of economic development indicators by member countries groups shows the differentiation of the initial socio-economic conditions of foreign trade development for the countries of the European Union [7, p. 24].

At the present stage of development of the European Union there are also changes in the principles and criteria of effectiveness analysis of the equalizing policy of the social and economic development of the European Union countries. For the period from 2014 to 2020, within the framework of development goals aimed at European territorial cooperation and investment in stimulating economic growth and job creation, Target support for not economically lagging regions with GDP per capita less than 75% the EU-28 average and so-called "transit" regions (GDP per capita 75-90% EU-28 average), but also for relatively competitive regions (GDP per capita more 90% the EU-28 average). At the same time, the mechanism for improving the foreign trade competitiveness of EU member States will maintain the principle that the more developed regions of Europe will receive less financial resources, a large part of which is support for the development of innovative technologies of energy efficiency, green energy and renewable energy sources [8].

In order to assess the effectiveness of policies to equalize the socio-economic development of countries in the European Union the following basic principles have been identified:

– Long-term programming as the methodological basis for socio-economic equalization processes;

– Concentration of financial support for foreign trade competitiveness, consisting in localization of investment resources to a limited number of depressed territories in the least developed regions;

– Additional co-financing subsidies involving central funding from the EU secured by national investment programs;

– Public-private partnerships in the form of joint management

decision-making and implementation involving representatives of regional and national business communities and supranational governments [9].

Thus, the conceptual basis of the process of social and economic development equalizing of the European Union countries is the "EU Cohesion Policy", implemented since 1988 by introducing into the practice of supranational regulation of the European Union mechanisms to increase the foreign trade competitiveness of new member countries.

The instruments of supranational regulation of external and internal commodity flows as a factor in the expansion of integration processes within the EU has been identified: regulation of foreign trade tariffs, anti-dumping regulation, rules of goods origin, rules of measuring the customs value of imported goods into the EU economic space, establishment of administrative rules and requirements for environmental protection and public health.

The results obtained in this study on the characteristics of the mechanism for improving the foreign trade competitiveness of the new European Union member countries can be taken into account in the development of the main directions of the mechanism to increase the foreign trade competitiveness of Ukraine within the framework of modern integration processes.

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CONCEPTUAL BASIS OF ENTERPRISE ENERGY MANAGEMENT

The variety of crises (industrial, social, energy, geopolitical) influences the energy management development which significantly exacerbates the problems of economic entities competitiveness. These crises are the result of contradictions in the implementation of the economic cycle stages: in the field of production, distribution or energy resources consumption.

One of the most important factors that caused the transition to a modern awareness of the main problems in the development of approaches to energy conservation is the energy crisis of the 1970s, which triggered an increase in energy prices and naturally raised up inflation.

In forming of the conceptual bases for energy saving and resources rational use, domestic enterprises along with international standards are guided by the national regulatory framework. Thus, the Cabinet of Ministers of Ukraine Order from August 18, 2017 № 605-r “On approval of the Energy Strategy of Ukraine for the period up to 2035“ Security, Energy Efficiency, Competitiveness” is in force in Ukraine and provides [1]:

- establishment of strategic management system, including the

scenario modeling of markets;

- introduction of the resource management principles in the governance of the mining industry;
- training of staff to work on new models of energy markets functioning, personnel and modern scientific and technical support;
- introduction of a system of public-private partnership in the reserve of energy resources and a system of strategic reserves of energy resources;
- elimination of excessive constraints for effective and flexible functioning energy infrastructure for the supply and transit of hydrocarbons;
- formation of basic principles of state sectoral policy on the ground of state and society interaction, based on the principles of effective management, delegation of powers and division of responsibilities;
- improvement of the corporate governance system at the enterprises of the fuel and energy complex, the state share of which exceeds 50%, in particular taking into account the OECD Principles of Corporate Governance.

In fact, the need for energy management arises from the results of the energy management system functioning itself, which has economic, environmental and social effects. The content of the economic effect lies in the fact that in the conditions of the energy crisis and economic downturn, the main task of enterprise management is to optimize incomes by improving energy efficiency of production and reducing energy consumption of products.

Focusing on energy as one of the main resources of the enterprise allows to form such management strategies that not only determine the priority of energy in production processes, but also separate it as a single production resource, that is, not land, labor and capital, but land, labor, energy, capital.

The environmental impact of energy management will be reflected in the consumption reduction of natural resources for the energy needs at the production or the most efficient use of natural energy sources (sun, wind, etc.). The environmental impact of energy management can be considered as an activity related to ecosystem restoration projects implementation involving energy-intensive enterprises.

The social effect in the possibilities of the energy management system realizing is most clearly manifested in the functioning of administrative-territorial associations, such as for example united territorial communities (Figure 2.4).

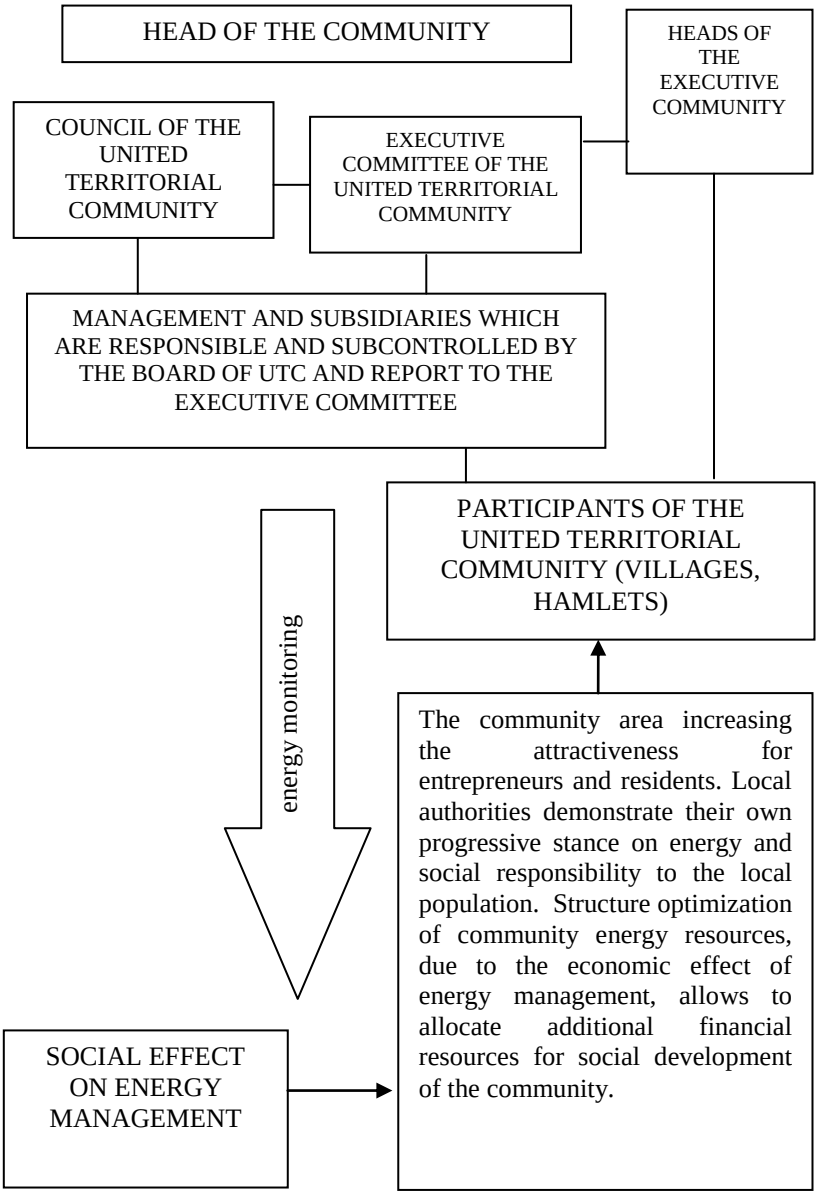

Figure 2.4 The social effect of energy management

Undoubtedly, the energy management efficiency will be the higher the greater the output of each component:

1. Energy efficiency planning;
2. Quantification of energy efficiency parameters;
3. Energy efficiency regulation;
4. Monitoring of energy efficiency.

Exogenous and endogenous factors have a major impact on each component. In our view, these factors are objective if they are exogenous to the entity and subjective if they are endogenous. We consider exogenous to be objective regarding the entity because they cannot be influenced, but only perceived and adapted to the conditions.

In turn, subjective factors should be in the enterprise management area and should be characterized first of all by flexibility, adaptability and relevance.

Implementation of the energy management system at enterprises is a common worldwide practice. This happened due to the fact that the International Organization for Standardization introduced the standard ISO 50001 Energy Management in 2011 [2]. This standard is intended to ensure organizations that choose to make energy efficiency part of their management system. For this purpose, this standard provides some assistance in organizing the efficient use of energy-intensive assets, creating transparency in the use of energy resources, promoting the implementation of advanced energy management methods and enhancing effective energy management skills, assisting in the assessment of objects in terms of energy efficiency and prioritization new energy-saving technologies, providing the foundations for improving energy efficiency across the production chain and the ability to integrate with other organizational management systems such as environmental management and occupational safety.

The term “energy management” means the organizational process of monitoring, controlling and optimizing the supply and use of energy. It aims to reduce energy costs, ensure sufficient energy supply and provide high quality energy services such as lighting or heating [3]. In our view, such an interpretation of energy management narrows it only to the organizational process, and aims only to reduce costs, provide energy services and sufficiently supply them. We are convinced that energy management is a holistic system that underlies the organization as a process, that appears to be a classic management function, one in four – planning, organization, motivation and control.

Secondly, energy management can be considered as a temporary

process aimed at optimizing the enterprise energy costs. In this case, it is envisaged to use the services of specialized companies – energy auditors, whose purpose is to provide engineering services in the field of energy saving (Figure 2.5).

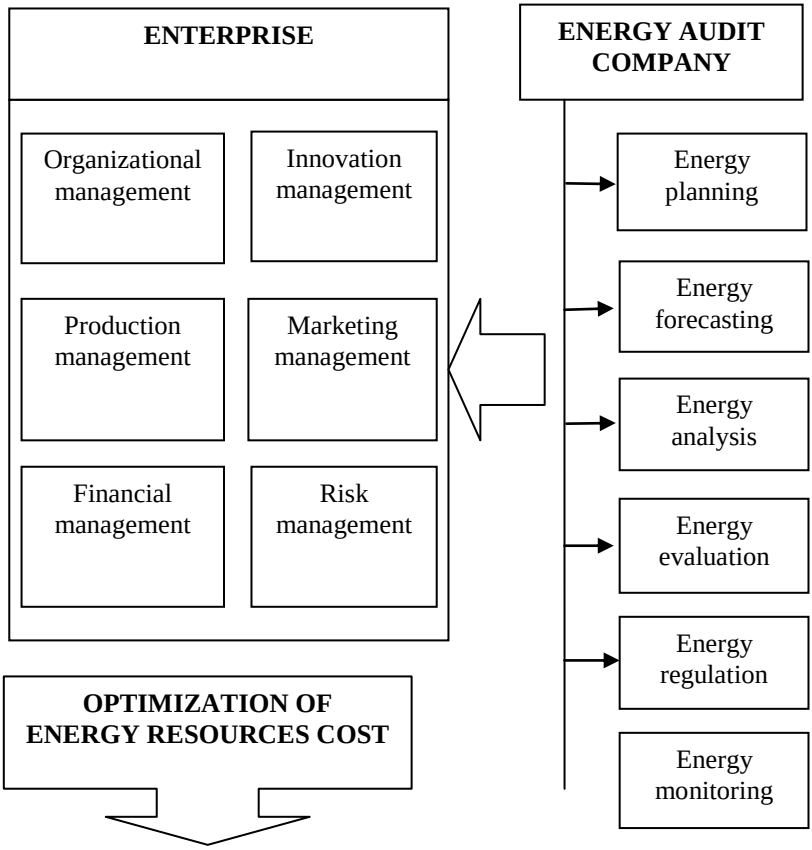

Figure 2.5 Energy management as a service of an energy audit company

Thirdly, energy management can be seen as an integrated element of each enterprise management subsystem (Figure 2.6).

This model of energy management integration into the structure of the enterprise's management system implies that each element of the system is focused on certain functional responsibilities in a single strategic priority – energy efficiency of the enterprise.

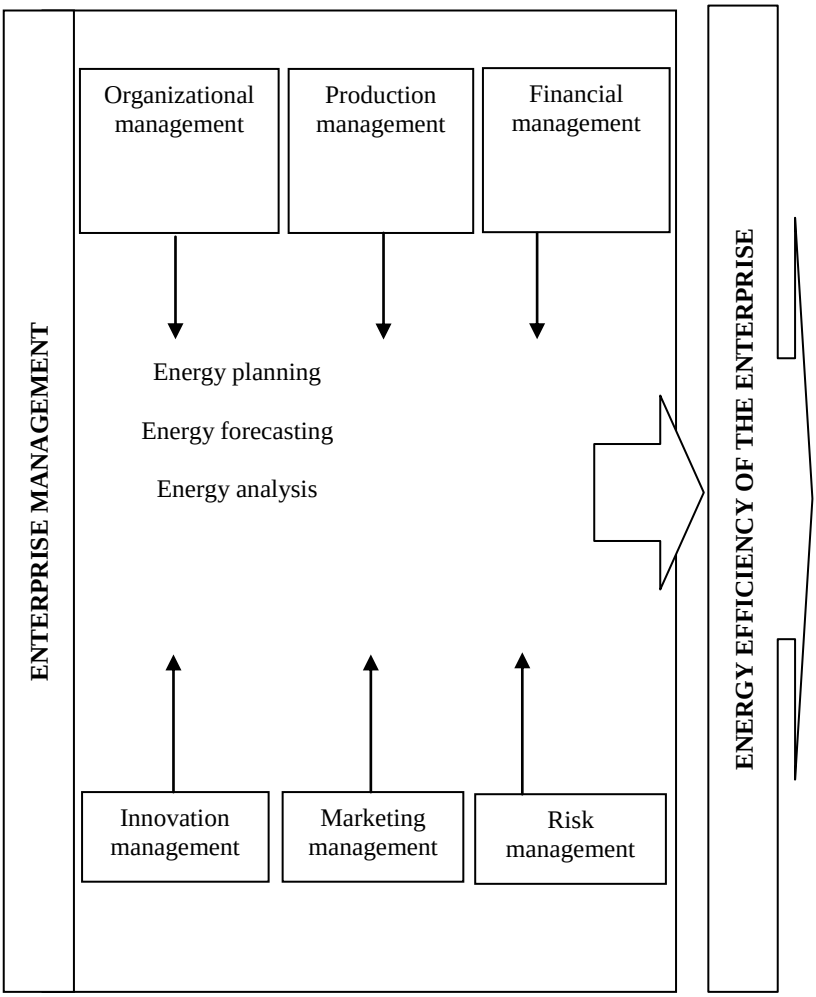

Figure 2.6 Energy management as an integrated element of enterprise management

In terms of content, energy efficiency is a specific cumulative concept of enterprise development. Its specificity is that it integrates problems related to technology, innovation, resources, risks, finance, marketing.

That is why, in energy management, energy efficiency issues are considered not only in terms of technical aspects of energy supply and

energy conservation, but also in terms of organizational, motivational, informational, marketing and investment aspects [4]. These aspects, along with technical issues, are components of energy management.

At the macro level, this concept, also influences technological and economic changes, as well as changes in the behavior of economic entities and reflects the whole understanding of rational energy consumption.

Energy policy as a state activity aimed at the mandatory regulation of the system of production, processing, distribution and use of energy is considered in the foreign researchers papers. For example, F. McGowan states that energy policy includes measures in the coal, electricity, oil and gas, nuclear and renewable energy sectors, as well as energy efficiency measures in the area of supply and consumption [5]. We do not agree with the author, since we consider that it is inappropriate to narrow down the energy policy only to certain measures in the energy sphere. Obviously, this is the whole set of methods, tools and mechanisms used by the state as a subject of energy management in order to optimize energy consumption and achieve a strategically determined level of energy efficiency.

K. Harris, for his part, affirms that energy policy is the path chosen by the government to address energy development, including energy production, distribution and consumption [6]. Harris's definition traces the characterization of the energy policy implementation process through production, distribution and consumption, but energy policy goal is not defined.

We believe that energy policy should be considered inseparably from the means of its implementation, the process of implementation and the goals of implementation (Figure 2.7).

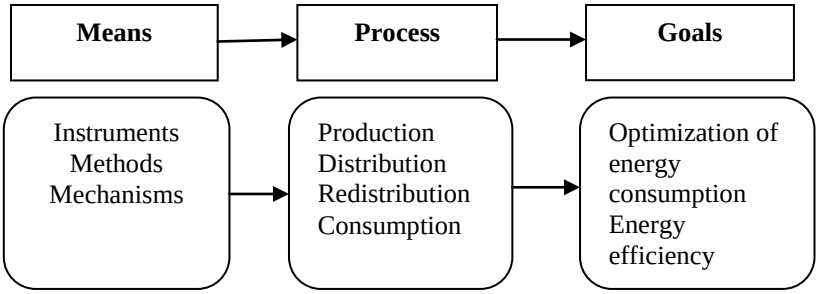

Figure 2.7 Energy policy

In the narrow sense, energy efficiency as an energy policy objective is seen as the ratio of the final effect, that is, the price of a product and the amount of utilities consumed to produce it, including electricity above all. The energy efficiency parameter thus determined can be easily measured, modified and controlled [7].

Here, the author focuses on the economic effect of implementing energy policy. Instead, we are convinced that exactly at the macro level society expects environmental and social impact from the implementation of energy policy (Figure 2.4).

At the micro level, energy policy should be considered as a set of certain measures to optimize the enterprise energy potential and as a basic document for the implementation of energy management system, as in this document the company undertakes commitments in the field of energy consumption to support and improve energy efficiency achievements. This document should clearly state the duties and responsibilities for saving resources of each structural element of the enterprise because the real consumers are its functional units that manufacture goods. In addition, the enterprise energy saving program should include such steps as analysis of the existing energy management system (if one operates at the enterprise) and identification of inconsistencies and shortcomings, development of energy management standards, staff training, monitoring the use of energy resources, implementation of personnel motivation system for energy efficiency consumption.

As a rule, the task of optimizing the use of enterprise energy resources by certain structural units that do not directly use such in their activities, do not concern them. Respectively, functional units are not fully involved in the energy management process. That is why the strategy of enterprise energy saving and energy efficiency can not be fully formed. And according to the conceptual principles of management, energy management is the management of energy like any other production resource to reduce costs by improving energy efficiency, the approaches to the formation of its system in a modern enterprise must be consistent with the priorities of the overall development enterprises strategy and integrated into each element of the management system.

At the same time, the goals of energy management must be achievable, realistic and relevant in terms of social responsibility, environmental and economic security. In turn, the fundamental task of energy management is a comprehensive analysis of energy consumption

and further implementation of energy-saving technologies and energy saving measures at the enterprise.

Domestic companies, especially energy supply companies, prioritize energy saving. The vertical model of energy saving management is well-established, i.e. the responsibility for the system functioning relies on the enterprise first deputy head. The coordinator is the energy manager. Heads of all divisions are subordinated to him. They are responsible for energy saving measures implementation. However, we believe that this is not enough, because to develop energy efficiency measures a working group consisting of specialists in energy, technology, financial and other enterprise services should be established. That is, all divisions of the enterprise should be aimed at a single strategic goal – energy efficiency (see Figure 2.6) [8-10].

An important point is also the possibility of extended discussion of the enterprise energy saving program in all departments. This mobilizes the whole team and, at the same time, will act as a motivating factor and facilitate the implementation of the energy saving program.

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THE METHOD OF MANAGING THE ENTERPRISE RESOURCE POTENTIAL BASED ON THE VALUE-ORIENTED APPROACH

Under current conditions, the mechanism of managing the resource potential of enterprises is not fully consistent with the tasks of improving the efficiency of their work, obtaining high final results, and further development. Only those enterprises that maintain sufficient capacity and growth rates relative to the resource potential of the main competitors are profitable and competitive, and their success depends on how well the resource potential matches to the external environment. Such conformity is achieved through strategic management. Strategic management of the enterprise resource potential is a continuous process of making and implementing managerial decisions concerning development of the enterprise.

The issue of resource management of enterprise development has received much attention in the scientific works of many authors. The overall content of these studies was to find ways to optimize the allocation of resources used by the enterprise to maximize the objective function.

In the first studies in 1978, J. Pfeffer and J. Salansik proposed a “resource-dependent theory” according to which organizations are able to survive to the extent that they attract and support their resources [1]. The term "resource theory" was first used by B. Wernerfeld in 1984 [2].

He highlighted the main provisions of the firm, the main idea of which is to strike a balance between the exploitation of existing resources and the development of new ones. However, the founder of the resource theory of the organization is considered by J. Barney, who examines resources from the point of view of the category of economic rent based on an analysis of their ability to provide or not to provide increased rent [3]. K. Prahalad and G. Hamel [4] argued that enterprises should combine their resources and capabilities, transforming them into unique core competencies and highlighting the five main areas of managing different resources. The development of resource theory led to the emergence of so-called combinational resource concepts in particular, for the first time the main tenets of the theory of resource preferences were formed by S. Hunt and R. Morgan [5]. R. Grant [6] notes that resources are a factor in the production process, but are inherently unproductive. Productivity requires the pooling and coordination of resource groups. That is, resources are the sources of the enterprise's ability, where they are the main source of its competitive advantage. D. Campbell, J. Stonehouse, and B. Houston identify two areas in the resource management process [7]: full utilization of available resource combinations in the short term and realization of existing and potential resource combinations in the long term. In his work [8] I. Ansoff proposes to determine the resource needs of the firm through "zones of strategic resources", which characterize the situation with regard to the provision of certain types of resources the needs of the enterprise. I.O. Blank defines the multifaceted nature of the resource management process and emphasizes that effective management of a trading enterprise allows to generate the necessary resource potential of high growth rates of trading activity [9]. Z.E. Shershneva determine strategies of enterprise behavior in strategic resource zones (BSR), forms and methods of supply, policy of creating insurance stocks, distribution systems and replenishment of resources [10].

The analysis of publications showed that the attention of researchers focused primarily on solving current challenges in meeting resource needs of the enterprise, while numerous aspects of generating the required resource potential to ensure long-term sustainable development often remained unaddressed by the scientists. Development of the necessary strategic basis for managerial decisions is an essential prerequisite for the successful solution of this problem. Therefore, the purpose of this article is to substantiate methodological approach to the development of a strategy for the formation of the resource potential of

the enterprise taking into account the value priorities of its activities.

In the process of their economic activity, enterprises constantly face new threats and development prospects, and, therefore, are forced to respond to these threats in a timely manner and to use promising opportunities. One of the most important factors that determine the degree of economic flexibility of the enterprise is its resource potential.

The enterprise resource potential is a corporate boundary characteristic of resources that can be used for the achievement of the predefined development goals, and is a prerequisite for the development and outcome of a certain strategy [11].

The strategy for the formation of the enterprise resource potential is a set of principles and requirements, on the basis of which the sources will be selected and the volume of the resources supply determined, and they should be effectively distributed by the directions of use. The main goal of the development and implementation strategy is that, considering all requirements of product and functional strategies, accumulation of the resources complex, which in terms of their structure, quantity, quality, would meet the requirements of sustainable development of the enterprise.

The strategy of the enterprise resource potential is a type of operational strategy, which determines basic principles of the enterprise behavior in the area of strategic resources, forms and methods of supply, policy of creating insurance stocks, systems of the resources distribution and replenishment [12].

Necessary components of the strategic planning are to ensure the maximum level of the enterprise potential utilization, a prerequisite for which is the requirement to form sufficient resource potential.

The study proposes methodical approach to the development of the strategy for the formation of the enterprise resource potential taking into account value priorities of its activities [13]. The process of the strategy of forming resource potential of the enterprise consists of the following stages: strategic analysis; development of the strategic goals of the resource potential formation and corresponding strategic standards; choice of the strategy based on the level of the resource potential and target indicator; development of measures aimed at the strategy effective implementation; assessment and control of the strategy implementation.

The first stage in elaborating strategy for the formation of the enterprise resource potential is to analyze factors of the external and internal environment. Environmental analysis should identify potential threats and opportunities that the enterprise may face in the future. The

main external factors of influence are economic, market, competition, political, factors of technology, international, social. The most important internal factors include the level of staff qualification, the general financial condition of the enterprise, technical equipment of production, material support, and the level of planning, organization, motivation and control of the enterprise resources [14].

The strategic analysis should result in a list of future threats and opportunities with the account of their importance and the degree of impact on the enterprise. Results of the analysis make it possible to estimate the level of the enterprise resource potential with the account of the implementation of value proposition by the appropriate methods.

The second stage is the development of strategic goals of resource potential formation and corresponding strategic standards based on the determined level of the resource potential. Effective management of the resource potential should be directed to the fulfilment not only of the enterprise mission, but also to its general goals, which go out of its mission. The main purpose of this activity is to increase the value created by the enterprise. The system of strategic goals should ensure the enterprise resource potential from the minimum possible level to the target one (from viewpoint of key stakeholders), formation of the sufficient resources and optimization of their composition, etc. In addition, at this stage, strategic standards of the created enterprise value are formed, with the help of which strategic goals are specified and the basis for making managerial decisions is substantiated.

It is suggested to use EVA (economic value added) [15] as a measure of the created value. In general, EVA describes the value of the enterprise economic profit after covering all capital expenses, and is an informative measure of value, since on the one hand it focuses on operating profit (the formation of which is the task of any enterprise), on the other hand, reflects the value and cost of the invested capital (which is definitely an advantage over net profit or net cash flow).

For this purpose the following options are possible:

1) if the enterprise value is <0, then the next goal is to achieve the minimum required level of EVA;

2) if the value of the indicator is > 0, then the goal is to support the existing level of EVA;

3) if the value of the indicator is > 0, but there is a tendency for its decrease, or EVA <0 and there is a tendency for the growth of its value, then the aim is to ensure the increase of EVA;

4) if the value of the indicator does not correspond the expectations

of the stakeholders, then the goal – is to reach the EVA target level.

After the analysis of the factors of the external and internal environment and setting goals, the basic strategy for the formation of the enterprise resource potential should be chosen that is the third stage. Formation of such enterprise strategy involves focusing on the development of available capabilities of the enterprise resource potential. The strategy formation should be based on a concept that would take into account the peculiarities of the enterprise, its state at the market and conditions of the environment.

It is proposed to choose the strategy with the account of the level of the resource potential and the identified target indicator, in particular (Figure 2.8):

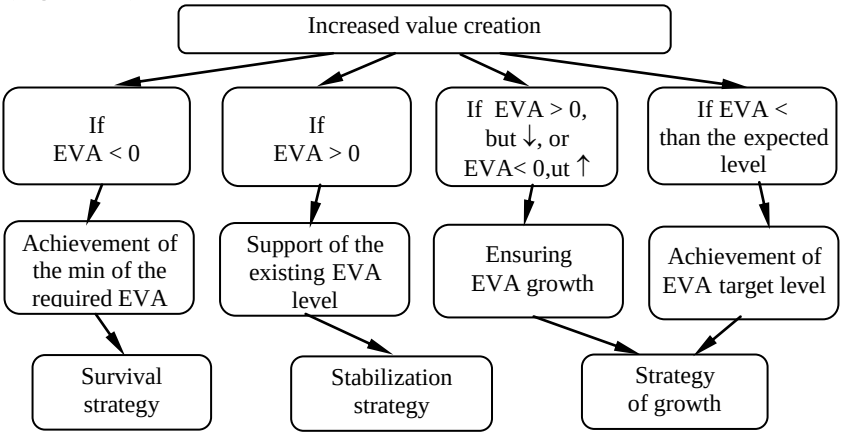

Figure 2.8 Selection of the basic strategy for the resource potential

– survival strategy – if the enterprise has chosen to achieve the minimum required EVA level,

– stabilization strategy – if the enterprise has chosen to support the existing EVA level,

– growth strategy – provided that the target company has chosen to ensure EVA growth or to reach EVA target level.

Within the framework of the chosen enterprise development strategy, the structure and composition of the resource potential is formed, with the purpose of providing the enterprise with the resources, their structuring and construction of certain organizational forms, which will ensure their stable development, efficient use and reproduction.

The process of the formation of the enterprise resource potential is

one of the directions of its strategy, and should foresee the creation of the resources system so that the result of their interaction would be a factor of success in achieving strategic, tactical and operational goals of the enterprise.

Attraction and use of resources is a characteristic feature of the implementation of production and economic processes at the enterprise. The core element in the process of developing the enterprise resource strategy is the procedure for determining the amount of strategic resources demanded for the implementation of the enterprise development strategy. During the implementation of this stage, the company must ensure an acceptable (in terms of facilitating the achievement of the goals and objectives) level of the coherence of all participants' interests in the chain of creating new value, and a proper measure of the balance of resource flows within the specified chain is achieved [11].

Identifying the demand for strategic resources during the formation of the resource potential must also take into account the content and nature of the goals that the company sets, inherent properties of resources, as well as the deadlines for achieving these goals and the solution of individual economic problems.

Development of the strategy for forming the enterprise resource potential involves elaboration of not only goals, but also the development of a plan of actions for the achievement of these goals. Functions, methods and principles should be applied for this purpose, which is connected, first of all, with the creation of an appropriate management mechanism, development of plans, formulation of appropriate rules and procedures, determination not only of what and when to do, but also those who will perform the scheduled plan.

For the implementation of the chosen strategy, the strategic goals are broken down into specific strategic tasks, which are to be solved in a certain period. Strategic goals are achieved by solving tactical problems. The directions, forming the enterprise resource policy, group the established goals – this is the fourth stage, which envisages the development of measures aimed at the effective implementation of the strategy. The system of measures allows to form the resource potential of enterprises with the account of the value priorities of their activity.

The background of these measures are planning and forecasting. Forecast estimates are highlighted in the strategic plan of the enterprise, which contains qualitative parameters for the use of available resources. The basic tactical steps are specified to implement the strategy of

resource potential formation. The most optimal is the development of several alternative scenarios for the development of the situation at the enterprise. After selecting the optimal variant according to the results of the calculations, the current plans are drawn up.

Assessment and control of the strategy implementation is the final, fifth stage of the strategy of forming the enterprise resource potential. Control as an important and necessary stage should include application of the system of observation and verification of the conformity with the use of the enterprise resources to the established standards and other standards, adopted plans, programs and operational management decisions, as well as the identification of allowable deviation from the adopted principles of organization and economy management.

Monitoring and evaluation of the strategy implementation occur by comparing the results of the work with the specified goals. This process provides consistent feedback between the process of achieving the goals, and the actual goals that the enterprise faces. This feedback mechanism is used to adjust the strategy. In order to be effective, the assessment is to be carried out systematically and continuously, and this process must cover all levels from top to bottom. The composition of strategy evaluation indicators depends on the type of strategy and its content. According to the evaluation results, the strategy can be adjusted [16]. Herewith, decision-making should meet general requirements put forward to any managerial decision. They should be well substantiated, purposeful, quantified and qualitatively assessed, legitimate, optimal, timely, comprehensive and flexible. Only if these principles are adhered to, the taken decisions will perform managerial (to assist in achieving the defined goals), coordinating (conform individual actions, decisions, activities of individual specialists and units) and mobilizing (activation of executors) functions.

Timely control of the formation of the enterprise resource potential is especially important in the conditions of the economic environment instability, since only effective functioning of the managerial system of the resource potential and availability of the provision strategy for its formation will help to maintain and further ensure successful development of business.

Thus, development of the strategy for the formation of the enterprise resource potential, definition of its basic indicators and tools, implementation and fulfillment of all requirements of this strategy will allow the enterprise to prevent losses from negative influences on its resource potential. It will also provide control of the process for the

formation of the enterprise resource potential with the account of its value priorities of its activities.

The developed strategy for the formation of enterprises resource potential also allows identifying which of its internal characteristics weaken performance of achieving efficiency in the process of managing resource potential. Efficiency is achieved due to the implementation of sequential actions during management. Ensuring internal mobility and flexibility of the enterprise is the basis for effective management of the enterprise resource potential and attainment of its overall development.

The basis for construction of the process of strategy substantiation is the enterprise's focus on strategic development that ensures its competitiveness. Rationally formed resource potential will allow us to select the strategy depending on the direction of the enterprise development: stabilization strategy, growth strategy, and survival strategy.

Consider this technique on the example of the trading company "X "Trading Network" Ltd. Based on the results of studying previous sections, it is determined the value created by the enterprise using the EVA economic value added index:

$$EVA = (\frac{NI}{E} - K_e) \times E \,, \tag{2.1}$$

where: NI – is net profit, thousand UAH;

E – invested equity, thousand UAH;

Ke – the rate of return on equity invested.

The results of the calculations are summarized in Table 2.2.

Table 2.2

EVA calculation for "X "Trading Network" Ltd

Indicators	2014	2015	2016	2017	2018	2019
Net profit for the period, thousand UAH (NI)	-1033,6	-132077,0	-89908,0	-11675,0	-45757,0	-42427,1
Cost of equity, % (Ke)	8,2	9,9	13,8	12,2	14,9	17,6
Share capital, average for the year, thousand UAH (E)	964775,4	1268337,8	1268338	1268338	1268338	1268338
Calculation: Economic profit of the company (EVA), thousand UAH	-80145,2	-257642,4	-264939	-166412	-234739	-265655

According to the results of the calculations, it is seen that EVA has negative value throughout the study period. It means that in the period 2014-2019, the surveyed trading company did not provide the owners with a rate of return on invested capital, and managerial decisions made during the survey period did not create, but destroyed the value of the enterprise.

According to the proposed methodology of the strategy for the resource potential formation, it is necessary to determine the further goal considering the created value. Since EVA is <0 for the selected enterprise, then according to the proposed methodology (Figure 2.8), the aim is to adopt a further goal – to reach the minimum required EVA level, and it is necessary to choose a survival strategy to ensure its achievement.

Survival strategy is a purely defensive strategy that is applied when an enterprise is in crisis mode. Its purpose is to stabilize the situation, and move to the stabilization strategy (hereinafter referred to as a growth strategy). Therefore, such strategy is designed for the actions produced in the shortest possible time due to the extreme situation. The complexity of the situation stipulates decisive, coordinated and at the same time careful and accurately considered actions.

The option of the enterprise development identified at this stage is the concept of its further activity. For the achievement of these goals, it is necessary to develop measures aimed at the effective implementation of the strategy (the next stage).

Managerial decisions aimed at the effective implementation of the chosen strategy should increase the economic value added of the enterprise to a positive meaning in order to create a basis for further generation of the enterprise value.

In this case, in order to increase economic value added, measures to raise profit and minimize the cost of the invested capital must be taken. For the growth of profit, it is necessary to provide the corresponding increase of the sales volumes of products and optimize current expenses of the enterprise. To minimize the cost of invested capital, it is necessary to attract the borrowed funds from cheaper sources and to optimize the capital structure of the enterprise.

An important task of strategic management is to ensure the maximum level of utilization of the enterprise potential, a prerequisite for which is the requirement of formation of sufficient resource potential.

The result of the study is an improved sequence of stages of the

strategy of formation of the resource potential of the trade enterprise, which proposes strategic goals that are defined on the basis of strategic norms, and the choice of strategy is justified taking into account the level of the resource potential and the target indicator. The proposed method allows to exert managerial influence on business processes and strategic development of the enterprise, which ensures effective performance of its inherent functions.

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FACTORS OF EFFECT ON THE EFFECTIVENESS OF GOODS MARKET MANAGEMENT

Introduction. The national economic system is a set of interrelated industries, in the process of market transformations, which necessitates continuous macroeconomic monitoring of market processes and trends. The need to study the effectiveness of domestic market management in Ukraine is determined by the need to determine the feasibility and urgency of market transformations, the need for effective structuring of institutional impact on macroeconomic processes, the development of incentive tools for increasing market efficiency and constraints to counteract the emergence and development of undesirable effects. Macroeconomic analysis of the internal market is also an important prerequisite for the development of a national strategy for managing economic development, forecasting trends in socio-economic development.

Literature review. Methodological features of the analysis of the management of the internal market efficiency are researched by many scientists in the context of managing the aggregate economic categories

of commodity, resource and financial markets. As Yakhno T. (2019) rightly points out, this may in part lead to some loss of information flows, but allows us to generalize the identified market trends. Therefore, the following categories of market economy are usually studied by scientists: material and cash flows in the model of turnover of income, resources and products of the internal market (Lisyuk, 2019); the state of the commodity market – by structuring GDP in terms of production and consumption and aggregating cross-sectoral relationships (Onipko, 2017; Lilyk, 2018), its macroeconomic equilibrium – by factor study of aggregate supply and demand (Bakas, Triantafyllou, 2019); state of the labor market: employment indicators, unemployment, factor analysis of labor productivity, mechanisms for ensuring equilibrium in the market (Shylovtseva, 2019); state of the financial market: indicators of the development of the monetary market, equilibrium in the monetary market, major indices of the stock and currency markets (Matskiv, Topolnytska, 2018); macroeconomic processes: innovation-investment activity, structure and factors of investment, inflationary tendencies, structure and dynamics of foreign trade (Svidruk, Myronov, 2017). Researchers in the field of market transformations also insist on the need for comparative analysis with similar indicators of countries with established market economies (Derevyanko, Zakharchenko, 2016), which allows to quickly identify negative deviations and their causes.

Such a wide range of scientific achievements of economists on theoretical and methodological approaches to managing development and analysis of the internal market is determined by the fact that the market generates aggregate supply and demand, it launches competition and defines the conditions for achieving equilibrium under different conditions and levels of economic activity. Thus, market analysis studies allow us to determine the conceptual priorities of structural transformation of the market and to develop effective mechanisms of managerial influence on the level of efficiency of the economic system of the state.

The purpose of the article is to identify and explore the main factors influencing the effectiveness of managing the functioning of the internal market.

The main content of the study.

The structure of the commodity market is formed in accordance with specialization, types of activity and branch functions. The main functions of the modern commodity market are self-regulation of

production – through the use of mechanisms of supply and demand, mediation – by ensuring relationships between producers and consumers, pricing – through public recognition of the expediency of production costs, as well as information and remediation. To analyze the mechanisms of ensuring the equilibrium of the commodity market, a number of indicators are used, in particular determining its capacity, dynamics of development (sectoral or regional), degree of diversification, quality and competitiveness of commodity offers. The importance of determining the type of market structure and classifying its constituent elements should be emphasized (Klepanchuk, 2019).

The interpretation of the concept of "market" focuses on such characteristics as the form of organization of social production and behavior of economic entities. First of all, it is about freedom of enterprise, with a corresponding limitation of the role of public institutions in its development. The internal market can be seen as a mechanism for organizing commodity production (Figure 2.9) and permanent identification of commodity-money relations in the economic system.

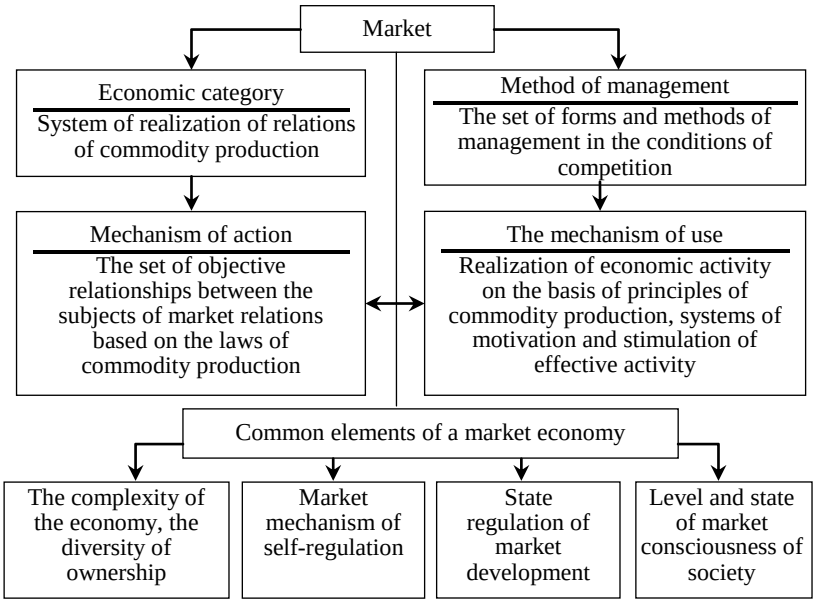

Figure 2.9 Market as a mechanism for organizing commodity production

The assessment of the internal market aims to optimize this complex economic system by selecting the most appropriate implementation option for its functioning (Onipko 2017). The second purpose of evaluation is to identify the market system that best meets the goals of developing the national economy and justifying the institutional instruments and levers of managing such development (Klepanchuk, 2019). Therefore, achieving this goal involves assessing both the socio-economic efficiency of the internal market and the degree of its technological development and economic prospects.

The evaluation also allows us to identify the possible undesirable effects of internal market trends. Determining the cost-effectiveness of the market is usually seen as an opportunity to optimize the cost-benefit ratio. The application of the latter involves considering the costs and results of operation as variables, the ratio between which should be optimized in accordance with the goals of market development. Such an analysis of the concept of development implies evaluation at three time intervals, in the ex ante and ex post directions (Figure 2.10).

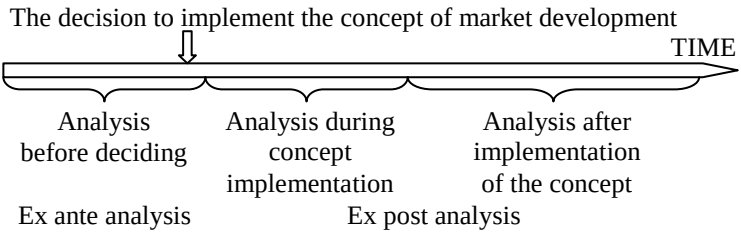

Figure 2.10 Time intervals for evaluating the economic efficiency of the concept of market development

Ex ante analysis allows to identify patterns of changes in macroeconomic parameters of development and to propose in due time adequate instruments of regulatory influence. The importance of ex ante analysis for institutional reform is determined, first of all, by the possibility of nationwide conceptual planning of the development of the domestic economic system. The application during and after the completion of the concept of development of the internal market ex post analysis is aimed at determining the main macroeconomic parameters and the results of the functioning of the internal market using a system of national accounts, covering at the macro level the whole set of socio-economic processes in the country.

Ukraine's domestic commodity market is represented by the overwhelming presence of private ownership of funds and output, while the share of public sector entities accounted for only 4.6% in 2019 (Table 2.3).

Table 2.3

Public sector share of the Ukrainian economy in 2019

Type of economic activity	Share of economic entities, %	Share of sales revenue, %	Share of cost of assets, %	Public sector share of the internal market, %
Total, including:	4,6	10,7	21,4	12,2
Agriculture	3,3	0	0,9	1,4
Industry	6,7	11,1	16,9	11,6
Construction	0,4	0,1	0,2	0,2
Wholesale and retail trade	0,6	0,9	1,4	1,0
Transportation, warehousing	8	37,7	43,4	29,7
Hospitality business	11,4	1,7	9,7	7,6
Information and Telecommunications	8,6	2,1	6,6	5,8
Financial and insurance activities	1,1	0,3	0,4	0,6
Real estate transactions	3,2	1,1	1,6	2,0
Professional, scientific and technical activities	20,5	79,1	80	59,9
Administrative service	2,7	0,4	0,9	1,3
Education	-	0	-	–
Health care and social assistance	3,2	0,6	4,4	2,7
Arts, sports, leisure	40	7,5	49,9	32,5

Source: calculated by the data from the State Statistics Service of Ukraine, 2020

The study of the relationships between commodity market actors involves the use of macroeconomic performance indicators such as gross domestic product, gross national income, net domestic product, national income and personal income at the disposal of the internal market. The analysis of gross domestic product implies the determination of the aggregate volume of activities of market entities, which does not include intermediate consumption. Macroeconomic indicators allow you to objectively determine the level and pace of economic development and productivity of social work (Table 2.4).

Table 2.4

The main indicators of socio-economic development of Ukraine

Indicators	2016	2017	2018	2019	2019/ 2016, %
GDP, billion UAH	2383,2	2982,9	3558,7	4080,2	171,2
Retail turnover, billion UAH.	1159,2	816,6	928,6	1096,7	94,6
Consumer Price Index	113,9	114,4	110,9	107,9	94,7
Average monthly salary:					
- nominal, UAH.	5070	7104	8865	10497	207,0
- real,%	78,9	119,1	112,5	109,8	139,2
Product Index:					
- industrial	102,4	99,9	101,1	98,2	95,9
- agricultural	106,1	97,3	107,8	101,1	95,3
- construction	113,1	120,9	104,4	126,8	112,1
Exports, billion USD USA	32,7	39,5	43,2	46,0	140,7
Imports, billion USD USA	35,1	44,7	52,1	55,3	157,5
Balance, billion USD USA	–2,3	–5,2	–8,9	–9,4	X

Source: calculated by the data from the State Statistics Service of Ukraine, 2020

The quality of the functioning of the commodity market depends largely on the degree of economic freedom of its subjects. However, according to the Index of Economic Freedom, Ukraine ranked only 147 in 2019 out of 180 countries surveyed in 2019 (Heritage Foundation, 2020). Despite the improvement in individual rating indicators for the protection of property rights and fiscal policy, the domestic market was rated as the least free among European countries (Table 2.5).

Another factor that ensures the efficiency of the functioning of the commodity market is the level of competition, which in general performs the functions of regulation, distribution and motivation. It should be noted that the concept of competitive development of the internal market is based on an analysis of its opportunities for price dictation. At the same time, the phenomenon of perfect competition implies an assessment of the market's own economic opportunities (Rak, 2017). The newest approach to commodity market competitiveness includes the notion of "opening procedure" by attracting innovation and disseminating marketing strategies (Florida, 2014). The globalization trends of market transformations have also led to the rapid accumulation of highly competitive innovative products in high-tech industries, with the unification of international cooperation procedures leading to the emergence of relevant competing

counterparties.

Table 2.5

Results of the assessment of the degree of economic freedom of Ukrainian market entities in 2019

Rating indicator	Score (in points)	Comment on the evaluation of the indicator
1. Rule of law		Positively: - legally protected property rights; - reduced permit for construction permit. Negatively: - the judiciary is prone to political pressure and corruption; - low public confidence in the efficiency of government institutions.
1.1. Ownership	43,9 ↑	
1.2. Judicial efficiency	31,5 ↑	
1.3. Government integrity	29,6 ↑	
2. Effectiveness of fiscal impact		The personal income tax rate is 20%, of enterprises - 18%. The total tax burden is 33.1% of GDP. Government spending is 42.1% of GDP The budget deficit is 1.9% of GDP. Public debt is 75.6% of GDP.
2.1. Tax burden	81,8 ↑	
2.2. Government expenditures	46,9 ↑	
2.3. Fiscal burden	82,6 ↑	
3. Effectiveness of institutional impact		Starting a business is orderly, it is difficult to fulfill licensing requirements. Regulatory uncertainty of commercial transactions. The Labor Code is outdated. Government controls on natural gas prices expanded.
3.1. Business freedom	66,1 ↑	
3.2. Freedom to work	46,7 ↓	
3.3. Money freedom	58,6 ↓	
4. Market openness		The total value of exports and imports is 102.2% of GDP. The average applied rate is 2.5%. Conflict with Russia is holding back trade and investment flows, and state-owned enterprises are distorting the economy. About 64% of Ukrainian adults have access to bank accounts.
4.1. Freedom of trade	75,0 ↓	
4.2. Freedom of investment	35,0 —	
4.3. Financial freedom	30,0 —	

Source: calculated from data Heritage Foundation, 2020

Infrastructural restructuring of the economic system has led to the reduction of barriers to entry into innovative commodity markets of innovation, having a positive impact on the processes of competitive interaction and market demonopolization. Specific basic conditions for formulating a competitive market, namely: profit, sale of goods,

competition, the presence of exclusive rights, the possibility of return of goods (Svidruk, Myronov, 2017). Additional conditions for the functioning of a competitive market are adequate and timely information support, transparent legislative regulation and protection of property rights of market entities (Derevyanko, Zakharchenko, 2016). In agreement with the above judgments, we note that an extremely important indicator of the intensity of internal competition in the commodity market, which we consider as the degree of competitiveness of market actors to obtain consumer commitment and the development of new market niches. The negative impact of high-intensity competition, which, for example, has led to distortions in output by domestic producers, should not be neglected. For example, in 2019, the proportion of self-employed businesses reduced by 15% exceeded the proportion of entities that increased production (State Statistics Service of Ukraine, 2020).

Conclusions. The state of the internal market is a general indicator of the development of the economy of the country, since its size and efficiency, including the activity of the business environment, openness and intensity of competition, consumer orientation depends on the productivity of all sectors of the economy and ensuring the balance between supply and demand. In the domestic market, a considerable part of household and enterprise income is formed and used, their demand for domestic and imported goods and services is satisfied, and market factors for structural changes in the economy are formed. The size, structure and efficiency of the internal market are determinants of the competitiveness of the national economy and of ensuring sustainable economic growth. At the same time, from the methodological point of view, the lack of aggregated statistical indicators on the market structure is hampered by an adequate assessment of the market entry / exit dynamics. Thus, it complicates the factor determination of drivers and destabilizing effects on the development of the domestic commodity market, thereby distorting the predicted calculations of the level of competition in individual market segments.

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SPECIFIC EXCISES AS A TOOL OF INSTITUTIONAL REGULATION OF PRODUCTION

Introduction. An indispensable element of a market-type tax system is specific excise duties, which take the form of an individual per goods turnover tax at the single level form. The prevalence of this form of taxation is driven by both its significant fiscal role and significant regulatory capacity. In Ukraine, excise tax is represented by excise tax on certain types of highly profitable and monopoly product groups, namely: alcoholic beverages, tobacco, vehicles, petroleum products. Excise tax as a tool for forming the revenue part of the budget is one of the most risky taxes, due to the specific characteristics of excisable goods, frequent changes to the relevant legislation and the lack of efficiency of its administration mechanism.

Literature review. The fiscal importance of this tax has led to numerous studies by both Ukrainian and foreign scientists. Particularly noteworthy is Kostyana's (2017) study on the structure of excise tax revenue from various types of excise products. The author analyzes the excise tax as an instrument of state control over the circulation and sale of ethyl alcohol and alcoholic beverages, pointing on the need for economic justification for the cost of excise stamps.

Sokolovska (2017), analyzing the prospects of harmonization of Ukrainian excise taxation with EU principles, demonstrates that the implementation of international norms is associated with a certain limitation of tax sovereignty and is complicated by the low level of socio-economic development of Ukraine. At the same time, the author offered a number of proposals that would prevent from obstacles for the free movement of goods and would allow the identification of excisable goods in Ukraine and the EU countries.

Koshchuk (2019) revealed a trend of annual growth of excise tax rate, which is justified both with the need to increase governmental revenue, and institutional attempts to influence the reduction of

consumption of some excise goods. Instead, it causes the phenomenon of a decrease in the volume of legal production and sales of excisable products, an increase in the level of shading and corresponding additional losses in the budget.

Exploring the reasons for the systematic under-execution of planned excise duties to the budget in Ukraine, Stakhov (2019) identified the drawbacks in the excise tax administration system and provided point recommendations on minimizing the negative impact of these factors on the efficiency of further budget filling. The author emphasized the necessity of expanding the organizational and technical capabilities of the State Fiscal Service for accepting and verifying respective electronic declarations with the software complexes.

It should be noted that the current studies of foreign scientists are mostly aimed on practice. Thus, Rybová (2015) defined trends of excise taxation in the Member States of the EU through economic indicators. Of considerable interest is the study by Schafferera, Yeha, Chenb (2018) on the design of an assessment of the impact of excise tax increases on cigarette consumption and tax revenues in 36 European countries. Wada et al. (2017), using the tools of macroeconomic modeling, investigated effectiveness of impact of the taxes increase for alcohol on the reduction of its excessive consumption. Despite the considerable achievements of scientists, it is worth noting that many issues related to excise tax remain without the attention of researchers and require further clarification.

Purpose of the study: analysis of tax regulation of final consumption and making recommendations on the use of excise tax instruments.

The main content of the study.

Consumption taxes are paid in the form of indirect taxes and on the account of income in the course of their use, that is, that part of the income that is directed to consumption. Final consumption taxes in Ukraine include value-added tax (VAT), customs duties and universal and specific excise taxes, which are included in the price of goods and are transferred to buyers at each stage of the commodity movement (Tyriansky, 2014). In the tax structure of the consolidated budget of Ukraine, final consumption taxation is characterized by a relatively small value and a decreasing trend in dynamics (Figure 2.11).

In general, the structure of consumption taxes in Ukraine is heterogeneous. The share of VAT is consistently the largest and ranges from 47.0-71.0%, and despite the fact that the amounts of VAT are increasing annually, its share in the total annual consumption taxes is reducing (Figure 2.12).

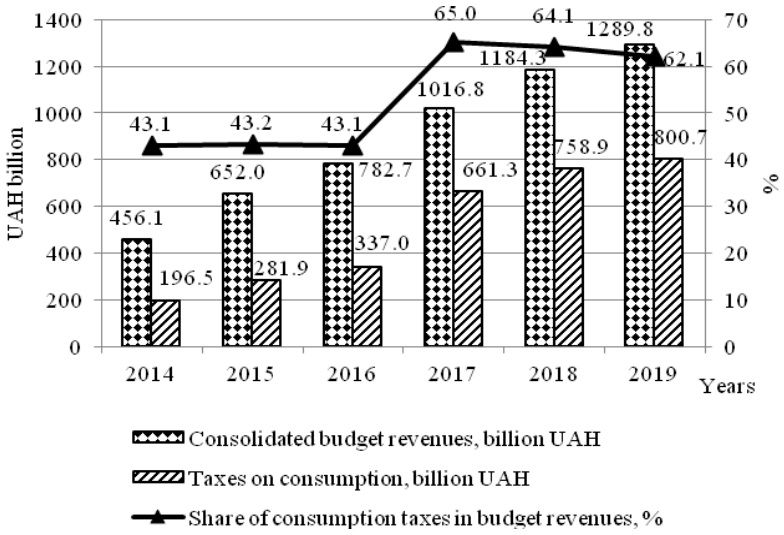

Figure 2.11 Dynamics of revenues to the budget of Ukraine from taxation of final consumption in 2014-2019

Source: build by the data from the State Statistics Service of Ukraine, 2020

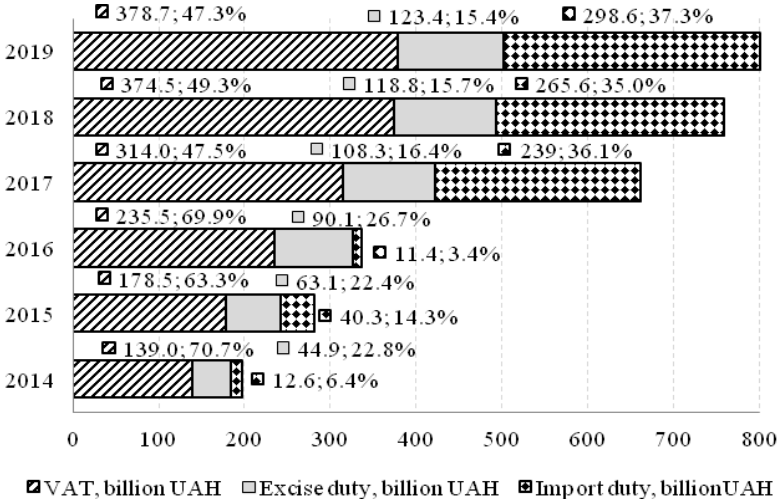

Figure 2.12 Dynamics of distribution of final consumption taxes in Ukraine in 2014-2019

Source: build by the data from the State Statistics Service of Ukraine, 2020

The dynamics of customs payments also increased their role in filling the budget of Ukraine, their share increased from 6.4% in 2014 to 37.3% in 2019. Less significant are the share of excise duty (the largest share is 26.7% in 2017, the lowest is 15.4% in 2019).

Excise taxes in the final consumption tax system are price-forming factors. They have a significant impact on inflation in the country and regulate the proportions of the ratio between consumption and accumulation. The defining features of excise duty are:

- fiscal filling of the revenue share of the state and local budgets (Table 2.6);
- redistribution of highly profitable sales of excisable products;
- limitation of production and consumption of certain product assortment;
- secondary distribution of revenues through the introduction of excise duty on goods with a low elasticity price of demand.

Among the reasons for the fluctuation of fiscal excise duty return are both internal and external. The first are derived from tax calculation mechanisms and are associated with large volumes of non-taxable turnover, driven by an increase in preferential export transactions. The second is a consequence of the non-opacity of the pricing system, lack of control by the state on production and consumption of excisable goods, abuse by manufacturers, importers, tax agents and intermediaries aimed at minimizing the tax burden (Duchenko and Melnyk, 2016). This is evidenced by the discrepancy between the rise in prices and the rate of excise tax increase in final consumer spending (Antimonopoly Committee of Ukraine, 2020). The situation is further complicated by the structural crisis conditions, which are accompanied by a decrease in the solvent demand of the population and a decrease in the consumption of excise goods.

At the same time, excise tax, acting as a function of the formation of state revenues, affects the production of monopoly and highly profitable goods. The excise duty regulatory function is implemented in the following areas:

- limitation of import, production and consumption of excisable products;
- structural changes in the cost structure in the direction of stimulating the growth of production efficiency, improving the consumer characteristics of the product;
- regulation of excisable goods production profitability (Verkhovna Rada of Ukraine, 2011).

Table 2.6

Dynamics of the sum and share of excise duty in consolidated budget revenues, tax revenues and GDP

Indicator	2014	2015	2016	2017	2018	2019	2019/ 2014, %
GDP, billion UAH	1586.9	1988.5	2383.2	2982.9	3558.7	4080.2	257.1
Budget revenues, billion UAH	456.1	652.0	782.7	1016.8	1184.3	1289.8	282.8
Tax revenues, billion UAH	280.2	409.4	503.9	627.2	759.9	969.6	346.0
Excise duty, billion UAH, including:	44.9	63.1	90.1	108.3	118.8	123.4	274.8
of domestic goods	28.1	38.8	55.1	66.3	71.1	69.9	248.8
of imported goods	16.8	24.3	35.0	42.0	47.7	53.5	318.5
Share of excise duty, %							percentage of
- in budget revenues, including:	9.8	9.7	11.5	10.7	10.0	9.6	97.2
of domestic goods	6.2	6.0	7.0	6.5	6.0	5.4	88.0
of imported goods	3.7	3.7	4.5	4.1	4.0	4.1	112.6
- in tax revenues, including:	16.0	15.4	17.9	17.3	15.6	12.7	79.4
of domestic goods	10.0	9.5	10.9	10.6	9.4	7.2	71.9
of imported goods	6.0	5.9	6.9	6.7	6.3	5.5	92.0
- in GDP, including:	2.8	3.2	3.8	3.6	3.3	3.0	106.9
of domestic goods	1.8	2.0	2.3	2.2	2.0	1.7	96.7
of imported goods	1.1	1,2	1.5	1.4	1.3	1.3	123.9

Source: calculated by the data from the State Statistics Service of Ukraine, 2020; State Treasury Service of Ukraine, 2020

The mechanism for excise duty restricting can be described by the following scheme. The excise tax, which is included in the price of the excisable goods, increases the spendings of consumers, which in case of

elastic demand leads to a decrease in sales of these goods. In turn, it forces producers to reduce production volumes, or to maintain existing prices by reducing the profitability of products (Tyriansky, 2014). At the same time, the effectiveness of this area of regulatory influence of excise tax depends essentially on how effective is the state control over the sphere of circulation of excisable products and how strong the obstacles to its shadow production are.

The efficiency of the institutional reform of the excise duty charging is clearly demonstrated by the current dynamics of budget revenues. Overall, in March 2020, excise tax revenues to the budget of Ukraine amounted to 5.9 billions UAH, including over 5.6 billions UAH by taxation of products produced in the territory of Ukraine and 305.5 millions UAH (Accounting Chamber of Ukraine, 2020) by taxation of imported products. It should be noted that the achievement of such indicators was made possible by the introduction of a complex program to counteract the production and sale of illegal products on the Ukrainian market. In order to improve the administration of excise tax and elimination of the shadow sector a number of measures was taken that included the total replacement of corrupt officials in the state tax service tax positions of companies producing excisable goods, inspection facilities of retailing system and system struggle with the manufacture and distribution of counterfeit products (Antimonopoly Committee of Ukraine, 2020).

The tobacco industry provides over 75.0% of all excise duties to the State Budget of Ukraine. In 2018 there was a decision (Verkhovna Rada of Ukraine, 2019) regarding the significant increase in excise rate and minimum commitments for cigarettes during 2019-2025 (Table 2.7).

Rates were decided to increase gradually, given the risk of increased smuggling, shadow production and sales. As a result of such actions, in March 2020, tobacco companies provided 4392.7 millions UAH excise tax revenue, which is 1308.4 millions UAH (142.4) more than in March 2019 (Accounting Chamber of Ukraine, 2020).

Accordingly, the revenues in March 2020 from excise tax from the sale of alcohol relative to March of the previous year increased 8 times (to 61.4 millions UAH). Revenues in the budget from the excise tax from the sale of alcoholic beverages (Table 2.8) in March 2020 was 595.6 millions UAH (growth according to March 2019, 131.2%).

Therefore, measures aimed at enhancing the role of excise tax in regulating production levels should be pursued in the following areas:

Table 2.7

Tobacco and its substitutes tax rates

Product description	Excise rates for years, UAH					
	2019	2020	2021	2022	2023	2024
Cigarettes - a minimum commitment (per 1.000 units)	1011,4	1213,6	1456,3	1747,6	2097,1	2516,5
- Raw materials and waste - Cigars and cigarillos - Tobacco and substitutes (per 1 kg)	949,8	1139,8	1367,7	1641,3	1969,5	2363,4

Source: systematized by the data from Verkhovna Rada of Ukraine, 2011

Table 2.8

Alcohol and alcohol-containing products tax rates

Product Description	Unit	Excise duty rate
Malt beer	UAH / 1 liter	2.78
Wines, grape mash, fermented beverages with a strength of 1.2-15.0% of EAVU * of enzyme origin		0.01
Sparkling wine (aerated), fermented beverages, flavored wine (aerated) with a strength of 1.2-15.0% EAVU of enzyme origin		11,65
Wines, fermented beverages with a strength of 1.2-22.0% of the EAVU		8.02
Cider and perry (without added alcohol)		1.06
Alcohol beverages with a strength of above 22.0% EAVU	UAH / 1 liter of 100% alcohol	126.96
Ethyl alcohol with a concentration of 80.0% or more; alcohol distillates		126.96
Products with an ethanol content of 8.5% by volume or more		169,27

Note: EAVU – ethyl alcohol volume units
Source: Systematized for Verkhovna Rada of Ukraine, 2011

- expansion of state regulation of production of tobacco and alcohol-containing products through activization of licensing, quotas, declaration, state control over compliance with legislation during

realization of excisable goods;

- increase of excise tax rates step by step, as well as introduction of local excise duties on alcohol and tobacco products;

- introduction of a protectionist customs and taxation policy for producers of alcoholic beverages and tobacco;

- restrictions on smuggling import and export of excisable goods, overcoming of shadow production.

Conclusions. Excise tax in the market environment is not only important budget forming factor, it also has a number of restrictive and stimulating functions of an economic nature. With the development of market relations, its role is increasing in view of the flexibility and the need for institutional regulation of the proportions of production and consumption of highly profitable and monopoly goods. The restrictive effect of excise taxes on consumption (and as a consequence on production) is generally applied to socially dangerous goods, the main ones being alcoholic beverages and tobacco.

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Chapter 3

INNOVATION IN THE ECONOMIC SYSTEMS MANAGEMENT

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ECOLOGIZATION OF PRODUCTION AS AN INNOVATIVE COMPONENT OF THE MODEL OF FUNCTIONING OF AN AGRARIAN ENTERPRISE

The main trend in modern development of agribusiness is globalization of the economy, which is the multi-faceted and complex process, which is connected with the development of human activity and reveals additional opportunities and economic benefits for all countries in the world. At the same time, this process causes negative consequences, which are manifested mainly in the anthropogenic impact on the environment. There has been a sharp increase in the negative impact of economic activity of a society on the environmental condition during the last few decades. It mainly concerns the area of agrarian production, which is mostly sensitive to any involvement into the development of agrarian ecosystem. Moreover the actual issue for Ukraine and many other countries in the world is the provision of population with high-quality and safe food products. At that, the main requirements are set not only for the quality of the produce but also for the environmental conditions.

Functioning of agrarian enterprises according to the concept of steady development requires creation of fundamentally new conditions for entrepreneurial activity, the base of which is ecologization of the agricultural production and increase in efficiency of applying the resource potential of the agro-industrial complex and formation of the

ecologically focused system of management.

O.H. Minkova (2016) notes that the ecological component in the agrarian business implies the scientifically grounded complex of mutually connected agro-technical, ameliorative, ground protecting and organizational-economic measures at efficient use of the ground, climatic resources, biological potential of plants with the purpose of receiving stable harvest of agricultural crops under the yield increase and keeping to ecological safety of the environment and grown produce. T.L. Shkabara (2014) determines potential ecological benefits of the domestic agrarian sector at the level of separate objects of management.

I.M. Siniakevych (2005) dealt with greening of the public development as the concept which implies greening of the economic and social policy and recovery of the spiritual sphere with the help of the system of efficient tools with the purpose of providing steadiness in ecological systems and removal of the global, national and regional ecological threats.

In the scientific publications O.V. Shubravska (2007) states that the humanity starts to deeper comprehend the threats from negative trends in dynamics of condition indicators in social and ecological components of public development therefore insists on transition toward ecologically clean produce.

According to A.M. Vichevych (2002) concepts of developing the objects of management took place simultaneously with the changes in attitude to the economic development and formation of the ideology of steady development.

Economist Z.V. Nikitina (2005) comprehends ecologically-focused production as such which takes place on the base of the rational implementation of agricultural grounds with the application of adaptive-landscape system of husbandry in combination with their biologization and moderate chemical changes of technological processes.

Ecologization is the main direction in the activity of agrarian enterprises and it is based on mastering ecological-economic methods of business activity with the aim of providing the extended recovery of the natural resources at the expense of forming steady ecological-economic systems, increase in the amounts of production of competitive ecologically-safe produce, creation of agricultural systems using ecological methods of management.

Ecologization of the business activity of agrarian enterprises implies the system of aim-targeted transformations in the productive forces and production relations, which decrease the negative impact on the

environment and provide efficient use of resources in the process of production, storing, transportation and distribution of produce. Ecologization is based on principles of ecological safety priority; ecological responsibility; environmental protection; restoration and saving of the natural resources; preservation of the landscape integrity; preservation of the biological biodiversity.

The modern economic direction in the business activity of agrarian enterprises in our opinion can be determined through the combination of economic and social problems of the rational use, recovery and protection of natural resources of agro-sphere and on the innovative base. We consider that greening of the production at agrarian enterprises is tightly connected with the innovative activity and should be considered as an integral part of its development with the creation at the government level of the system of ecological-economic management. Therefore the organization of the production relations in agriculture should take place based on the rational application of the natural resources – on the one hand and formation of the system of managing them on the other hand. To achieve this it is necessary to apply innovative technologies – economic models which based on the usage of biological husbandry elements and optimization of the production processes will make possible to achieve a high level of management, predictability and efficiency. Unlike traditional technologies they are based on the use of energy- and resource-preserving systems of husbandry (Syrtseva S.V., 2008).

The result of application of innovative technologies in agrarian production is the creation of the innovative produce.

Ecologization is the direction of the innovative development of agrarian enterprises which are based on mastering ecological methods of management, provides a wide recovery of natural and anthropogenic resources at the expense of forming steady ecological-economic systems, directed at the increase in the amounts of production of the competitive produce, with the application of ecological methods of management based on the implementation of adaptive-landscape systems of husbandry, rational involvement in the economic turnover and increase in the efficiency of applying natural, material, and work resources in the rural area.

The prospect of development for small, middle and large commodity enterprises directly depends on the correctly chosen aim and strategy of development.

The main strategic directions in the innovative model of agricultural

producers can be formed due to the following criteria:

– ecological – be useful for the environment, lead to health improvement of people, grounds and eco-systems, maintenance of the ecologic balance in the biosphere;

– economic – provide implementation of the strategy of development by organic manufacturers in the direction toward increase in profits, decrease in costs, increased efficiency of management;

– market – widening of the part of organic manufacturers at the market of produce, lead to their concentration and differentiated scientific-commercial activity;

– publicly – encourage the increase in the professional activity among agrarian producers, creation of new jobs and improvement in the working conditions and quality of life in rural areas.

To implement those directions it is necessary to undergo a whole set of qualitative transformations which concern the transition to the innovative market, renovation of the production system, overcoming the significant differentiation of approaches, that is the global modernization of the national economy is needed.

We outlined main components of the innovative model in functioning of agrarian enterprises based on principles of ecologization and steady development (Table 3.1).

A large-scale implementation of the greening production at the agrarian enterprises is impossible without ecological social awareness. At the country level the ecologization of the ecological development does matter, which is considered in the context of the economic, social and spiritual spheres as the process, which provides the movement of the earth's population toward steady ecologically balanced development (Haydutskyy P.I., Hodakivska O.V., 2012). Ecologically aware activity and competitiveness of the agrarian business is achieved by convincing the customers of the highest consumption value of ecologically clean produce and support of the image of enterprises on its development. The ecological component must be considered while making any business solutions.

The base of building the innovative model of functioning of agrarian enterprises is their corresponding actions in the process of transformation to the ecologically focused development. For the correct stimulation of those actions it is necessary to have the motivational mechanism, with the basic components – instruments of motivating the innovative development of agrarian enterprises and instruments of greening agrarian production. The base of the motivational mechanisms

in our opinion is the awareness of motivating the ecologically focused behavior of customers and motivation for greening the production. Consumers motivation and motivation of the ecologically focused production are the basics of this mechanism.

Table 3.1

Components of the innovative model of ecologically focused activity of agrarian enterprises

1. Formation of the ecological awareness Formation of ecological needs	Workers of enterprises by accepting the ecological situation, understanding the value of the nature, inclination to active actions aimed at its protection, social responsibility/ Reconsideration of the structure of needs, aims, priorities and ways of activity of a person/
2. Development of motivational mechanisms of agrarian producers and consumers	Economic motivation of production-business activity, economic stimulation (subsidies, preferential crediting, taxation, insurance of risks), efficient mechanisms of regulating and stimulating the greening process/
3. Transition of agrarian enterprises to organic production	Certification, ecological standardization and formation of norms; recovery of the natural-resource potential, utilization of energy- and resource-saving systems of husbandry, ecological audit, production of high-quality and safe produce, ecological-economic management
4. Rational combination of the fields of ecologically focused agrarian enterprises	Increase in areas of arable crops and forage crops at the expense of technical improvements in the crop production area and the number of cattle – in the breeding area
5. Infrastructure of the organic market	System of organizations and institutions, which provides interrelation between structural elements of the organic market and encourages free movement of the organic agricultural produce and food products, non-stop process of recovery and efficient functioning of spheres of consumption

Source: summarized by the authors

The material base of the motivation of work is stimulation, which is based on the process of external influence on the interests of the

business entities with the help of a certain set of actions (moral, material, social), which could encourage the positive development of social relations between business entities and formation of the new type of a personality. We can state that stimulation of the ecologically safe development of the agrarian production on the one hand, must have the material ground for agrarian producers and on the other hand – not material loading which will make possible to obtain a certain status in the society. The base of the economic regulation of the ecological activity of agrarian enterprises is the opportunity to regulate the economic activity of enterprises by the government based on economic methods, which are formed based on the redistribution of funds from the producers of non-ecological goods to the producers of ecological goods.

In our opinion the key moments to solving the issue of ecological provision of enterprises, which will make possible to create a fully functioning sector of producers of ecologically clean produce, should be the material stimulation and changes in the internal philosophy of conducting agrarian business.

Ecological advantages make possible to solve the issue of providing people with high-quality products without breaking the ecological balance and not harming the environment. Therefore, organic production is spread in different countries of the world, and modern trends of developing the market of organic produce are under the influence of general and global trends.

The radical way of solving the issue of the ecological safety of technologies for growing agricultural crops and ecologically clean produce should be the transition to the organic production as an alternative model of business activity, but at the same time we understand that, currently there are no considerable alternatives to intensive technologies in the global scale since the main problem of many agrarian producers is the maintenance of the yield. The transition period from traditional (intensive) technologies to organic technologies is a rather long-term process. Depending on the situation, it can last from 2 to 5 years and it can be accompanied by certain risks.

Ecologically focused transformation of the production activity of agrarian enterprises includes the following:

– rational use of land which is accompanied by maintaining and increase in soil fertility;

– provision of the optimal level for ploughing arable grounds which prevents water and air erosion of soil;

– keeping to standards for the limited norms of pollutants in the

produce, provision of produce greening;

– compliance with the set rules toward transportation and application of mineral fertilizers, means of protecting plants and animals;

– prevention of the chemical contamination of the environment and food products;

– keeping to ecological requirements while designing, building, reconstructing and use of new buildings and constructions, ameliorative systems and so on.

An essential condition for functioning of the innovative model is the efficient combination of areas of the organic enterprises is the compliance with the natural-ecological standards. Such a combination should provide the optimal economic efficacy of land usage; вrelatively balanced use of machinery and workforce during the year (in the area of husbandry and breeding) to reduce the seasonal effect of the agricultural work; rational and maximal possible application of the produce of one field by the other field; more efficient and fast money turnover; bigger produce output, achievement of the maximal level of work productivity and the figures of the profit. The main task of specialization and concentration is the significant increase in the amount of production and distribution of the agricultural produce, their quality, increase in productivity, and decrease in costs.

At the expense of the constant optimal planning and predicting the rational combination of the areas, it is possible to find the transition from the traditional business activity to the organic one with the least losses and risks as well as to achieve the economic effect (increase in profitability, gross produce or decrease in costs caused by production), social (employment of people in rural areas, increase in the level of workers' life), agro-ecological (improvement in the structure of soils, their physical and phyto-sanitary conditions, air and water modes, positive balance of humus, development of biogenic elements, ecological characteristics of the created produce).

Thus the improvement in the field structure of organic enterprises by the criterion of implementing the strategy of greening the production implies the increase in the arable areas of grain crops and forage crops at the expense of the technical processes – in the husbandry area and increase in the cattle – in the area of breeding.

The innovative model of developing the agrarian production should be based on the overall consideration of ecological factors, requirements to the ecological safety of any production process, rational use and preservation of natural resources. Owing to that, the society will be able

to overcome the ecological crisis and create such conditions under which the agrarian production will develop intensively, competitively and at the same time ecologically safe.

As a result, the production activity of agrarian enterprises may be transferred to the fundamentally new economical-technological base, structural transformation of production must be made considering ecological factors, laws, requirements and standards, which is an obligate condition for overcoming the ecological crisis in the country. While implementing the main tasks of greening it is possible to significantly decrease the man-made pressure on the environment, improve its conditions which will help Ukraine to perform the obliged duties on environmental protection and gradual achievement of the European norms and standards on the boundary levels of harmful influence on the environment.

Essential ecological preconditions for development of ecologically focused innovations are resource and energy conservation. Those criteria are especially important under conditions of limited and exhausted natural-resource potential of Ukraine.

The structure of the agrarian production should provide the minimal anthropogenic influence on the environment. At that, it is necessary to carry out the estimation of social-ecological status of the territories and estimation of the ecological condition of carrying out the business activity. That estimation should be made in accordance with the world trends on development and international standards.

The determined main directions in the development of the organic agrarian enterprises include the following measures: organization of the informational campaign on increasing the level of public awareness of advantages in the organic agricultural production and organic products; promotion of the steady agrarian cooperation and establishing the joint distribution of the organic produce, supply of the biological measures for protecting plants and animals; formation of the national system of certification and control over the quality of the agrarian produce; organization of special places in agricultural markets and the chain of distributing the organic produce by creating special retailing establishments for sales and distribution; organization of special fairs, exhibitions and other promoting events; activation of commodity exchange and formation of transparent market conditions for price-making and distribution of significant amounts of the organic produce at the regional, national and international markets; setting up win-win partner relations between producers of the organic produce and other

operators of the agricultural market.

The main indicators of the efficiency of the innovative model for development of the agrarian enterprises is quality (economic, ecological, social-institutional and stages of harmonization) and life safety of the population.

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ANALYSIS OF STRATEGIC PRIORITIES AND MECHANISMS OF ECOLOGIZATION THE INNOVATIVE DEVELOPMENT OF UKRAINE [2]

Exacerbation and aggravation of environmental problems, degradation of the environment and natural resources have continued in Ukraine over the past decades. The reason for this is that Ukraine does not sufficiently consistently implement a single state (national) environmental policy, does not introduce the principles of nature rational use and minimize the negative impact on environmental objects when conducting anthropogenic activities at the regional level.

Among the scientific papers dealing with the innovation development are the works of foreign scientists, as Ortega A.R., McCann, P., Perianez-Forte, I., Cervantes, M., Larosse, J., Sanchez, L. [1], Sugimoto, C.R., Robinson-Garcia, N. Costas, R. [2], Delaney, K. and Osborne, L. [3] and others, which discuss the basic conceptual provisions and provide recommendations for their implementation. The smart specialization concept that underpins the European Commission's regional development policy was first developed by the European Commission's Knowledge for Growth Expert Group on Knowledge for Growth in the process of forming a single European Research Area (ERA). The regulations governing the procedures and procedures for regional smart specialization in the EU are presented on the S3 platform, established by the European Commission in 2011. Smart specialization combines industrial, innovation and education policies aimed at

[2] *"Research is performed within the RDW" Dominants of the investment-innovation policy of the nature management of national economy "budget program" Support for the development of priority areas for scientific research (CTCC 6541230)*

selecting a limited number of priority areas for investment within the region, focusing on its strengths and comparative advantages. Unfortunately, most of these authors do not consider the issue of greening the investment and innovation policy of the state and individual regions in the context of the international sustainable development paradigm.

The choice of strategic development of Ukraine towards European integration necessitates the matching of the parameters of the economy of Ukraine with the parameters of the European Union economy (EU). It should be noted that the rating of the Bloomberg Agency for the assessment of innovative development of countries has been released for the seventh consecutive year. It evaluates the innovation of economies on the basis of a number of criteria, such as R&D expenditures in relation to GDP, productivity, percentage of innovative companies in the total number of enterprises, number of scientists per million inhabitants, value added of production in relation to GDP, percentage of graduates in total graduates educational institutions and patent activity. The leader of the most innovative countries in the world according to Bloomberg is once again South Korea.

Germany rose in the ranking by two positions and took the 2nd place. Finland climbed four positions and finished third. The top five also include Switzerland and Israel. In 2019, Ukraine ranked 53rd in the ranking with a total score of 48.09. A year earlier, our country was ranked 46th in the ranking. Such a fall is caused by the weakening of Ukraine's position in 6 out of seven components of this index.

Ukraine's position in the Global Talent Competitiveness Index in 2019 has dropped from 61 places to 63rd. A total of 125 countries were surveyed. The improvement is observed in two of the six components of this index. In terms of the criterion "market and regulatory opportunities", Ukraine has risen to 3 positions, and according to the criterion "global knowledge" – to 5 positions. At the same time, the following indicators have significantly deteriorated: the talent attraction index – 105th place against 98th in 2018, the talent retention index or the ability to retain qualified personnel – 66th place against 58th in 2018 (Table 3.2).

According to the latest published report of the World Economic Forum on Global Competitiveness "The Global Competitiveness Report 2018", Ukraine ranked 83 in the ranking among 140 countries surveyed. Dominican Republic ranked 82nd, Macedonia ranked 84th. Compared to the previous report, Ukraine lost 2 positions, but this comparison is incorrect, since the index calculation method and its components have

been changed in the 2018 report [4, p. 14].

Table 3.2

Values of the main criteria of the Global Talent Competitiveness Index for Ukraine for 2016-2019

Criterion	Rating 2016	Rating 2017	Rating 2018	Rating 2019
Market and regulatory opportunities	91	103	99	96
Talent Attraction Index	97	94	98	105
Chances for career advancement	72	64	66	68
Talent retention index or ability to retain qualified personnel	56	54	58	66
Production skills of employees	40	66	44	45
Global Knowledge	61	53	42	37
Global Talent Competitiveness Index	66	69	61	63

Source: generated using [4, p. 14]

It should be noted that, according to domestic analysts, the weaknesses of Ukraine in terms of innovative activity in international indexes are recognized as: "environmental sustainability", institutions, protection of intellectual property rights, state of development of clusters, development of broadband Internet, innovative environment. In Ukraine, systemic obstacles that impede the formation of "reasonable specialization" are related to the centralized and universal nature of strategic planning for economic development, which does not take into account the conditions and needs of specific regions (Table 3.3, 3.4).

Analysis of financing of existing priority areas of innovation activity is carried out in Ukraine on the basis of compliance with the Law of Ukraine “On Priority Areas of Innovative Activity in Ukraine”, which identified seven strategic priority areas of innovation activity, and the Cabinet of Ministers of Ukraine Decree No. 1056 of 28.12.2016 strategic priorities identified 41 medium-term priority direction of innovation activity at the national level [6] (Table 3.4).

Strategic Priority 3 “Development of new materials production technologies, their processing and connection, creation of the nanomaterials and nanotechnologies industry” occupies the second position in terms of financing innovative activities – UAH 45,315.30

thousand or 15.6% of the total budget financing of strategic priorities innovation activity (2017 – 13.9%).

Table 3.3

Dynamics of the rating of some countries by the Innovation Efficiency Index for 2010-2018

Country	2010	2012	2014	2015	2016	2017	2018
Ukraine	54	14	14	15	12	11	5
Kazakhstan	77	131	118	124	108	116	111
China	14	1	2	6	7	3	3
USA	63	70	57	33	25	21	22
Germany	56	11	19	13	9	7	9
Poland	85	80	76	93	66	48	42
India	101	2	31	31	63	53	49
Japan	18	88	88	78	65	49	44
Switzerland	15	5	6	2	5	2	1
Luxembourg	5	8	9	3	1	1	2

Source: generated based on [5]

The smallest amount of financing in 2018 is directed to the 5th strategic priority "Implementation of new technologies and equipment for quality health care, treatment, pharmaceuticals" – 5356.06 thousand UAH or 1.8% of the total financing of all strategic priorities. At the same time, compared to 2017, there was an increase in funding of this priority by 9.9%, but its share in the total financing of the priorities decreased by 0.1 in due to the significant increase in funding for the 2nd and 7th strategic priorities.

Strategic Priority 7 "Development of modern information, communication technologies, robotics", ranking fourth in terms of funding, compared to 2017, has the highest growth in terms of funding (1.8 times) and in terms of total budget financing (by 2,5). A significant increase in funding (1.6 times) and its share (by 1.9) was also due to strategic priority 2 "Development of new technologies of high-tech development of the transport system, rocket and space industry, aviation and shipbuilding, weapons and military equipment".

Funding for all strategic priorities in 2018 increased compared to 2017, of which three (2, 3, and 7), as well as in 2017, also increased their share of total funding. Financing of the 4th strategic innovation priority "Technological renewal and development of the agro-industrial complex" is the highest among all priorities, it nominally increased by 1.3% and reached UAH 153444.2 thousand. Its share (52.6%) in total financing compared to 2017 decreased (by 5.8 pp) due to the significant

growth of this indicator by the 2nd and 7th strategic priorities (Figure 3.1).

Table 3.4

Budget financing of innovation activity and technology transfer by strategic priority areas in 2016-2018, thousand UAH

Priority areas for innovation	**Total**			including:					
				general fund			**special fund**		
	2016	**2017**	**2018**	**2016**	**2017**	**2018**	**2016**	**2017**	**2018**
1. Development of new energy transportation technologies, introduction of energy efficient, resource-saving technologies, development of alternative energy sources	20101,96	15212,73	17094,31	-	460,00	475,00	20101,96	14752,73	16619,31
2. Mastering of new technologies of high-tech development of transport system, rocket and space industry, aviation and shipbuilding, weapons and military equipment	6274,01	11710,93	18729,10	-	135,80	-	6274,01	11575,13	18729,10
3. Development of new technologies for production of materials, their processing and connection, creation of industry of nanomaterials and nanotechnologies	16345,33	35979,56	45315,30	-	-	110,00	16345,33	35979,56	45205,30

Table 3.4 (continued)

Priority areas for innovation	Total			including:					
				general fund			special fund		
	2016	**2017**	**2018**	**2016**	**2017**	**2018**	**2016**	**2017**	**2018**
4.Technological renewal and development of agro-industrial complex	115563,30	151412,50	153444,23	-	-	-	115563,30	151412,50	153444,23
5.Implementation of new technologies and equipment for quality health care, treatment, pharmaceuticals	5023,95	4871,42	5356,06	-	-	-	5023,95	4871,42	5356,06
6.Widespread use of cleaner production technologies and environmental protection	23687,27	29182,88	32213,93	-	600,70	801,70	23687,27	28582,18	31412,83
7.Development of modern information, communication technologies, robotics	7562,39	10759,69	19299,91	-	215,60	-	7562,39	10544,09	19299,91
Total Priorities	**194558,20**	**259129,71**	**291452,84**	**-**	**1412,10**	**1386,70**	**194558,20**	**257717,61**	**290066,14**

Source: generated using [4, p. 32]

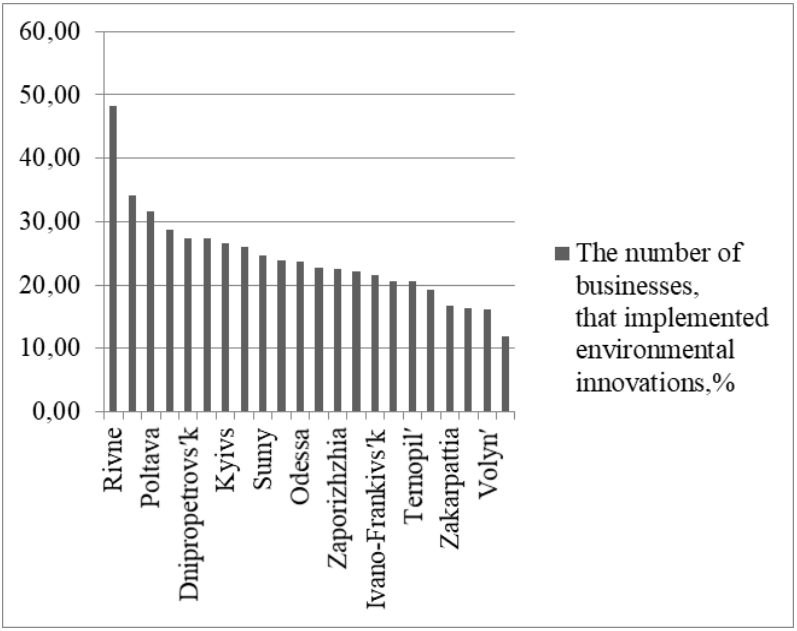

Figure 3.1 Number of enterprises introducing environmental innovations in Ukraine, by region, %

Source: generated based on [7]

The above analysis concludes that, unfortunately, there are two strategic directions of investment and innovation policy: strategic priority No. 1 "Development of new energy transportation technologies, introduction of energy efficient, resource-saving technologies, development of alternative energy sources" and strategic priority No. 6 "The widespread use of cleaner production and environmental protection technologies" in this legislative field are not decisive and are not at all related to the existence of a complete national eco-innovation system. Because the latter is actually only beginning to take shape in Ukraine and has no legally defined framework.

The innovative development of Ukraine depends directly on the support of the state for innovative development, availability of qualified personnel, researchers, necessary for the implementation of innovative development, consumer readiness and their confidence in the introduction of the latest technologies and those already used in the European Union. A prerequisite for building the country's innovation

potential is the funding of research by scientists and the acquisition of new equipment, which is usually lacking. The preservation of scientific and technical potential remains urgent. To ensure the innovative development of Ukraine, it is necessary to: concentrate capital on priority areas of development, in particular education, science, advanced technologies, entrepreneurial activity in the market of high-tech products. A favorable investment climate is an important factor in the development of the latest technologies and the further development of the state [8, p. 172].

Summarizing the above, it is possible to draw the following conclusions that the effective implementation of an investment-innovation policy of greening the economy is possible only if the implementation of a comprehensive adaptive mechanism and support system for greening innovation at the state, regional and local levels, based on: availability of financial support mechanisms for environmental protection activity, stimulation of greening of innovative activity, as well as organizational, logistical and personnel th security. The use of innovation leads to changes in the efficiency of reproduction of production potential, the emergence of scientific, technical, social, environmental and economic effects. Innovative production potential is a major factor in the formation of high-tech industries that can produce high-value, high-value, competitive products on the domestic and foreign markets.

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TOOLS OF INVESTMENT-INNOVATION INCENTIVE OF DEVELOPMENT THE INDUSTRY OF INDUSTRIAL ENGINEERING

In the current conditions of globalization and the entry of the economy to a qualitatively new level of development is becoming more relevant the role of information and digital technologies. In this context, special attention needs to be paid to the field of industrial engineering which in Ukraine is not sufficiently provided with efficient infrastructure and appropriate incentives for powerful developers,

without which it is impossible to increase the competitiveness level of the economy in general, and industrial innovation and active scientific-research and research-development work in particular. After all, the activities of engineering companies are aimed at developing new industrial products, generating ideas, industrial design and more. Accordingly, incentive of development the industry of industrial engineering should be provided by active and efficient investment-innovation instruments.

Activation of investment-innovation processes in Ukraine as a whole is a instrument to ensure sustainable development of entrepreneurship activity, as it incentive the development of small and medium-sized businesses in the conditions a new socio-economic realities, including the recession in 2020. It is investment in innovation in the industry of industrial engineering allow you to develop new technologies, actively expand and diversify production, increase profitability, upgrade fixed assets, etc.

Investments, innovations and incentive of economic processes with their help, in particular, implementation investments in innovations are generally clear concepts and do not require additional substantiation of their essence, so we focus on the definition of industrial engineering.

Thus, the term “industrial engineering” is understood, as a rule, a set of engineering-consulting services (performance of works), which are related to the analysis, justification of development prospects and the use of scientific-technical and organizational-economic innovations, as well as ensuring the activities of enterprises a wide range of their goals (from production to sales). In addition, engineering, as a special type of entrepreneurship, has, according to experts, certain specific features:

1) is a form of production services, which is embodied not in the material form of the product, but in its useful effect, which is characterized by a material carrier (technical and project documentation, graphics) or not inherent (education or direct);

2) ultimately combines the preparation and ensure of the production process, as well as the realization of material goods and services designed for intermediate and final consumption;

3) is interpreted as an object of purchase-sale, which indicates its commercial characteristics;

4) in contrast to know-how or franchising, it is associated with reproduced services, the price of which is determined by the socially necessary cost time for their production, and therefore has a significant number of sellers [1, p. 288; 12; 14].

It should be noted that in Ukraine in recent years much has been done to adapt national standards to European legislation requirements, but the basic regulations designed to ensure the system of investment-innovation processes in the field of industrial engineering still not fully implemented. In addition, investments in innovation activity in Ukraine now are currently quite unsystematic, which hinders innovative transformations in society and domestic enterprises, adequate to the requirements of the global competitive environment. After all, incentive innovative development is the most operational and effective way to increase the competitiveness level of economic entities.

Since a significant share of innovation in modern conditions activity is implemented by business structures, it is advisable to analyze the indicators of innovative development of Ukrainian enterprises, the dynamics of which, in turn, allows us to argue about the prospects development of industrial engineering (Table 3.5).

Table 3.5

Innovative activity of industrial enterprises in Ukraine, 2010-2019

Year	Share of enterprises engaged in innovation	Total costs	Including :			
			research and development	acquisition of other external knowledge	purchase of machinery, equipment and software	others costs
	%	million UAH				
2009	12,8	7949,9	846,7	115,9	4974,7	2012,6
2010	13,8	8045,5	996,4	141,6	5051,7	1855,8
2011	16,2	14333,9	1079,9	324,7	10489,1	2440,2
2012	17,4	11480,6	1196,3	47,0	8051,8	2185,5
2013	16,8	9562,6	1638,5	87,0	5546,3	2290,9
2014	16,1	7695,9	1754,6	47,2	5115,3	778,8
2015	17,3	13813,7	2039,5	84,9	11141,3	548,0
2016	18,9	23229,5	2457,8	64,2	19829,0	878,4
2017	16,2	9117,5	2169,8	21,8	5898,8	1027,1
2018	16,4	12180,1	3208,8	46,1	8291,3	633,9
2019	15,8	14220,9	2918,9	37,5	10185,1	1079,4

Source: built on basis [4]

Thus, in 2019, the share of industrial enterprises engaged in innovation was only 15.8% of their total number, which is 3-6 times less

than similar indicators of economically and technologically developed countries in world, where the number of innovation-active enterprises is from 40 to 80% of their total number. At the same time, the indicator at the level of 16% in Ukraine, in fact, remained unchanged during 2017-2019, and even in the "best" years it did not exceed 19%. For EU countries the average value of innovation activity of enterprises reaches 40-45%, while innovation-oriented economic entities produce products that are competitive not only in the domestic market but also in the EU market as a whole [4; 15]. At the same time, the share of domestic industrial enterprises that implementing innovations tends to be even lower. That is, despite the presence of certain developments, the final volume of sold innovative products is insignificant, because there is no commercialization of innovations, and the innovation cycle often remains incomplete.

It is clear that without the application of a certain set of incentives by the state it is impossible to implement an innovative model of the economy. This is because investing in innovation involves with additional risk, therefore, the expected profit must compensate for it. As various forms of state support are aimed at "reducing the cost" of value investment in innovation, this can be an additional incentive for investors. At the same time, institutional-legal instability, insufficient financial support, low level of development of innovation infrastructure is obstacles to innovative development of Ukraine.

It is also advisable to analyze data on sources of funding for innovation activity in Ukraine (Table 3.6).

As the data of Table 3.6, the basic source of financing is still the own funds of enterprises, at the same time we observe a positive trend to increase volume investment compared to previous periods. However, today in Ukraine investments are directed in the field of lower technological modes. About 48% of investments are directed to the production of knowledge-intensive products, and in the field of information and telecommunications invested only 3.3% of all investments in the national economy are [8].

Given the above, in Ukraine for investment-innovation incentive of development the industry of industrial engineering it is necessary to introduce a set of clear measures, in particular, the introduction in production of modernized and knowledge-intensive technologies. A number of such priority directions can be represented in a comprehensive scheme (Figure 3.2).

Table 3.6

Sources financing of innovative activity during 2009-2019, million UAH

Year	Total costs	Including at the expense of funds:			
		own	state budget	foreign investors	other sources
2009	7949,9	5169,4	127,0	1512,9	1140,6
2010	8045,5	4775,2	87,0	2411,4	771,9
2011	14333,9	7585,6	149,2	56,9	6542,2
2012	11480,6	7335,9	224,3	994,8	2925,6
2013	9562,6	6973,4	24,7	1253,2	1311,3
2014	7695,9	6540,3	344,1	138,7	672,8
2015	13813,7	13427,0	55,1	58,6	273,0
2016	23229,5	22036,0	179,0	23,4	991,1
2017	9117,5	7704,1	227,3	107,8	1078,3
2018	12180,1	10742,0	639,1	107,0	692,0
2019	14220,9	12474,9	556,5	42,5	1147,0

Source: built on basis [4]

As we can see, the importance and necessity of incentive investment-innovative development of industrial engineering in Ukraine in the context forming of innovative economy and structural transformation in the direction of information development and digitalization, due to the need to transition to high-tech industries and integration into business communication in the context of movement towards EU membership.

Under these conditions it is necessary to introduce such a key instrument for investment-innovation to incentive the development the industry of industrial engineering as digitalization of the economy. Digitalization (from English) is the introduction of digital technologies in all spheres of life, where companies, in addition to increasing productivity as a result of using these technologies, also form a chain of such indirect benefits of digitalization as saving time, creating new demand for new products and services, new quality, etc. It is fair to say that the digital economy is the engine of competitiveness, productivity, innovation, investment in the industry of industrial engineering and, in general, economic growth of the Ukraine in the global digital environment. That is, the fundamental goals of such a tool are:

- incentive the economy and attracting investment;
- forming a basis for the transformation of economic sectors into competitive and efficient;

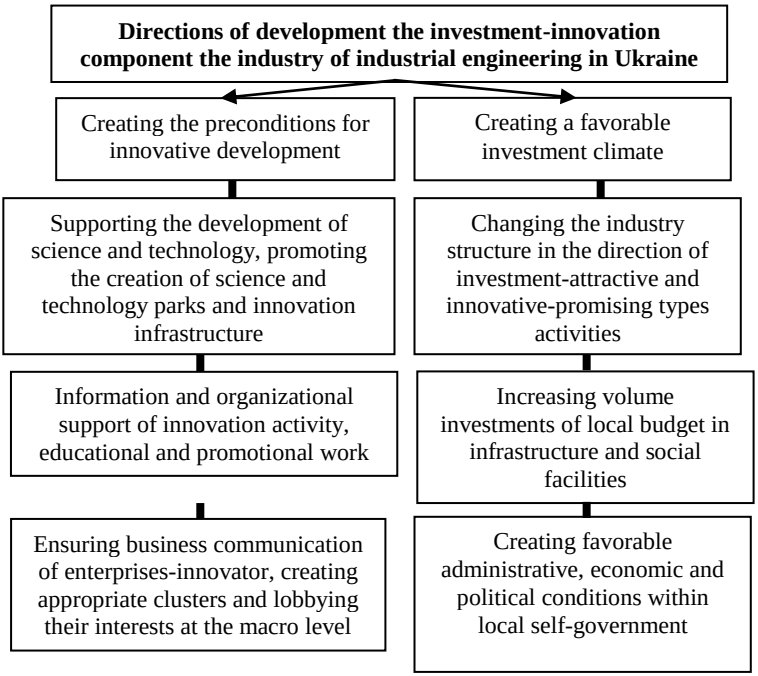

Figure 3.2 Directions of development of investment and innovation component the industry of industrial engineering [1; 7]

- availability of digital technologies;
- creating new opportunities for the realization of human capital, development of innovative and creative industries;
- development of leadership in the export of digital products and services [10; 11].

It is important to note that the program document for the development of Industry 4.0 in Ukraine “Strategy 4.0”, which targets the main stakeholders in this area on the main priorities and initiatives 4.0 for a 3-year period, states that the field of industrial engineering should be divided into 3 categories (Figure 3.3).

Thus, for Ukraine this division is especially important given that we have not yet had a fundamental difference between mechanical engineering and metallurgy. At the same time such a difference is fundamental for reasons of added value, jobs, and, in general, the impact on the ecosystem of high-tech industry segments.

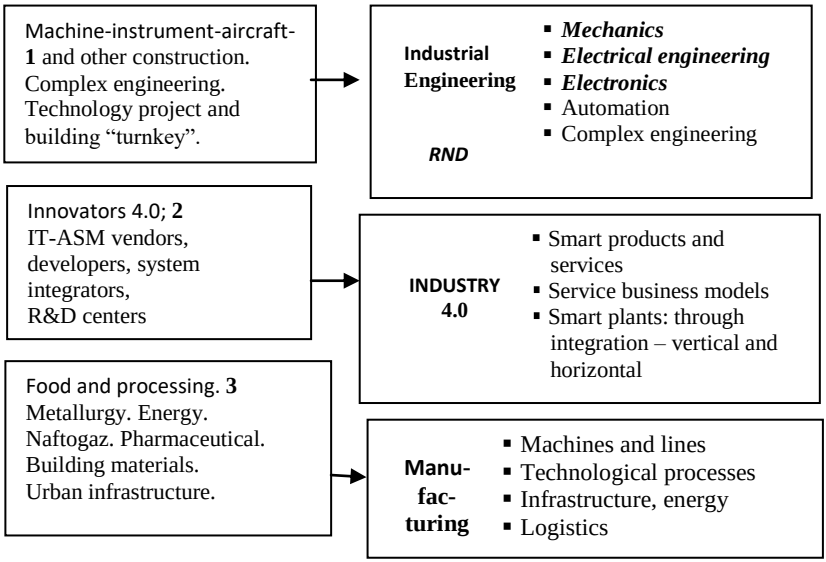

Figure 3.3 General framework for the distribution of roles and categories between end users of technology [9]

Therefore, in the relationship of the three indicated in Figure 3.3 categories have several important aspects [9]:

- if domestic machine (and other) builders do not have a competitive position, then sector 3 (end consumers) will increasingly focus on imports of relevant goods and services;

- in order to increase the competitiveness of its goods and services, Sector 1 should invest in scientific-research and research-development (R&D) and in digital technologies;

- carriers, as innovators of these technologies (Sector 2), must be in sufficient quantity and with appropriate quality (speed of innovation, strong marketing and impact on Sectors 1 and 3).

The above aspects together form an ideal model to which developed countries seek to implement. However, the Ukrainian market has a number of problems, including low investment in scientific-research and research-development work in category 1 and a weak focus on innovation, which has already led to the loss of certain industries, including electronic production, on the verge of survival – instrumentation. In addition, in the industry of industrial engineering, the competitiveness of the mechanical engineering industry has significantly decreased, the automotive industry has completely

disappeared and the future of shipbuilding and aircraft construction is in question. But, on the other hand, these categories have never had the support of the state, as is the case in other countries. That is, foreign experience gives grounds to claim that it is the basic industries that can give impetus to the development of high technology in industry [9; 13].

Therefore, we believe that to solve these problems it is necessary to first to spend monitoring the industrial sectors in order to assess the main factors of competitiveness – the level of scientific-research and research-development work, the presence of design offices, quality of human potential, technological level of production, completeness production cycle, development prospects. This will lead to the selection of analytical agencies, obtaining the appropriate insights, identifying drivers for such growth, and so on. According to the results of research can be formed a reliable information base for planning development and attracting investors with the least risks for them.

In addition, with a systematic approach by the state, digital technologies will incentive the development not only the industry of industrial engineering, but also the information society as a whole, increase productivity, sustainable economic growth, job creation, and ultimately increase the level and quality of life in Ukraine.

It should be emphasized that the increasing share of production and supply of new technologies, as well as organizational and marketing innovations, the essence of which – in new management solutions, innovative creative directions of enterprise management, market promotion, marketing solutions aimed at improving financial results of activities of economic entities and increase their competitiveness. Therefore, it is important to consider such instruments of investment-innovation incentives for development the industry of industrial engineering, as managerial innovation and investment marketing.

If we analyze the experience of successful industrial enterprises, they all, in fact, use management innovations that are unique for each company. The use of managerial innovations allows to move to the developed new types of products or to introduce new types activities [5; 6].

For Ukrainian enterprises, industrial engineering is relevant, as domestic business needs the introduction of new information technologies to revise the concept of management and improve production activities. As mentioned above, for development of industrial enterprises requires specific measures for the purpose of improve the quality of production to the level of international standards, for which it

is necessary to have experienced professionals in the staff and creative managers to make effective decisions.

At the same time, today the field of management is becoming more diverse and needs improvement from managers. There is a need for specialists who can in non-traditional ways assess existing problems, identifying reserves to maximize the financial results of the enterprise, because the modernization of facilities can save up to 40% of investors' funds [14]. Thus, managerial innovations can play an important role in development the industry of industrial engineering in Ukraine.

Investment marketing is becoming a kind of indicator of changes in the business life of the country. Its purpose is to provide the customer with progressive innovative, scientific and practical knowledge, skills and abilities in the field of investment, as well as information about competitors [2]. However, a certain business must be presented to the investor, justifying the innovation, competitive advantages of the project, because only in this way is it possible to obtain a higher income with lowers risks [3]. However, for domestic enterprises it is relatively new and uncommon.

Thus, attracting investment and creating a favorable investment environment through internal and external sources of resources is a prerequisite for development the industry of industrial engineering. Therefore, investment marketing, as a instrument to incentive its development allows you to qualitatively and quantitatively evaluate alternatives, build certain forecasts, and as a result, choose the most successful management decision to invest.

Thus, the problems of building the industry of industrial engineering and ensuring balanced socio-economic development of the country are inextricably linked. The formation of industry in Ukraine requires the use of highly effective and efficient incentive instruments that should allow to achieve high rates of economic growth based on qualitatively new approaches and solutions.

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THE MISSION AND FUNCTIONS OF ENTREPRENEURIAL UNIVERSITIES IN THE GLOBAL SPACE

Since the creation of the modern model of the university, its main functions have been the generation and dissemination of knowledge. However, the nature of knowledge demanded by society gradually changed: the industrial age ended and humanity took a step into a post-industrial society based on the "game between people", in which against the backgdrop of machine technology rises intelligent technology based on information. The methodological basis of each society is different and, importantly, there are qualitatively different axial principles around which are concentrated the institutional and organizational attributes of a society [1, p. 223].

In post-industrial society, the main problem is the organization of science, and here an important institution is a university or research laboratory, where scientific work is carried out [1, p. 224]. In close cooperation of a research laboratory with enterprises working in the field of innovation, an innovative product / service can be "born", which will indicate the emergence of an innovative economy. In this regard, it can be argued that the ideas of the theory of "post-industrial society" are at the heart of building an innovative economy. The innovative economy based on knowledge forms the key factors that contribute to the development of the entrepreneurial function of universities in the global economic space.

Universities as a system in the modern knowledge society are undergoing a stage of double transformation: first, along with teaching and research (respectively, the first and second functions of universities) in higher education begins economic and social development (i.e. universities acquire a third function and become one from drivers of innovative development); secondly, there is a transition from a focus at the individual level of research to a focus at the group level of

interaction [2]. Theories such as entrepreneurial science and academic capitalism mark a general shift towards a more commercial orientation in academia [3]. Entrepreneurial activity of universities is manifested both in the creation of small university innovative companies (spin-offs, spin-offs) and in the interaction of universities with industrial companies.

In the global economic space, there is a constant interest in the topic of technology transfer, which appears in the framework of university research, to a successful business, which gives impetus to the innovative development of the country. Governments in the United States, the European Union, and Asia are allocating significant funds to universities to build on their scientific or technological knowledge and transfer it directly to business needs through the creation of strategic partners and the emergence of new university companies. For example, federal research funding at the University of Washington in 2018 was $ 1.35 billion [21]. In the United Kingdom, the commercialization of technologies created in research in universities intensified in the late 1990s, and it was during this period that technology transfer centers were most actively established at universities [4]. As practice shows, university companies are an economically strong set of technological start-ups. Forbes expert Natalie Robehmed notes that it is advisable to call a project a start-up only if you start a new company / project that have the ability to grow rapidly. Adora Chtung, co-founder of Homejoy, calls a start-up a “state of the brain” when people join a startup company, exchanging their stability for opportunities for great growth in the future [5].

Well-known startup guru Steve Blank defines a start-up as a temporary organization created to find a scalable, repetitive and profitable business model in conditions of extreme uncertainty for rapid growth [6].

No more than 3,380 such companies were established in the United States during 1980-2000, but on average, spin-offs of university proved to be the most successful [7]. A spin-off is a new enterprise created as a result of the separation of employees of the parent company or another organization, such as a higher education institution or research laboratory, which uses the resources of the parent organization. Spin-off firms have the character of units independent of the parent organization. The emergence of firms through the separation of employees of research institutions or technical staff of large industrial enterprises is often associated with the commercial use of technology, technical knowledge,

skills acquired in the parent organization. This process largely causes the spread (diffusion) of new technologies in the economy. In world practice, governments are improving and supplementing legislation, making it more responsive to the needs of universities.

The institute of startups is one of the most profitable methods of earning an entrepreneurial university, as well as a way to bring a certain idea or development to market with the help of investor funds. It is clear that the university is not able to implement the entire volume of ideas or developments, so by implementing some of them, it receives funds for financial investment in the most attractive projects in accordance with the defined strategic innovation goals.

Today, the market for startups is developing rapidly. To support it, innovation and investment platforms (business incubators) are being actively created, which promote the development and application of innovative technologies by small and medium enterprises. Thanks to this, startups get a unique opportunity to work in specially equipped premises, as well as economic, legal, technical and managerial support before they gain financial independence. Yes, there are now more than 4,000 officially registered business incubators in the world. Most of them in the United States: from 850 to 1100. There are 800 of them in Western Europe [8]. The quality and uniqueness of the products created by them are increasing, more and more talented young people are involved in the work. Startups are becoming increasingly attractive for investment in their development (Figure 3.4) [9].

One of the main indicators, which according to K. Antonenko and D. Khromova [10] can characterize the prerequisites for the development of startups in the world – the index of innovative development, UN experts assess two components: input innovation factors and innovative results [11]. Countries that have found a balance between these indicators have achieved the best results.

According to him, for example, in 2017, the most suitable countries for the development of startups can be considered Switzerland, Sweden, the Netherlands, the United States and the United Kingdom. As for the innovation orientation of the countries, Luxembourg is on the first position, Switzerland on the second, and China on the third.

The main criteria of this indicator are the following: the share of research expenditures in GDP; industry efficiency; GDP growth per capita for three years; the share of local high-tech companies in the country’s business as a whole; efficiency of higher education; concentration of scientists; patent activity.

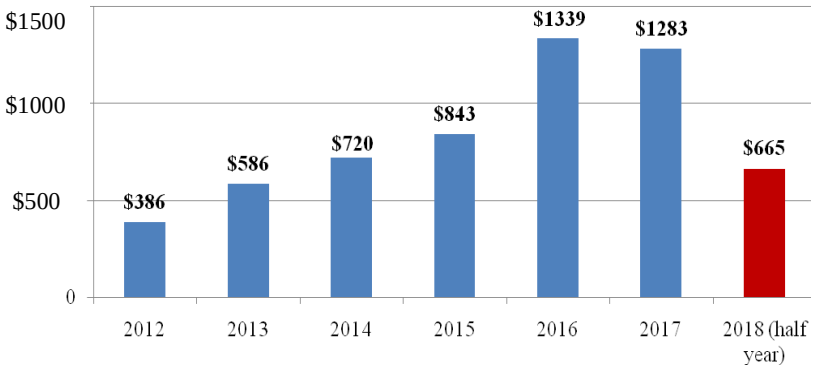

Figure 3.4 Dynamics of investment and innovation capital in Europe, million dollars

Source: compiled by the authors on the basis of [9]

In 2019, another year in a row South Korea was recognized as the world leader in the field of innovation with a total score of 87.38 points. As in 2019, the second place was taken by Germany (87.30 points). The top three also included Finland (85.57), which raised four positions in the ranking in a year. The United States returned to the top 10-most innovative economies on the planet, from which it dropped out in 2018 for the first time in six years of research due to a low rate on the education system, and now ranks eighth (8th place; 83.21 points). The leaders in high-tech exports are South Korea, Singapore and China [11].

And although the above indicators show a decline in US positions in modern innovative technologies, if we analyze the number of startups among countries of the world, the US has no competitors. Monopoly power belongs to the United States, as they account for more than 50% of all startups [12].

If we delve into the history, we can see that the United States as a phenomenon is a startup based on venture capital. Of course, the success of venture business and startups is influenced by many factors. America has succeeded in creating the conditions for such businesses to thrive, the way of life, the infrastructure, and the number of people willing to take risks and make the American dream come true.

The failure of business in American society is perceived as a kind of success, because people have learned a lot. For comparison, in Japan, if a startup fails, the founders will no longer see any investment or recognition.

This concentration of talented people around allows you to quickly and relatively easily get advice from those who have already gone through some stages in life. It is the exchange of experience, conversations about the future of technology and about something significant that is lacking in the realities of Ukrainian life.

In Ukraine, the startup-movement is taking the first steps, but there are already successful projects, such as: Opendatabot online resource with which you can check the integrity of contractors and get public data about companies, PatentBot is a trademark registration service, Grammarly is an English text editing service, Terrasoft and its IT product bpm'online is a unique intelligent platform for business process management and CRM-system with many applications and templates Marketplace and many others [13], which were able to convince investors of their prospects and attract financial resources to run.

Gradually, the infrastructure of the startup market is being formed in Ukraine, which includes various forms of business support. Thus, in 2014, an initiative group of leading Ukrainian IT companies with the participation of representatives of the Ministry of Economy of Ukraine and the Kyiv City State Administration in Ukraine established the BrainBasket Foundation, which aims to raise the IT industry in Ukraine by help implementation of educational projects, which can be the driving force of economic growth. Currently, this is the largest social educational IT project in Ukraine, because during its operation more than 5 thousand children and adults have become graduates of the proposed training programs. One of the priority goals of the Fund is to promote the training of 100 thousand new IT specialists by 2020 [14]. On January 1, 2019, the Invention Support Fund of the Ministry of Economic Development and Trade of Ukraine was launched on the basis of the State Innovative Financial and Credit Institution (SFII), thanks to which startup owners can compete for additional funding of up to UAH 500,000 [15].

At the same time, the processes of integration of Ukrainian startup incubators are taking place. In 1998, the first association "Association of Ukrainian Business Incubators and Innovation Centers" was established.

According to the "Concept of the National Program for the Development of Small and Medium-Sized Enterprises in Ukraine for 2014-2024", promoting the development of infrastructure to support small and medium-sized enterprises, including: support for business incubators, consulting centers, venture funds, innovative business incubators that support new projects and provide venture financing are a

priority for Ukraine [16]. However, it is not yet necessary to talk about mature forms of Ukrainian business incubators. There are de facto more than 70 business incubators and accelerators in Ukraine, but the unit is really active.

A promising direction is the creation of startup-incubators at universities. According to the Law of Ukraine "On Higher Education" [17], national universities have the right to form on their basis innovation structures of various types (science and technology parks, business incubators, small innovation enterprises) in order to implement innovative projects. Startup-centers already operate at the Taras Shevchenko National University of Kyiv, the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ternopil Technical University. I. Pulyuy, Kharkiv National University. V.N. Karazin, Kharkiv National Economic University. And in order to develop new innovative initiatives and opportunities, the network of business incubators in Ukrainian universities, where students and scientists will be taught how to implement the results of their research in business, government officials plan to expand, in particular, provided the Memorandum of Cooperation between the Ministry of Education and Science Innovation Partnership Platform (YEP) of March 12, 2018. Lilia Hrynevych also notes about the importance of supporting business incubators and the development of innovative entrepreneurship in universities [18].

However, as L. Gulyaeva and A. Zhuk rightly point out, the development of regional and interuniversity startup centers is relevant for Ukraine, where ideas could pass crash tests, accelerate, get their mentors, and idea owners to create their own business or find real investors. This is the task that is on the agenda not only in Ukraine but also around the world [19, p. 27].

The urgency of the development of innovative structures of various types in the Entrepreneurship University is due to the need for accelerated implementation of the results of scientific, technical and innovative activities. This implementation allows you to quickly commercialize the results of completed research and have a source of stable income to ensure their own financial autonomy. Development and popularization of the business movement is one of the key tasks of the university. It should be noted that in the classical model of the university, entrepreneurship always recedes into the background; the emphasis is only on educational and scientific activities. Most universities, according to Ukrainian scientist M. Sytnytsky, focus on the

dissemination of knowledge and invest significant financial resources in the development of channels for their transmission, ignoring that this knowledge may not be realized by a graduate who starts a new business to implement their own business ideas. In entrepreneurial universities it is necessary not only to impart knowledge, but also to teach methods of their effective application. If this is not done, there is an entrepreneurial trap between the qualification of a new specialist and his real ability to apply their competencies to become an entrepreneur-innovator and create new jobs, rather than looking for a job on the terms of an employee [20, p. 202].

The modern university, within which the functions of education and research constantly intersect, appeared thanks to the Prussian philosopher Wilhelm von Humboldt. In 1810, he headed the University of Berlin, which later became the ideal model of the university, to which appealed universities in Europe and the United States. Humboldt changed the very model of the university, placing research at the center of education, emphasizing science, the development of relationships between different disciplines, and thus tried to make the university's contribution to economic growth and development direct and obvious.

The process of "flow" of knowledge from educational institutions has deep roots. Until the beginning of the 19th century, for example, research at the British universities of Oxford and Cambridge was practically non-existent. However, over time, an increasing number of universities have become directly involved in the development of technologies that have the potential for commercial use. German universities have become the most valuable source of scientific knowledge for the chemical and pharmaceutical industries, which only emerged in the nineteenth century. This, in turn, stimulated the rise of research in US universities and corporations through the exchange of students educated at German universities. The biomedical and biological research movement has intensified at the universities of Pesilvania, Delaware and Rutger, thus encouraging the establishment of research laboratories at companies such as Sterling, Merek, DuPont and Elin Lilly. These companies, through financial and other channels, have contributed to the expansion of research in universities. The engineering departments of specialized institutes, such as the Massachusetts Institute of Technology, became an important source of practical knowledge for the industries of their regions. Japan, which actively used the experience of the German university system, used the imperial universities, which began to be established in the late nineteenth century as a means of

“adopting” Western scientific knowledge and using it to modernize the country.

During the first half of the twentieth century a small number of universities in industrialized countries with varying degrees of activity through intellectual and informal connections were intellectually engaged, and then found application of scientific results in the creation of new companies and the development of existing ones. Most institutes of higher education devoted themselves more to learning and passed on to their graduates the honorable mission of disseminating knowledge.

World War II gave impetus to technological development. Programs launched during the war and the scale of public funding provided by the US government have made large-scale research an integral part of the activities of several leading American universities. The entrepreneurial function was perceived by American universities much more deeply than by universities in Europe, the Soviet bloc, or the Asian region. The consequences of a much earlier and deeper acceptance of the entrepreneurial function by US universities can be traced and today. In particular, the ranking of Leiden University 2018, evaluates the effectiveness of research activities of universities, among the top 100, 46 positions are occupied by US universities, the remaining 54 universities in Germany and Japan (9 each), South Korea (8), China, France and Great Britain (5), Switzerland (3), Belgium, Canada, Israel and the Netherlands (2 each), Denmark and Singapore (1 each) [21].

The key success factors for US universities are:

1. Purposeful development of research intensity.
2. Active development of university independence.
3. Maintaining the entrepreneurial spirit within the university.
4. The constant struggle of universities for a higher institutional status.

However, today the universities of Europe, the Asian region and Latin America are on the path of purposeful development of entrepreneurial function in universities. This is due to the following factors. First, the more modern technologies become, the more likely they are to form at the intersection of several disciplines or sub disciplines. And it is within universities that it becomes possible to conduct research at the intersection of several sciences [22].

Second, the university sector, which expanded significantly during the second half of the twentieth century, is now on the verge of a serious decline in developed countries. The reason for this decline is the demographic changes that have taken place in OECD countries and as a

result of which the number of students has significantly decreased. Because of this, the university sector must find other ways to maintain its earnings or reduce decrease in size. The expansion of basic research and the growth of interaction with the business sector enable universities to maintain the scale of their operations.

Apparently, one of the important ideas for the transformation of a modern university, aimed at ensuring better compliance of its results with the requirements of the time, was the concept of an entrepreneurial university.

Many articles and books are devoted to the topic of the university's entrepreneurship, but the only generally accepted definition of the Entrepreneurial University has not yet been formed. In general, this term refers to a higher education institution capable of attracting additional financial resources to support its activities, a university that uses innovative teaching methods, a university that works closely with industry, where the development of university scientists is implemented [23].

Today there is no single, mutually agreed approach to the interpretation of the essence of the Entrepreneurial University and its main criteria and characteristics. H. Etzkowitz understands "entrepreneurial university" as an institution of higher education that, in addition to traditional sources of funding, actively develops and uses patents, research and other areas of contractual cooperation with private enterprises as effective tools for expanding sources of funding and investment in the university [24]. However, this approach, according to Ukrainian scientists I. Kalenyuk and A. Dyachenko, is somewhat limited, as it does not include the range of other business functions and activities of modern universities [25]. However, along with that the specified definition has important applied value, if we consider it from the standpoint of the need to stimulate and assist all stakeholders (especially employees and students) in the establishment and development of entrepreneurial activity.

The most capacious is the wording of academic entrepreneurial, given by Harvard Business School professor Howard Stevenson: "Entrepreneurship is the search for opportunities beyond the currently controlled resources" [26]. This definition is particularly accurate in that it is unlimited in the realm of business: according to Stevenson, entrepreneurship is possible in virtually all areas of human activity. Subsequently, Stevenson's definition was placed in a broader context by R. Chervets: "The creation of material wealth is only one of the

manifestations of entrepreneurship. Entrepreneurship is not a business. It is an installation for mastering the world; it is the process of cultural innovation" [27]. This understanding of entrepreneurship allows establishing a connection between this concept and the concept of social innovation, which in turn connects the problem of building an entrepreneurial university for the practical implementation of the results, the transformation of intellectual potential into assets (licenses, intellectual property rights).

B. Clark, as one of the most famous developers of the concept of entrepreneurial universities, believes that the main feature of an entrepreneurial university is the lack of fear of commercializing the generation and dissemination of knowledge, because members of such a university do not see the commercialization of academic traditions and quality of education [28]. This approach implicitly involves the diversification of university funding sources. Clark emphasizes that an important condition for the effective functioning of an entrepreneurial university is a management style that provides flexibility and strategic interaction with the external environment.

Taking into account that, which exactly areas of activity are key to a higher education institution, it can be argued that a university that cannot be called entrepreneurial must overcome limitations in three areas:

- generating knowledge, constantly working on the creation of new research methods and the study of new areas of knowledge or new problems in already known areas;
- teaching, developing innovative teaching methods and modernizing the content of teaching by reflecting the latest advances in science and practice;
- introduction of knowledge into practice through various types of interaction with the external environment.

Restrictions in all three areas are always due to the lack of basic resources, namely financial, informational and human. Without solving the resource problem, the entrepreneurial activity of the university is impossible, so traditional universities mostly consider this issue as a task that should be solved not by them, but by the environment in which they operate. The problem of resources is related to the need for serious changes in the internal environment of the university, in particular, changing its corporate culture, as well as overcoming the tendency to isolate from the external environment [29].

Thus, the analysis of the works of domestic and foreign researchers

allows us to identify two key factors in the formation of definitions of entrepreneurial universities. Entrepreneurial universities are educational institutions that train specialists for the corporate sector and, as a result, provide business needs with a significant number of highly specialized specialists. Another important factor is the galloping pace of technology development, which requires constant staff training, and as a result, actualizes the development of narrow corporate universities. This phenomenon originated and spread in the United States, which formed the concept of entrepreneurial universities, which are mobile and fully self-sustaining due to the commercialization of the results of their own research and educational activities commissioned by the corporate sector.

According to these approaches, M. Sytnytsky defines the entrepreneurial university as a higher education institution that carries out educational, research and innovation activities in accordance with the forms and tasks defined by national legislation, ensuring its own autonomy through commercialization of significant scientific and technical activities in the technology transfer market and participation in the implementation of international projects and programs [20, p.25-26].

The development of entrepreneurial universities must be considered using the method of modeling. Given this goal, it is necessary to identify and solve a number of tasks, namely: to propose a new management category “entrepreneurial progressivism”, which reflects the essence of the entrepreneurial development process at the university and comprehensively covers the phenomenon of freedom of innovative thinking.

Entrepreneurial progressivism is a process of development based on academic freedom and a set of principles that ensure the implementation of scientific ideas of a person with an entrepreneurial mindset and business approach to its implementation, providing opportunities to act freely, unconventionally, creatively, and in a way it considers rational, even if the institution in which the person operates under different rules and is critical of such initiatives.

The proposed definition of the development of an entrepreneurial university more focused reflects the centrism of the human innovator in the activities of the research university, which is always encouraged in the leading universities [20, p. 206-207].

At the same time, in the global educational space, entrepreneurial universities, in addition to teaching and research, fulfill the so-called third mission to promote the development of social innovation. For

entrepreneurial universities, the topic of social innovation is a priority that must be solved by higher education institutions, which aim not only to obtain and implement new knowledge and the formation of creative activity at the stage of learning, but also create economic and social value through technology transfer and commercialization of results, training and research for social enterprises. Social enterprises are enterprises that exist to address social or environmental needs. This is what makes the socially most interesting and effective movement in the world, which inspires and offers a number of benefits for faculty, students and entrepreneurial universities themselves. At the same time, work with social enterprises is designed to increase the level of competitiveness of educational and research services of entrepreneurial universities and strengthen its reputation. In addition, instead of a "commercial" route, the social enterprise offers an alternative way to generate income for reinvestment in university research.

The participation of universities in social practice also provides an opportunity to address issues of social inclusion, which are becoming increasingly relevant in society. After all, every year the number of people with reduced mobility who have problems with access to educational infrastructure at universities and campuses is increasing. In this regard, the issue of inseparability of social innovations with the so-called inclusive ones, the purpose of which is to involve socially exclusive groups in the search for solutions to social problems, is on the agenda. Quite often they are disguised as a means by which new goods and services are developed for the benefit of marginalized groups. It is then that innovations are designed to ensure social equality and justice in society, providing an opportunity for the ascending movement of the "social lift" [30, p. 15].

Social innovations progress due to the increase of social knowledge, which by their nature, firstly, cannot be exclusive, and secondly, are necessary for every member of society. Moreover, the generation of knowledge in these conditions is no longer the sole responsibility of scientists: social knowledge is born, for example, in business, when there is a comprehension of consumer behavior. Accordingly, it is necessary to rethink what knowledge the university should generate and disseminate. Changing the nature of this knowledge, in turn, requires revision and methods of its dissemination.

We remind you that universities have been generators of social innovations, especially those that have managed to help the local community and entrepreneurs to develop territories based on a practical

understanding of their social needs. From this point of view, the University of Entrepreneurship must perceive itself not only as an institution of “transfer” of knowledge, but also as a system that generates social investment with a higher level of human capital, capable of solving complex innovative projects.

Many universities, supporting the social entrepreneurship movement, have been forced to take on many new challenges, including outreach projects and technology transfer activities. Outreach activities of universities show how effectively they can rethink their role and interaction with the social sector of the economy. These projects should be considered as actively forcing social movements, local communities, organized social groups (formal or informal), which significantly change the relationship between teaching and research practices.

The most illustrative example in this aspect, which allowed to solve social problems and bring economic benefits to entrepreneurs and the country, in particular, was the project of students of the University of St. Thomas (USA) is Café Cocano Project, which received an award from “Ashoka V” for innovative approach to social entrepreneurship in higher education. Students studying international business, marketing and communications calculated the economic feasibility of investing in coffee rather than wood and proposed measures to develop the appropriate infrastructure needed to sell coffee products; this allowed farms to enable Haitian farms to import and sell Portau Paix coffee and provided them with extra profits. Currently, the university is actively working with Panther Coffee in Miami, which also encourages fair trade, helping to elaborate packaging [31].

In recent years, the number of universities offering social entrepreneurship in the world has increased significantly, due to the awareness of the importance of their role in providing students with the skills necessary for modern transformational social change. Reflecting this general trend, the research project “Social Entrepreneurship in a Global Context is The Role of Higher Education Institutions” found that in some countries almost every fourth freelancer works with social enterprises. In terms of the number of active partnerships, the largest share of freelancers who worked with social enterprises is in Hong Kong and Kenya, followed by the United Kingdom and Mexico, respectively 89 and 88% of freelancers (Figure 3.5).

Annually, on the initiative Ministry of Science and Education of Ukraine, Taras Shevchenko National University of Kyiv and KNU Science Park, an all-Ukrainian festival of innovations is held. A good

tradition has been the participation of heads of higher education institutions in Kharkiv in 2018 in the “Festival of Social Innovation” in order to implement innovative approaches in the social sphere [33].

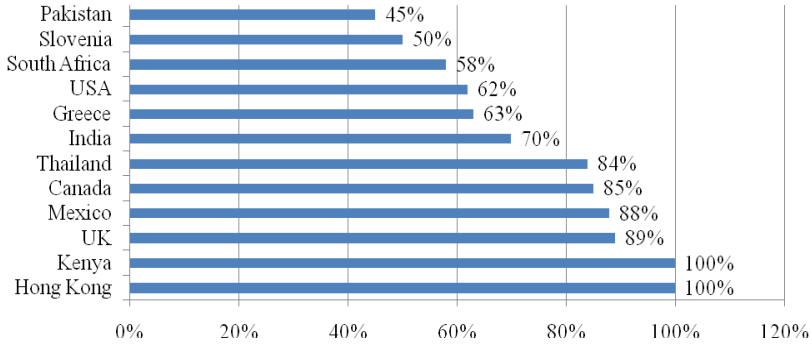

Figure 3.5 The share of higher education institutions that work with special enterprises in the world

Source: compiled by the authors on the basis of [32]

The above shows that more and more universities around the world are joining various innovation projects to support social innovation, as well as initiate a general university effort to socially innovate and social change in the global educational environment.

All this changes the content, institutional structure, political weight and mission of entrepreneurial universities, the nature of activities and logistics (economics) of the entire field of education and research not only in the “leading” countries, but also in all countries that accept the concept of “knowledge economy”, move in its “fairway” and build the appropriate cultural, economic and informational impact.

Universities are increasingly seen as the most important actors in the competitiveness of national economies. The competitiveness of the university should be understood, on the one hand, the ability of the university to create mandatory services that are more attractive to users in terms of quality, and on the other – a set of characteristics of the educational institution: quality of scientific and pedagogical staff, level of technological equipment, innovative forms training, availability of marketing services, etc. The study of the competitiveness of the university is to determine what competitive advantage the university can achieve and to what extent this advantage can be maintained and increased in the specific situation.

In modern conditions there is no single methodological assessment of the competitiveness of the university. In this regard, we can note a number of solutions to this problem based on the rating. Currently, several methods of rating have been developed. Thus, it should be noted the methodology used in the US higher education system, the results of which are published annually in the journals “VS news world report” and “Business week”. They are also used for business schools whose graduates receive an MBA degree. The main advantage of this method is that it assesses the rating of the educational institution, primarily from the standpoint of consumers and includes such indicators as: the reputation of the educational institution in the teaching and student environment; scientific potential of the teaching staff; the price of educational services; number of graduates; average starting salary of graduates, etc.

However, it is necessary to pay attention to the fact that this technique is more suitable for self-certification of higher education and can, most likely, be a preparation for state certification, but it does not allow to develop an expert strategy of behavior in purposeful struggle. The most well-known and effective tools in the formation of specific strategies of entrepreneurial universities are the methods of portfolio analysis, which allow to form a certain institutional environment that increases the competitiveness of the university.

The analysis of the investment portfolio of entrepreneurial areas of the entrepreneurial university is designed to diagnose current and future activities for the preparation of strategic decisions and to “portfolio analysis” and strengthen the specific position of the entrepreneurial university in the market of educational services. This determines the optimal business portfolio strategy, which should provide the entrepreneurial university with key factors to increase competitiveness, both in the short and long term, and scientific recommendations for each business unit of the business university as a whole. The place of portfolio analysis (with a list of its most used tools) in the system of strategic planning of the entrepreneurial university is shown in Figure 3.6.

To increase the efficiency of portfolio analysis, it is advisable to use statistical models based on W-functions and the theory of closed flow graphs [34], which allow:

- clearly and sufficiently fully present all stages of portfolio analysis;
- take into account the stochastic nature of both the portfolio analysis itself and the influence of various factors (taking into account the

probabilistic considerations both regarding the time of each operation and the probability of its execution);

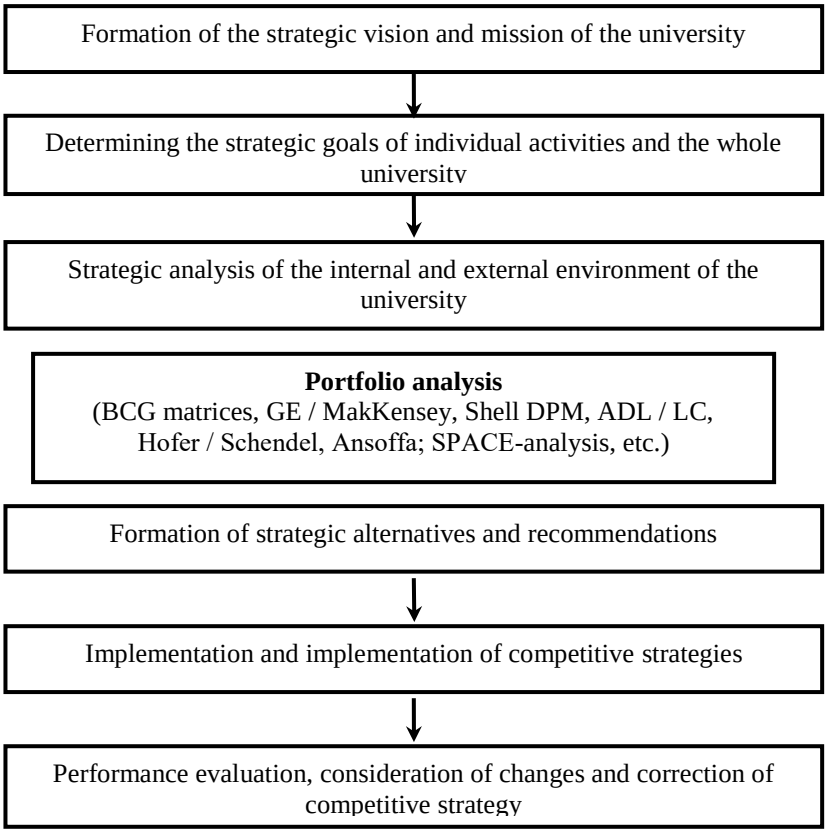

Figure 3.6 The place of portfolio analysis in the formation of competitive strategies of business universities

Source: compiled by the authors on the basis of [29, 33]

- identify the main risks associated with portfolio analysis;
- assess the duration of the stages and the entire portfolio analysis in general;
- determine the probability of obtaining certain results in the process of portfolio analysis;
- more optimal distribution of financial resources between individual business units of the entrepreneurial university;

- more effectively balance business strategies using synergistic support and communication between business units of the entrepreneurial university;

- take into account as much as possible changes in the factors influencing the competitiveness of individual business units and the entrepreneurial university as a whole;

- to increase the effectiveness of the formulated strategies both in terms of their validity and in terms of future implementation;

- provide information “for reflection” on further management of the business portfolio of the entrepreneurial university in terms of its restructuring [35].

In practice, there are more than 20 types of strategies with many more modifications. A large number of competitive strategies raise the question of the validity of their choice. The choice of competitive strategy is a control moment of increasing the competitiveness of the university. All the variety of strategies that entrepreneurial universities use in real life is a modification of several basic strategies. Each of them is effective under certain conditions, the state of the internal and external environment and the initial competitive position. Thus, business universities may face a large number of possible alternative strategies.

Thus, based on research on the evolution of the formation of entrepreneurial universities in the global space, as well as on the basis of the concept of business universities B. Clark was able to formulate the following scientific results:

- currently in the academic space there is a transformation of the classical university of its traditions and values, the development of university entrepreneurial culture is being formed, which is accompanied by the corresponding economic and informational influence;

- modern entrepreneurial universities focus their efforts not only on the production and dissemination of knowledge, but also their implementation in economic practice, stimulating and supporting the creation of startups, they have become drivers of regional and national development of developed countries;

- in the process of evolution, universities, as generators and multipliers of social innovations, have undergone institutional and structural changes, which eventually led to changes in the content, role, mission and nature of their activities in all countries that focused on the knowledge economy;

- an important role in the development of the entrepreneurial

university is played by the establishment of effective diversification of funding (according to B. Clark);

- supporting the movement of social entrepreneurship and enabling the creation of small innovative enterprises in their orbit, many universities were forced to take on many new challenges, including outreach functions;

- globalization and increasing international competition encourage universities to seek new effective development strategies not only at the level of the surrounding socio-cultural space, but also at the international level – educational, research and innovation and technology;

- gradually, Ukrainian society is concentrating on intensifying the innovation and entrepreneurship movement in universities, institutional foundations for the creation of appropriate structural units are gradually being formed, but lack of experience and constant socio-economic challenges slow down this process in some way.

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Chapter 4

SOCIO-DEMOGRAPHIC PROCESSES IN THE ECONOMIC SYSTEMS MANAGEMENT

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PROSPECTS OF LABOUR INTERNATIONAL MIGRATION OF UKRAINIANS

International labour migration is the most dynamic feature that responds immediately to any changes in the socio-economic development of the country and the global changes in the world space.

Globalization, ill-conceived economic transformations in Ukraine, the lack of effective legislation aimed at protecting and supporting domestic producers, corruption and the like had a negative impact on migration intentions of Ukrainians. Thus, according to the United Nations Special Commission, the total number of labour migrants from Ukraine amounted to 5.9 million people in 2019 (the 8th largest in the world) [1], accounting for 34% of the economically active population (from 17381.8 thousand people) [2]. Most of them never returned to their Homeland. According to the Center of economic strategy, from the beginning of the XXI century, in the period of 2002-2017, 6.3 million people left Ukraine and never came back (3 million people went through the western border, 3.2 million people – the eastern border) [3].

The increase in the outflow of the economically active population abroad, mainly mobile and competitive, can lead to the following

negative consequences: a shortage of labor (first in some regions and in some professions, and then totally), acceleration of demographic ageing and increased depopulation rate which during all the years of independence of Ukraine are the highest in Europe.

According to the Director of the Institute of demography and social investigations named after M.V. Ptukha of NAS of Ukraine (further IDSI named after M.V. Ptukha of NAS of Ukraine) academician of NAS of Ukraine E. Libanova, the population of Ukraine with current 42.2 million people (including population of Donbass, but excluding the Crimea) will be reduced by 2031 by 2.7 million people (6.8%), and will be 39.5 million people, and the working-age population (by European standards from 20 to 64 years) will decrease from the current figures of 26.9 million to 24 million people over the outflow of labor force abroad [4]. These data indicate present and possible future labor shortages in the labor market, cause concern of the Ukrainian business, government, President [5-6] and actualizes the problem of the suspension of migration losses and the creation of conditions for return migration today.

Given the above, the study of the current state and prospects of international labor migration of Ukrainians, identifying and disclosing threats to Ukraine's economic security, forecasting opportunities and negative consequences of migration for Ukrainian society, in order to further develop and justify measures to combat negative trends, is extremely important and relevant.

At the general methodological level, labor migration is most often associated with economic migration, which is seen as the relocation of residents for socio-economic reasons, due to deteriorating living and working conditions, leading to poverty and misery of the masses, while causing mass stratification in society, which creates a basis for polarization and confrontation, conflicts and contradictions [7, p. 23].

Among the determinants of the conditionality of modern international labour migration of Ukrainians are: socio-economic factors, as the classic determinants of migration, which are governed by the state; globalization, world conditions and scientific and technological progress, which are objectively acting and uncontrolled by the state factors, as well as geopolitical and geocultural processes, which in a special way change the outlook of the world of people in the information society.

In scientific works on migration [8; 9, p. 86-136; 10, p. 27; 11, p. 15; 12; 13], it is noted that: labor migration has a predominantly economic nature; the main driving forces of modern labor migration are

socio-economic factors, and the most powerful catalyst is the significant difference in the levels of economic and social development of countries and the characteristics of the demographic situation in them (the poorer the country and the larger the number of people in it, the more likely mass labor is migration).

Taking into account this conclusion, it is advisable to determine the prospects for international Ukrainian labor by predicting future migration trends under the influence of socio-economic factors, assessing the impact of quantitative parameters of socio-economic development on indicators of migration scales, and analyzing the prospects for possible changes in demographic and socio-economic indicators, which will be achieved in the context of the expected transformations of labor migration processes.

The complex nature of the nature of international labor migration and the probabilistic relationship between its scale and socio-economic factors determines the need to use special research methods, one of which is correlation and regression analysis. The use of correlation and regression analysis to determine the quantitative relationship between the scale of international labour migration of Ukrainians and the most significant socio-economic factors allowed us to obtain the following mathematical model [14]:

$$y = 3{,}1964 - 0{,}00021\, x_1 - 0{,}0081\, x_2 - 0{,}00042\, x_3 - 0{,}0391\, x_4 + 0{,}00323\, x_5\,, \qquad (4.1)$$

where: y – in the scale of international labour migration (retirement rate of the population);

x_1 – state economic development (GDP per capita in US dollars);

x_2 – the stability of the economy (the inflation rate in the country);

x_3 – the value of the minimum wage;

x_4 – the level of poverty of the working;

x_5 – total unemployment rate (in percent).

Calculated on the basis of the obtained coefficients of the regression equation, the private elasticities for factors (Table 4.1) show that, in particular, with the growth of GDP per capita in USD at 1% retirement rate of the population will be reduced to 0,864% provided that other factors remain unchanged.

Identified dependencies can be used in forecasting the scale of international labor migration of Ukrainians, under the condition of

known trends, factors, components of the regression model.

Table 4.1

Partial correlation coefficients regression equations

Factor	x_1	x_2	x_3	x_4	x_5
Partial correlation coefficient	-0,864	-1,449	-0,624	-1,299	0,045

Current global trends and the emergence of pandemic COVID-19 the hypothesis of the possibility of such prediction are not confirmed. Thus, the main macroeconomic projections that determine the state of socio-economic development of Ukraine for the near future [15], are revised, expectations are not met.

From this we can conclude that the study of the relationship between the state of Ukraine's economy and population migration based on econometric methods, allows to identify the potential of the indirect measures of inhibition and prevention of the risk threatening the growth of migration only in conditions of certainty.

In the face of uncertainty and emergency the perspectives of migration processes are to be determined using the methods of scenario planning (development of scenarios for the development of events).

Scientists of the IDSI named after M.V. Ptukha of NAS of Ukraine have developed scenarios of international migration flows in the country, respectively, of future trends of its socio-economic development based on the use of the method of "logic of the possible development" (Table 4.2).

The ideal (the most optimistic) scenario, which provides for reducing migration losses to zero, there is the scenario of "migration transition", held in the countries of southern Europe and now occurs in several countries of Eastern Europe. Unfortunately, as evidenced by results of researches [15; 17], the current socio-economic situation in Ukraine gives no reason to hope for reduction in the intensity and scale of external labour migration in the short term. According to many experts, labour migration is not only dynamic but inertial by nature, therefore, the flow of retirement for employment abroad will continue, even if improvement of the situation in the country [16, p. 145].

In the context of globalization the rising trends in international labour migration of Ukrainians imposed on the crisis demographic situation, have a negative impact on socio-labor and socio-economic sphere in Ukraine. Meanwhile, external labor migration of Ukrainians has a positive impact on the economy of recipient countries. This shows that Ukraine as a donor country is interested in the return home of

emigrants (in reverse of emigration) and countries receiving migrants are interested in the reverse.

Table 4.2

Scenarios of the future extent and orientation of international labor migrations of Ukrainians *

No. scenario	Future trends of socio-economic development of Ukraine	Forecast of the scale and direction of international migration
1	Stabilization of key development indicators in the long run (without significant improvements)	- increase in the scale of travel abroad; - strengthening the transition of a temporary form of external labor migration to irreversible; - accelerating the onset of labor shortages, especially in certain specialties; - invariability of the scale of short-term migration; - expanding the geography of migration from Ukraine.
2	Deterioration of key development indicators	- increasing the intensity of migration; - a sharp increase in the departure of highly qualified specialists; - dominance of long-term migration over short-term.
3	Improving the main indicators of development	- stabilizing the scale of long-term labor migration; - reducing the scale of short-term migration; - gradual return of some long-term migrants (in case of appropriate policy); - reorientation of some participants in the migration process to the domestic labor market.
4	Sustainable and significant improvement of the main indicators of development	"migration transition" – transformation from a donor country of the population and labor force to a recipient country

Note: compiled on the basis of the source [16, p.145]

The qualitative analysis of the reasons for interest in the migration recipient countries, allows to establish the presence of the influence of external factors on the future scale and direction of international labour migration of Ukrainians.

Demographic factors are one of the main determinants of interest in

migration recipient countries. More developed country has its own demographically-employment loss offset by attracting migrants from donor countries. For example, to address seasonal labour shortages, Czech Republic, Poland and Slovakia in 2018-2019 simplified the procedures for foreign workers from selected countries that are not included in the European Union, in particular Ukraine. However, for Ukraine, this path is not yet a priority because it does not belong to the economically developed countries, and therefore is not attractive for foreign migrants.

Now, as in the short term, Ukraine could not provide its citizens with a competitive level of income. Further European integration will continue to facilitate the access of Ukrainians to foreign labor markets, which is for them more attractive. Emigration will be one of the main reasons for the decline of the population of Ukraine. Although to predict international migration is very difficult, the International Monetary Fund (hereinafter IMF) suggests that emigration from Ukraine until 2050 will remain at the level 2016-2019 years [18]. A long-term perspective in the field of migration of Ukrainians will largely depend not only on socio-economic development of Ukraine, but also on the success and speed of solving the problem of an exit from demographic crisis in recipient countries.

For reference: according to Eurostat, in 2016, in the structure of the population of the European Union, children under 14 years of age accounted for less than 16%, and people over 65 years of age accounted for more than 19%. In Germany, this ratio was 13% to 21%, resulting in an average German age of almost 46 years [19].

If this trend is maintained, according to the forecasts of demographers, by 2050 the age of 37% of Europeans will be “60+”, and the average age will be even closer to 50. This will mean a decrease not only in the absolute population, but also in its able-bodied and reproductive population. Considering this, states should already today compete not only for sales markets and natural resources, but also for demographic resources.

In the context of the demographic crisis, the likelihood that recipient countries will develop long-term strategies to stimulate immigration is increasing. Therefore, in the long run, developing countries (including Ukraine) can become a resource of the working-age population for developed countries in which the nation is aging.

Unfavorable demographic trends encourage developed countries with a significant number of elderly people in the population structure

(“elderly and wealthy” countries) to an economic and demographic union with developing countries, which in their population structure have a significant share of young people («young and poor» countries), which will contribute to the development of migration processes in Ukraine. From the point of view of world market processes, the reception of migrants by recipient countries, mainly developed countries, is a kind of compromise that provides some with higher wages, and others with scarce human resources.

Using the scenario method of links, it was found that in the absence of immigration, the population of developed countries aged 20 to 64 years will decrease by 23% (from 741 million people to 571 million people) by 2050 [20]. In turn, demographic changes will reduce the growth rate of real GDP in all countries of Central, Eastern and Southeast Europe (hereinafter – CESEE countries), except Turkey. In terms of per capita, the average annual growth in the CESEE region from 2020 to 2050 will be lower by about 1.2 percentage points, which will lead to an overall decrease in production by 17% [18]. This means that in 2050, GDP will be about 31% lower than if the demographic situation did not deteriorate. At the same time, due to a decrease in labor force and labor productivity, given the rapid increase in the proportion of older workers, Ukraine will receive the biggest blow to GDP (-1.4 percentage points annually).

According to the IMF, Ukraine, which belongs to the CESEE countries, will be faced with the worst workforce reduction in excess of 30% by 2050. The sharp decline in population will lead to drop in the population of working age. It is projected that by 2035, the pace of decline will slow down, because now the most numerous age groups is that of 25 to 34 years. After 2035, the rate of decline will accelerate and will be higher than in Western Europe (according to the forecasts the population of nearly half of the CESEE countries by 2030 will be reduced by 5% by 2050 – 15%) [18].

Ukraine belongs to the category of “young and poor” countries only by the criterion of poverty, but the demographic indicator since 1994 has been negative [2]. This means that Ukraine is not able to compensate for the loss of the working-age population who travels abroad by birth rates. And it turns into problems.

For reference: according to forecasts, the proportion of older workers in Ukraine will increase from 11.8% in 2015 to 21.4% in 2050, and the ratio of people over 65 to people aged 20 to 64 years old – from 24.7% in 2015 up to 46.8% in 2050 [18]. This means that in 2050 the able-

bodied population of Ukraine will have to support more than twice as many older people than now. The tax burden on able-bodied Ukrainians will increase, and, under the pessimistic scenario of the country's socio-economic development, this circumstance will contribute to the strengthening of migration processes.

The most effective method of dealing with a sharp decline in the labor force for Ukraine is the increasing level of engagement of the population in the workforce by raising the retirement age, increasing the involvement of women and men aged 55+, as well as the growth of budget expenditures related to ageing population (pension system and health care).

Some countries (Poland, Greece and others) are trying to return its citizens who left to work in other countries. For example, the Polish government strengthens the relationship of these people with their Homeland and stimulate their communication with the Polish Diaspora.

Taking into account foreign experience, in order to stabilize the overall situation in the Ukrainian economy, Ukraine should return the labor migrants to the country. For this condition, according to experts, Ukraine is able to avoid changes in depopulation associated with the demographic transition. Unfortunately, Ukraine, like many countries in Central and Eastern Europe, is still far from the level of income per capita in Western Europe. There is a risk that these countries will "grow old before you get rich".

Thus, the most realistic prospect for Ukraine is that in the future she will be a donor country, losing its labour and intellectual potential. This trend is extremely dangerous for Ukraine and requires immediate solution of demographic and labor problems and the creation of conditions for return of Ukrainians to their Homeland. According to demographic projections, by 2030 the population of Ukraine will decrease to 41 million, by 2050 - to 35 million, and in the end of the century will consist of scarcely 27 million people. Depopulation can accelerate and its economic consequences will become more severe.

Ukraine faces the task of forming a balanced socio-economic policy that will ensure sustainable and significant growth of indicators of socio-economic development of the country that will favor the return of labour migrants to their Homeland.

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ORTHODOX FAMILY VALUES AND DEMOGRAPHIC PROCESSES IN THE CONTEXT OF THE DEVELOPMENT ECONOMIC SYSTEMS

The demographic situation in the country always remains the main indicator of its development, therefore, the solution of the most important social issues relating to the development of the country, its economic condition and national security depends primarily on the solution of the demographic issue. The development of the economy of any country, the alignment of economic, and after them political forces on a regional and global scale, largely depends on demographic processes. It should be noted that economic factors significantly affect the structure and population.

Ukraine is in the global demographic trend of global aging of the Earth's population and caused by it in a number of countries, both developed and developing

According to the State Statistics Service of Ukraine, as of January 1, 2019, the current population of Ukraine excluding the temporarily occupied territory of Donetsk region, Luhansk region, the Autonomous Republic of Crimea and the city of Sevastopol was 44,289,400 people (including Donbass – 46,153,000 people). Ukrainians are steadily declining, the birth rate in 2017 was 10.3 ‰ (18th place in the world),

mortality – 14.4 ‰ (5th place in the world), natural increase – -0.41% (220th place in world).

Low birth rate leads to an increase in the share of the elderly population and a decrease in the share of the working population, and as a consequence to an increase in the share of unemployed (dependents) to the share of employed in the world [4; p. 249–253].

The decline in birth rates that we see in modern Europe is largely determined by the influence of the value factor [5; p. 261–292].

The theory of the second demographic transition [10; 48] dominating today in demography is based on the thesis that the current decline in the birth rate (second demographic transition), especially in Western countries, is based on a value shift – from material values to postmaterial values (values of self-realization). In addition to a general indication of a value shift, researchers analyze the specific processes that caused this shift. The secularization process is recognized as a key process (or at least one of the key ones) [3; p. 137]

Ideological changes are connected, among other things, with institutional changes. Various factors and institutions are explicitly or implicitly the conductors of certain ideas and values. Research shows that the economy and education (especially higher education) now tend to support the values of "self-realization" (in the case of the economy, this is especially associated with changes in the emancipation of women, their entry into the labor market, etc.). Medicine seems to cultivate the value of "responsibility" and an idea of the complexity of having several children. Both values work to reduce the birth rate. There are only two institutions that have a positive effect on the birth rate today: the family and religion.

In this context, it is interesting to investigate the influence of the Orthodox Church on the Ukrainian family, because family and religion are in a long relationship.

The level of religiosity in Ukraine remains quite high – the number of those who profess to be believers is 66% [9; p. 4].

In different studies, religiosity is understood as belonging to a particular denomination, self-determination as a believer and the implementation of faith in practice ("practicing believers").

The institutionalized religious segment includes, as the most numerous, the following churches: PCU (13.2%), UOC-MP (10.6%), UGCC (9.5%)

Among those who attend religious services, meetings, services, most often (at least once a month) it is done by the faithful of the UGCC

(71%), while among the faithful of the PCU – 45%, UOC (MP) – 44%, UOC- CP – 42% [Ibid: p. 14-15].

Marriage, family, family relations are not only the reflection of the current social relations, but also the reflection of the many problems that are inherent in the modern state, society, working collectives, individuals and, to some extent, in the family institution. It is clear that the state and its structures, local authorities, non-govermental organizations and society as self-regulator of its relations in many cases can not cope with modern challenges in the family area, and can not fulfill the tasks connected with creating conditions of the strengthening of the family as the primary and fundamental society's unit, strengthening of a sense of duty to parents, children and other family members; building family relations on an equal footing, mutual love and respect, mutual help and support; ensuring every child with family care, the right of spiritual and physical development [2; p. 1, 3]. The percentage of marriages and families that break up and the number of single-parent families remains high; the number of orphans and children deprived of parental care does not decrease; the phenomenon of the children's adoption by foreigners is still a disgrace to society, etc.

In these circumstances the Ukrainian Orthodox Church, referring to its age, experience and traditions, wants to establish a sacred-religious influence on the modern family, thinking this approach means family's relations recovery, it warrants overcoming negative processes in the society and guarantee religious priorities' recovery in society. The motivation for such Orthodox churches' statements based on at least three points:

- secular structures fail to cope with the problems in the family sphere. Moreover, it happens, while previous (mostly secular) laws, regulations, rules and traditions of the Soviet period are depreciating;
- Orthodox Church has the age-old traditions and experience of impacting on the family sphere.

These provisions, as evidenced by modern church documents on this issue, largely determine the position of the current Orthodox Churches of Ukraine in the implementation of Christian values in the formation and strengthening of the family, raising children, caring for elderly parents and others.

The paramount importance of the family in society, its fundamental importance for all social structures – whether church or secular state – is evidenced by the fact that in the basic, conceptual documents of these institutions of marriage, family, family relations is given one of the main

places. “The family, as the home church”, according to the Fundamentals of the Social Concept of the Ukrainian Orthodox Church, is the only organism whose members live and build their relationships on the basis of the law of love.

Thus, the family is the primary and vital structure for many public institutions, regardless of their political, social, philosophical, moral, economic or some other contexts for a variety of reasons. The role of the family in society is important because of its uniqueness and incomparableness with other social institutions. The family can be considered as a primary form of human group life, because the ability to live in society is formed there. All other social groups can be considered as “inventions” of culture, their place of existence is social life; the family’s one is, first of all, in privacy. A family forms and develops the personality, it helps to master the social roles, which are necessary for the child’s adaptation in a society. A family serves as the first educational institution, a person feels the link between his/her and it throughout the life. A family forms the child’s attitude to the world, there he/she gets the first lessons of morality and experience of relations with society. The state totally depends on the family, since the family is considered to be the smallest social unit of society.

Nowadays the modern institution of the family is in crisis. The evidence of this is the fact that the number of divorces is increasing; birth rate, despite the measures taken, is reducing; the number of mothers who are unmarried is increasing; the number of single-parent families is increasing; the facts of homeless children, orphans, children deprived of parental care, children who do not study in school, are becoming more often; the number of children that get involved into thefts, crime, drug intoxication etc is getting more.

Realizing the extreme importance of the family and marriage and relations between the sexes for society, the Ukrainian Orthodox Church consider their competence and their duty to help to overcome the negative effects and processes in the family sphere. Scholars are interested in family and, especially, in woman because she is the keeper of the hearth, spreader of Orthodox values and reproductor of the Orthodox faith in the new generations. Hence, there is the course for the development of detailed system of rules and orthodox morality, which has strong connection with matrimonial Code regulating the place of women in family and society, marriage and sex; rules that form people’s views on childbirth, encourage them to have many more of children.

In one of speeches, Metropolitan Epiphanius said: “We, the

Churches and religious organizations, testify and call on the Ukrainian state to create a program in the future until 2025, which will clearly outline the role of the family, the role of the family in our Ukrainian society the family is the basis of the security of our Ukrainian state" [6].

The family and the woman, as the guardian of the family hearth, are of interest to theologians and as a channel for the formation of Christian, in particular Orthodox, values, as a means of reproducing the Orthodox orientation in new generations. Hence – the course to develop and detail the system of norms of Orthodox morality, which is directly related to the marriage and family code, regulates the place of women in the family and society, as well as marital and sexual relations; norms that shape people's views on childbearing, having many children, etc. Just like in the past, the Orthodox Church as an institution of the massive and ideologically dominant religion wants not just to occupy a niche of force that has influence on family, but it also seeks for an opportunity to take control of the Orthodox family, family relations, directing the education of children according to Orthodox doctrine. The crisis of the family, which is being discussed in mass media, the Orthodox clergy considers to be caused by the fact that not every family is a union of the faithful, not every Christian family is the "Home Church". Patriarch Filaret in one of his speeches said: "The main task of the European community in the third millennium should be a revival of the Christian family. Only a Christian family can overcome the evils of modern society, including demographic crisis. The family can be the basis of spiritual healing. In order to create a normal family we must not only worry about creating the material conditions for families, but also for giving an education to children based on Christian morals and prepare them for family life" [7; p. 17].

Among the main problems that led this institute to disruption and degradation, most researchers – not only religious but also secular – noted that there was process of depreciation until the disappearance of traditional family values happened, which were the main basis for the existence of family relations.

The notion "family values" in a secular sense has a very wide rage of meanings, so we should specify what the most of us mean using that. Family values are based on the principles of mutual relations between the spouses as well as on relations between parents and children, love, caring, understanding, patience, faithfulness, sacrifice, respect, compassion, mutual support, honesty, sincerity, trust and many others. They are not just important, but are fundamental and form the basis of

well-being of the family.

Researcher L. I. Savinov believes that the ancestral family values include:

- a complex spectrum of relations between man and woman, whose highest value is love;

- childbirth – value, in which achievements are manifested not only by biological instinct, but also by important spiritual and social skills;

- different value orientations, with help of which family members have the opportunity to join the world of humanity. This is facilitated by the role of wife, husband, father, mother, son, daughter, etc. [8; p. 26].

In the modern world Orthodox values attract more and more attention and take a prominent place; there is a solid interest to native culture and spirituality. Since we talk about Christian values, that are spiritual in their nature, we should recall some of the content that dogmatic and practical experience of the Orthodox Church put into it.

The Church sees marriage not only in the foundation of the society's family unit and as the image of the union of Christ and the Church. In his teaching apostle Paul calls the family "little church" and likens marriage union of Christ and the Church. For an Orthodox family has always been the foundation of his/her life, moral and economic activity. If a person has no family, he/she was considered to be punished by the God. Having a family and children was as necessary and natural as working. Large families was respected, childlessness was seen as an anomaly and punishment of God.

The holiness and purity of premarital relations have traditionally played an important role for creating a happy and harmonious life. Birth and upbringing of children is an important part of the life of the spouses.

The sacrament of marriage was established for the sanctification of family life and the Church's blessing of the conjugal union. It happens during the wedding ceremony.

If there are seven sacraments in Catholicism and Orthodoxy, the Protestant faith left only two sacraments of chistening and communion. However, the effect of these rites was deprived of special magical powers. The Lutheran faith generally considers marriage to be the usual ritual action.

Marriage is one of the Christian sacraments. According to (Gen. 2:18), the purpose of marriage is not only childbirth, but the spiritual and corporal unity, mutual complement and mutual assistance. The commandment "Be fruitful and multiply" refers to man and other living creatures (Gen. 1: 22.28), but only a human commanded to make "one

flesh" in love (Genesis 2:24.). Childbearing and upbringing are the main purposes of marriage.

Orthodox Church in its history has never tied itelf to certain statements on this issue. But this does not mean that the problem of control over the childbirth is absolutely indifferent to the Orthodox Church. Christian attitude to marriage implies that childbirth is natural and sacred, and is a part of Christian marriage.

A fundamental thing to this issue in all times of Christianity was a denial of birth control. Christianity has always been critical to the usement of contraceptives, and any methods of protection. Abortion of pregnancy on any terms without a serious medical reason is viewed as a mortal sin, so the Church strictly forbids abortion.

In today's world the problem of birth control has entered into a new phase of the invention and spread of contraception. Another factor is the creation in the postwar world new free attitude to sex, called the sexual revolution that destroyed the family. This situation has led to the emergence of differences in opinions within Christianity. For example, the Protestant churches (except for Mormons) consider the conscious family planning within the Christian social ethics to be a vital necessity.

On the contrary, the Roman Catholic Church in special encyclicals of Pius XI (1930) and Paul VI (1968) completely bans all means of contraception. However, the Catholic Church followers almost ignore the ban of the use age of the abortion (at least in most industrialized countries).

Modern economic and demographic challenges, new opportunities provided by social and technological progress require a deeper understanding in the context of the Christian culture of family planning.

Orthodox Church believe that the main reason of the collapse of the family is still in the moral aspect. Because of the loss of spiritual principles, we have a whole series of family and social problems, including the so-called sexual revolution, alcoholism and drug addiction, which is a direct consequence of the lack of normal family, a healthy psychological atmosphere. One of the most important problem of modern families, that do not contribute to their strengthening, is the problem of deliberate abortion of pregnancy, which is also widely spread. Church equates abortion to murder, because it considers the origin of human beings to be the gift of God, so the attempt on the life of the future of the individual considers a violation of the commandment "Thou shalt not kill". Although the Orthodox Church do not banish women who had an abortion, it encourages them to repentance and

emphasises that the human race resumption is one of the purposes of the marriage established by God [1; p. 178].

Processes that take place in the modern world and negatively affect the family, family relations, distorting or devaluing them, cause concern among the Orthodox Church. Particular attention ispaid to the destruction of traditional ties between parents and children, the degradation of the social value of motherhood and fatherhood, orphanhood of children with living parents, sexual immorality and premarital relations.

What does the Orthodox Church offer in this situation?

Metropolitan Epiphanius is the head of the Orthodox Church of Ukraine, Metropolitan of Kyiv and All Ukraine in his speech noted:

"Today we have shown together that the problems that exist in our society, we can solve. To decide together, unanimously declaring that it is family values, namely the protection of children and families – the prerogative not only for our Churches, but for the country as a whole" [6].

Pondering the points of the Orthodox churches on the modern family, family relations in the context of the Christian values, we can not say that no matter how timely Church, particularly the Ukrainian Orthodox church, is trying to participate in activities aimed at strengthening of the Ukrainian modern family, the measures of the church, in our opinion, has not been able to significantly change the situation. In many cases they are the same declarative as many "events", "application", "projects" of secular authorities. The many reasons and the actions are not directed towards total individualization of private life or the traditional isolation of the family. In our view, the weakness of the influence of the Orthodox Church in our country in family, family relationships sphere has a few reasons:

- depreciation and forgetting of national and national-religious traditions of the family sphere;
- the Orthodox Churches' underestimation of modern individual work with families, especially with young families, with children from Orthodox families; briefing down the influence and holding only big events, religious rites and ceremonies;
- the Orthodox clergy's not understanding that old methods of influencing on family, as well as the return of the Church's status quo today may not be effective since not only the conditions changed, but the object and the subject of influence;
- unwillingness of the Orthodox Church clergy to use modern

methods and means, not taking into account the characteristics of the current generation, their psychology, mentality.

In this way belonging to the denomination and self-determination as a believer will not exert a natural influence on improving the demographic situation in modern Ukrainian society.

The decline in demographic growth, the situation with the use of labor will be reflected in the prospects for the economic and social development of the country, at the alignment of economic forces throughout the country.

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PECULIARITIES OF PENSION ASSETS MANAGEMENT OF THE ACCUMULATIVE PENSION INSURANCE SYSTEM IN THE CONDITIONS OF PENSION REFORM

Domestic pension legislation provides for the formation of a three-tier national pension system. The new state pension model should use redistributive and funded pension schemes that will allow retirees to receive pension benefits from a variety of financial sources. Differentiation of pension incomes will increase pension benefits for citizens of retirement age and, accordingly, increase their welfare. The purpose of pension reform in any country, including Ukraine, is that the pension should properly replace a person's former salary so that he or she does not experience a serious deterioration in his or her financial situation after retirement.

It is the need for the simultaneous functioning of all three levels of the Ukrainian pension system that will contribute to its consistent formation as a holistic mechanism and will make it possible to use solidarity and accumulative pension programs, bring financial relations between the main subjects of the pension system to a new level. Effective management of pension processes should play an important role in the successful implementation of this issue.

As part of the pension reform in Ukraine, an important systemic measure is the introduction of compulsory funded pension insurance,

which forms the second level of the national pension system. According to some financiers, funded pension systems could become a “driver of the economy” [9].

The accumulative level of pension provision of the second and third levels of the national pension system will make it possible to diversify the sources of income when reaching retirement age, to further weaken the impact of the demographic factor on the state of the solidarity pension system. In addition, the practical use of the mandatory funded pension system will form an integrated national pension system, consisting of three levels, which are defined by domestic pension legislation [3].

The use of the 2nd and 3rd levels of the domestic pension system will help solve long-term demographic problems, as well as improve the adequacy of pension benefits for citizens of retirement age. This can be achieved if it is optimally built, effectively managed and properly regulated, especially by the state in the field of pension legislation. The funded pension insurance system has a wide range of construction options, including active or passive investment strategies, established investment and asset management company (AMC) options, and various options for the pension payment phase.

Employees of leading research institutions of Ukraine, Ukrainian and foreign experts and specialists in the field of pensions have devoted their scientific works and developments to the issue of reforming the domestic pension system. Among them are scientists from M. V. Ptukha Institute for Demography and Social Studies of the National Academy of Sciences of Ukraine [10], employees and experts of the Razumkov Center [11], V. Hrushko, Y. Skulysh [1], L. Tkachenko, M. Svenchintski, I. Chapko [12], who covered the problematic issues of formation and development of national pension system in terms of pension reform, especially the use of funded pension insurance.

Important guidelines for our country are international approaches in the field of pension policy, the main ideologues of which are reputable international organizations such as the ILO, the OECD, the World Bank [13; 14: 15]. Their importance is due to general global challenges, similar problems of economies and societies, as well as Ukraine’s interest in strengthening its international status. Analysis of research shows that the IMF, together with the World Bank and other international financial organizations, are actively involved in developing many programs, projects for Ukraine in the field of reforming its pension system, taking into account international approaches and

adapting them to Ukrainian conditions. International experts note that there is no single recipe for reforming national pension systems that would satisfy everyone. Therefore, it is necessary to take into account the specifics of each country and choose the option that would be optimal. In this regard, the complexity and diversity of issues related to pensions, the peculiarities of the management of pension assets of funded pension programs necessitates their further study.

Previous studies of the use of funded pension insurance in the domestic pension system have shown that funded pension schemes used in the private pension system are vulnerable to uncertainty in the financial and labor markets. They are very sensitive to the manifestation of such financial risks as: actuarial and investment. Assessing the weakness of the banking and non-banking financial sectors, and the insufficient level of development of the capital market in our country, they must be taken into account and managed, if possible.

If we analyze the net nominal cumulative investment income of private pension funds, in the period from 2013 to 2018 it was 9.6%. During the same period, the average annual inflation rate reached 19.2%. These data indicate that participants in funded pension programs of NPFs received on average negative net investment income (including costs of services and inflation) of -8.1% per year [16]. Practice shows that increasing the amount and term of payment of insurance premiums is not enough if there is no main component – a positive long-term net investment income, taking into account inflation and administrative costs.

A feature of the accumulative pension insurance system is the long-term nature of pension assets storage of its members. Owners of pension assets will be able to receive them only when they reach retirement age. Prior to this event, they must be stored in specialized financial institutions provided by domestic pension legislation. It is during the entire period of their storage and use that an effective mechanism for managing the pension assets of the funded pension insurance system should be used, which would increase their value and protect against the manifestation of various financial risks.

Management of pension assets involves the choice of investment strategy and the formation of the investment pension portfolio using various financial instruments. When forming an investment portfolio for participants in funded pension programs, it is necessary to take into account the peculiarities of investing pension assets, which include:

first, the long-term investment period and the impossibility of early receipt of pension savings by a participant in the pension program,

except in certain cases. Since the term of management of a particular participant's funds depends on the number of years before his retirement and his planned period of receiving pension benefits, it allows you to plan the length of the investment period;

secondly, the regulation of the process of investing pension assets by the provisions of the investment declaration of the accumulative pension program, which states: the objectives of investing pension assets; the main directions of the investment policy of the financial institution that manages pension assets; criteria for selecting objects for investment; restriction of investment activity with pension assets, taking into account the relevant provisions of the legislation; requirements for the composition and structure of pension assets; requirements for persons managing pension assets; the procedure for exercising control over the investment of pension assets; risks associated with investing in assets defined by law;

thirdly, the dependence of the risk-return ratio of the investment portfolio on the age structure of participants in funded pension programs, because the larger the share of participants who already receive pension benefits and who plan to retire in the coming years, the less risky the investment portfolio of these programs should be.

Foreign experience shows that in the system of accumulative pension insurance, at the second and third levels of national pension systems, an approach to creating several investment portfolios with different levels of risk is often used. Non-state pension funds, which are the main subjects of funded pension programs, in practice offer their participants such options for investment portfolios, depending on the number of years left before retirement. It should be noted that domestic NPFs in the system of private pension provision such an approach is almost not used.

It is typical for NPFs to form a portfolio that includes investment objects with a minimum degree of risk. Therefore, the choice of investment instruments is especially important, using which NPFs will be able to protect the money of the population from inflation and at the same time get a certain increase in capital.

As of 31 December 2019, the predominant areas of investment of pension assets are securities, the income of which is guaranteed by the Cabinet of Ministers of Ukraine (45.9%), deposits in banks (38.5% of invested assets), bonds of enterprises issued by residents of Ukraine (7 , 5%), real estate (2.8%), shares of Ukrainian issuers (1.4%) (Table 4.3) [4]. The purpose of investing pension assets is, first of all, to preserve the pension savings of citizens. The investment strategy of private pension

funds is more conservative than that of other financial institutions.

Table 4.3

Dynamics of the structure of invested pension assets of the private pension system

ASSETS	UNIT	AS OF		SHARE ASSETS, (%)	INCREASE AS OF 31.12.2019 AS OF 31.12.2018 (%)
		31.12. 2018	31.12. 2019		
Cash placed on deposit (deposit) bank accounts	mill uah	985,5	1 210,8	38,5	22,9
Securities whose income is guaranteed by the Cabinet of Ministers of Ukraine	mill.uah	1263,50	1 443,5	45,9	14,2
Bonds of enterprises issued by residents of Ukraine	mill.uah	298,6	236,7	7,5	-20,7
Shares of Ukrainian issuers	mill.uah	43,8	42,7	1,4	-2,5
Real estate	mill.uah	47,3	86,8	2,8	83,5
Bank metals	mill. uah	9,8	5,0	0,2	-49,0
Funds on current account	mill. uah	18,5	4,7	0,1	-74,6
Assets which are not prohibited by the legislation of Ukraine	mill.uah	26,2	26,2	0,8	0,0
Receivables	mill.uah	48,3	72,3	2,3	49,7
Shares of foreign issuers	mill.uah	3,7	3,0	0,1	-18,9
Securities whose income is guaranteed by the Council of Ministers of the Autonomous Republic of Crimea, local councils in accordance with the law	mill. uah	0,0	11,6	0,4	-
Total asset value	**mill.uah**	**2 745,2**	**3 143,3**	**100,0**	**14,5**

Source: [4; 7]

Therefore, as of 31 December 2019, there was an increase in investments in real estate (by 83.5%), in cash placed on deposit (deposit) bank accounts (by 22.9%) and in securities, income on which is guaranteed by the Cabinet of Ministers of Ukraine (by 14.2%), also in securities guaranteed by the Council of Ministers of the Autonomous Republic of Crimea and local councils in accordance with the legislation, which amounted to 0.4% (UAH 11.6 million) of total asset value.

At the same time, the volume of assets invested in bank metals (by 49.0%), bonds (by 20.7%) and shares (by 2.5%) of Ukrainian issuers and shares of foreign issuers (by 18.9%) decreased significantly.) [7].

In the domestic practice of NPF activity, the only criterion on the basis of which a fund participant is offered to choose one or another investment portfolio is the number of years before his retirement. In our opinion, when choosing an investment portfolio, it is necessary to take into account not only the age of the participant of the funded pension program, but also his risk tolerance and the probability of early retirement.

It should be noted that one of the main issues in the introduction of the second level of the Ukrainian pension system is the choice of the optimal model for investing pension assets of funded pension programs at the initial stage of its implementation. Some domestic financiers, using the experience of many countries where the second level operates, believe that its members can immediately choose models with a high degree of risk of investing pension assets, which will allow to accumulate a fairly high investment income on such a pension portfolio. Given the state of development of the stock market in Ukraine, insufficient legal framework for its effective functioning, as well as insufficient level of financial literacy of the population, lack of experience in using pension assets, these types of pension portfolios at the initial stage of the second level are associated with high risks and probabilities of their manifestation. This can lead to losses from investing pension assets and even greater public distrust of funded pension schemes.

According to Nicholas Barr, a professor at London School of Economics (LSE), the model of broad investment choice and competition is not optimal for individual retirement savings for the following reasons:

- the choice is associated with a high level of administrative costs;
- consumers make poor choices due to: (a) incompleteness (asymmetry) of information; (b) “selective rationality” and (c) “selective willpower” to make one’s own decisions [5].

The experience of mandatory funded pension schemes in many countries shows that in the initial stages of the development of a mandatory funded pension system, the investment portfolio will be based on bank deposits, certificates of deposit and government bonds. The basis for the emergence of sound private financial assets is sustainable real economic growth, competitive markets, effective corporate governance and effective regulation. In view of this, it is necessary to ensure the proper functioning of capital markets already in the initial stages of reform [17].

Thus, research conducted, as well as the results of a survey of

citizens show that in Ukraine most people are unwilling or unable to make informed decisions about investment strategies [2].

In addition, they do not have enough knowledge of the functioning of the stock market, the possibility of using various financial instruments in it, do not know the characteristics of the main investment products that can be used at the second level. In view of the reluctance of most people to make such a choice, public pension policy makers should offer a carefully designed Tier 2 savings system that is simple, inexpensive, and has limited choice.

Implementing proposals on legislative support for the introduction of the second level of the national pension system in the Verkhovna Rada of Ukraine in December 2019, a bill "On mandatory funded pension provision" was introduced. It offers members of the funded pension system to form pension portfolios, taking into account the requirements set separately for each type [6]. Thus, the pension portfolio of the conservative type can be chosen by participants of the system of any age, while the pension portfolios of the balanced or dynamic type are recommended for persons who at the time of choosing this type of portfolio were not more than 50 years old. That is, according to this legislative document, it is proposed to choose the type of pension portfolio depending on the age of the participant of the mandatory funded pension program. The second level requires the participation of almost all citizens of working age.

It is noteworthy in the proposed legislative document that the procedure for changing the pension portfolio of the Pension Treasury or authorized private pension funds by a participant is established by the National Commission on Securities and Stock Market. This specialized state financial body is given an important role in the management of pension assets and is given sufficient powers to legislate the investment strategy for the use of pension assets at the second level of the national pension system.

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GLOBALIZATION AND INTEGRATION FACTORS IN THE DEVELOPMENT OF THE MIGRATION POLICY OF UKRAINE

Modern migration policy is a complex and multidimensional phenomenon, and its development prospects can only be interpreted in the context of society's integration processes. In turn, integration processes have their own system of dimensions. In the general theoretical context, the "integration" concept means a process that leads to a state of coherence of the individual parts and functions of the system into a single whole, as well as the process of inclusion of a separate element into the system [1, p. 20]. Such a definition makes it possible to distinguish between the concepts of "system integration" (combining its elements into a single whole) and "integration into a system" (inclusion, joining individual entities, that have an individual, group or even systemic nature, to the system). At the same time, the concept of integration is sometimes used to indicate the state of a social system, which is achieved as a result of rapprochement, the consolidation of various social elements into a single whole [2, p. 16]. However, in our opinion, one should use the term "integration" for this.

Depending on the direction of the integration processes (inside or outside referred to the system), it is possible to distinguish external and internal integration, i.e. the integration of the system to other systems and integration within the system itself. Speaking of internal integration, the scientists of the Institute of Sociology of the National Academy of Sciences of Ukraine consider it in three contexts: "integration of the society" (systemic), "integration into the society" (socio-economic) and "integration in the society" (as a combination of both first types) (Table 4.4). These forms are closely interconnected, but their distinction is advisable for a more complete articulation of the essence of integration processes. For example, a society may have a low integration of institutions into the system despite high level of social integration (cohesion, solidarity of various social groups). Therefore, it is important to achieve all forms of its integration to maintain the integrity of society,

its full use and development.

Table 4.4

Integration processes through the lens of social sciences

Research approach	Name of process	Definition of integration process	Integration indicators
Systemic	Integration of the society (internal)	Combination of the components of society through the harmonization of various social groups, the assimilation of various cultural elements and the reconciliation of various moral norms	➢ Stability ➢ Non-conflict ➢ Standardization ➢ Orderliness ➢ Balance ➢ Strength ➢ Resilience
Socio-economic	Integration into the society	Involvement of an individual or group subject in all spheres of life as its full-fledged member	➢ Employment ➢ Education ➢ Social inclusion ➢ Civic activism
Combined	Integration in the society	Intra-system processes of strengthening the ties that are carried out by constituent elements with the help of agents	➢ Social solidarity ➢ Trust ➢ Tolerance ➢ Social responsibility

Elaborated by the author on the basis of the source: [2, p. 12]

By areas of manifestation, one can distinguish the following types of integration in society: economic, political, social and cultural. Economic integration is characterized by the establishment and intensifying of bonds between business entities, that is accompanied by the emergence of new integral properties in the system. It is often considered through the prism of inter-regional, which is defined as “the process of rapprochement, interpenetration and merge of the reproductive processes of business entities of two or more regions, that turns them into an integral economic mechanism, into an inter-regional economic system” [3, p.15]. Under the conditions of growing external threats to national security and territorial integrity of Ukraine, the necessity for supporting the economic integration of the regions with its other types also increases. Actually, as a result of inter-regional unity, the unity of

the state is developed. It is both a result and an indicator of the integration of society. As professor S.I. Vovkanych notes, one of the most significant manifestations of nation unity is “the ability of a nation to work and create together, synergistically, to increase well-being” [4, p. 5]. The main features and importance of the integration of society at the end of the XIX century were defined by Ivan Franko, who gave such instructions to future generations: “As long as you live in public order, keep together, stand unshakable, all for one, and one for all, until then no hostile force defeats you” [5, p. 167].

Thus, a high level of integration in society (its unity) can be an intangible factor in the development of the economy, contribute to the activation of population migration within the country and be an alternative to emigration, and at the same time act as an important tool to counter external threats.

It should be noted that migration processes and, respectively, migration policy are largely dependent on the external economic integration of the state. It is defined as “the process of rapprochement, interpenetration, merge of national economies and the establishment of an integrated regional (international) economic complex” [6, p. 40]. In turn, international economic integration is heavily tied with globalization processes. The word “global” comes from Latin *globus*, a globe and is defined as “that which covers the territory or population of the entire globe; universal, all-round”. Therefore, “globalization” is a process of giving a global nature to something [7, p. 161]. The term “globalization” is mainly used to refer to the process of increasing the level of interaction, integration, influence and interdependence between nations and countries in various spheres of human life (economic, social, technological, cultural, political and environmental). Globalization reduces the significance of distance and state borders and promotes the formation of a unified environment (economic, political, cultural, etc.).

One of the most complete definition, among the scientific approaches and interpretations of globalization, in our opinion, is the one proposed by B. M. Yuskiv. The author considers globalization as “a qualitative stage of social development, which represent a process of systematic transition of the functioning of society from the predominantly national to transnational level by creating and strengthening transnational interrelations and interaction in it in all spheres of life: political, economic, social, cultural, environmental and etc.” [8, p. 13]. This interpretation can only be supplemented by the definition of the Russian scientist M. O. Mnatsakanyan, who considers

globalization as the establishment and assertion of the integrity, interconnection and interdependence, the integration of the world and its perception by a public consciousness as it should [9, p. 137]. Such a definition contains the basic characteristics and manifestations of globalization: the integrity, interconnection, interdependence and integration of the world.

At first glance, the direct effect of globalization on population migration seems obvious. However, this relationship is ambiguously assessed in the scientific literature. The experts note that such manifestations of globalization contribute to the activation of migration processes [8, p. 167]: the collapse of two political systems, which allowed migration across borders that had previously been closed; instilment of multiculturalism or openness of cultures in many societies; removal and reduction of technical and economic barriers to the movement of large masses of people over considerable distances; opening or growth of openness of many national economies; standardization of products and industrial production at an international scale.

In general, the impact of globalization on population migration is manifested in an increase in the number of migrants and their countries of origin, the intercontinental nature of movements, the emergence of new forms of migration (educational, intellectual, “virtual”, “pending”, etc.). Moreover, scientists point at the complementary nature of the relation between globalization and migration [8, p. 174-176]. On the one hand, globalization stimulates (or restricts) migration flows and contributes to the emergence of new forms of migration, and on the other hand, migration is one of the manifestations of globalization, its stimulator, and in some cases is a stopper. The mechanism of this interaction occurs because of the growth of four structural flows that cross the borders of countries: goods, investments, information, individuals. For example, migration flows involve the movement of remittances between recipient countries and migration donors. In turn, the international trade of goods and certain services, the internationalization of production processes become a cause of migration for those who provide these services and those who consume them [8, p. 175].

The impact of integration processes on the formation and development of migration policy is summarized in Figure 4.1 as a triangle of interaction.

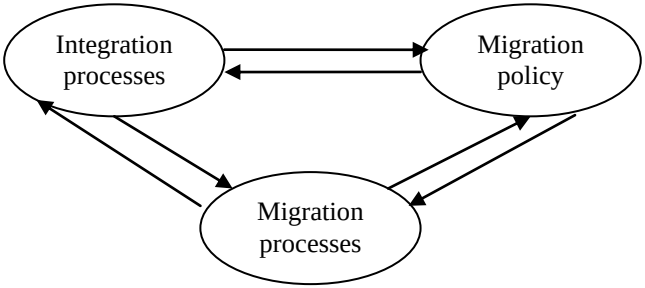

Figure 4.1 Integration triangle of the development of migration policy

Elaborated by the author.

The triangle depicted in the figure can be detailed depending on the type of integration and the nature of migration processes. For example, the processes of European integration have a direct impact on the migration policy of Ukraine through the need to harmonize legislation on regulating the migration sphere with the European standards, the introduction of certain standards for the conduct of migration policy, indicators for assessing its effectiveness, etc. On the other hand, the European integration indirectly determines migration policy, influencing on migration of the population (in particular, in the case of Ukraine, this is an increase in the scale of migration of the working-age population to European countries with the purpose of education and employment). In turn, migration processes contribute to integration one. Migration policy also contributes to the European integration by signing treaties and agreements, carrying out relevant activities and programs. In fact, we are talking about the interconnection and mutual influence of integration, migration and politics.

In general, the following key changes in the migration sphere can be distinguished, that are influenced by globalization and external integration processes: simplification of border crossing procedures and, as a result, an increase in the number of migrants (however, not in direct proportion to goods or other flows), an increase in the number of migrants' countries of origin and strengthening the intercontinental nature of transfers; the emergence of new forms of population migration; the possibility of free choice of place of residence / work / study. In addition, it is important to mention that, in the context of globalization, a new model of migration policy is being created, in

which the state still retains the main functions of migration management, but its nature and conditions are changing. In particular, the range of subjects of migration process management is expanding both at the national and international levels. Thus, there is a gradual shift of the center of migration regulation to the supranational level, where credible international organizations develop certain guidelines, recommendations on the formation of a national policy in the field of migration regulation. In particular, in 2015, the International Organization for Migration introduced the Migration Governance Framework (MiGOF). It contains three main principles [10]: compliance with international standards and enforcement of the migrants' rights; policy making based on real data and using an integrated management approach; attracting partners to solve migration and other problems. These principles are designed to create a friendly environment in which the positive effects of migration are maximized. The concept also provides for the achievement of the following goals [10]: to improve the social and economic prosperity of the migrants and society; to solve effectively the problems of migration risks associated with crises and forced displacement; to ensure orderly, safe and decent migration.

IOM has developed 90 indicators based on six policy components in order to help governments to implement the proposed Concept and assess the effectiveness of migration policies at the national level [11]: the rights of migrants; the complexity of the state approach; partnership; the welfare of migrants; countermeasures to migratory threats; safe, orderly, decent migration. In March 2019, Ukraine approved the Profile of Migration Management Indicators. It is expected that this will improve the capabilities of international comparative research and analysis, contribute to the improvement of strategic planning in the field of migration and increase the effectiveness of migration policy in general.

An important way to promote international cooperation in the field of migration was the signing of the Global Compact for Safe, Orderly and Regular Migration (adopted on December, 19th, 2018 by the Resolution of the UN General Assembly). This document defines 23 goals, the achievement of which will ensure such a migration [12, p. 6]. These goals can be grouped into three imperatives: reducing the negative factors that force people to leave their homes; increased benefits from migration; regulation of migration processes through a better understanding of migration itself, pursuing more effective migration policies and international cooperation. More than 150

countries have acceded to this pact. Ukraine has prepared a joint statement by the Ministry of Foreign Affairs and the State Migration Service, which says about the possibility of our state to accede to this document “at another stage under favorable conditions” [13]. The main argument for this decision is the need to solve the problems of internally displaced persons, which requires significant material resources.

The basis of the migration policy of the EU member states is a set of indirect methods that provide a developed market environment that is attractive for living and personal development. Ukraine, forming a European-Ukrainian migration network, is turning into a donor of cheap labor, losing tremendous human potential. Inefficient use of migration potential only complicates the socio-economic situation of our society. Favorable environmental conditions for targeted immigration to the EU have led to the trend of not only personal, but also corporate migration: this type of migration means moving the units of organizational (commercial or non-commercial) activities from one country to another, in which individual units (branch) may have previously taken part. A notable example of the current corporate migration for Ukraine is the movement of IT business.

The effective migration policy of the European Union forces Ukrainian society to develop its internal environment and adapt to the best European standards. For Ukraine, which seeks to remain a competitive socio-economic entity in the developed European area, it is necessary to improve regulatory approaches to population migration in the following priority areas:

– firstly, in the socioeconomic context – ensuring a synergistic interaction between migration and development [14, p. 16];

– secondly, in a worldview and axiological context – the proliferation of indirect methods of regulating migration in the context of a growing level of the population mobility and the perception of migration as an opportunity to meet needs in better conditions for personal development;

– thirdly, in the context of socio-economic security – the improvement of social protection policies and the creation of conditions for labor and academic mobility with the mutual recognition of diplomas, employment experience, and mobility of pension benefits.

Thus, the European integration for Ukraine is both challenges, new opportunities, a necessity and a benchmark for improving migration policy. In general, integration processes, affecting population migration, pose new challenges to migration policy. At the same time, the need to

promote integration processes and achieve the state of integration of our country (internal and external) also encourages to solve a number of problems.

The European vector of external integration is a reasonable choice for Ukraine. Integration with the EU can be a long-awaited chance of gaining economic and political independence with the formation of an innovation-oriented economy and civil society. At the moment migration is an indicator of the gap of our country to the standards of the developed economies of the EU countries and the forced response of the population to the impossibility of developing personal labor potential in their native country. Therefore, the development of migration policy in Ukraine should be constantly aligned with European practices. It should be based on a system of indirect managerial tools focused on the social protection of migrants, supporting circulating migrations and counteracting excessive migration losses, balancing the needs of regional economies for labor supply.

To increase the internal integration of the Ukrainian society, it is necessary to intensify transregional cooperation and internal migration of the population, coordinate the activities of all authorities, restore law and order, trust in the main social institutions, instill a sense of national consciousness, social solidarity and responsibility among the young generation, etc.

An important direction of migration policy is to ensure the successful integration of external migrants, internally displaced persons and returnees into society, that accepts them. For this, first of all, it is necessary to provide them with equal rights and opportunities in comparison with the local population, to facilitate their employment, language learning, etc.

The implementation of migration policy objectives, which emerge in the context of Ukraine's integration processes, requires close interaction of migration policy with other important areas of state policy, as well as the development of its conceptual framework. Therefore, the development of recommendations for improving the current Strategy of the state migration policy of Ukraine (Order of the Cabinet of Ministers of Ukraine by June, 12th, 2017) and the creation of the State Program for the implementation of migration policy is a prospect for further research on this issue.

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Chapter 5

MARKETING ENSURE FOR DEVELOPMENT OF THE ECONOMIC SYSTEMS

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BRAIN FOOD AS AN INNOVATIVE WAY OF IMPROVING THE QUALITY OF RESTAURANT SERVICES

Relevance of research topic. Increased competition in the hotel and restaurant sector determines the need to search for new innovative products and services that meet the needs of modern consumers and ecological requirements to the quality of food and environment, promotion of healthy lifestyles, as well as aimed at preserving healthy lifestyle, prolonging active longevity.

A popular trend of restaurant and gastronomic innovation is BRAIN FOOD. It is an intelligent menu aimed at improving brain function, stimulating mental activity, and meeting nutritional needs, especially during high intellectual stress: conferences, symposia, meetings, important business and political meetings, etc. [1; 2; 3; 4].

Brain ecology has already been mastered in hotel and restaurant businesses and catering projects of any class, including the Hilton Hotel and Resort, Redisson Hotel and Resort, and others. Specialized BRAIN FOOD menus are also proposed by catering and food delivery services.

Numerous scientific studies in the fields of medicine, physiology, and nutrition (D. Perlmutter, L. Mosconi, L. Capreliants, K. Melega, H. Hryban) indicate that special nutrition for the brain not only prevents XXI century diseases (Alzheimer's disease, dementia) but also provides

for productive daily brain activity for many years [2; 4; 5].

Nutritionists suggest that forming a daily diet based on the principles of BRAIN FOOD accelerates the thinking process, improves memory, and enhances attention and creativity. Therefore, the specialized menu BRAIN FOOD is designed to take into account the physiological features of human brain functioning.

Human brain requires more than 45 high-quality nutrients, and the methods of absorption of these substances are as diverse as the molecules, cells, and tissues they help to create. If, on average, a person's body consists of a large proportion of water (60%), as well as proteins (20%), fats (15%), and carbohydrates (2%), and the rest is vitamins and minerals, this ratio changes significantly in the brain. Water content in the brain is much higher (80% of the total mass), fats occupy the second largest share (11%), 8% of the mass are proteins, 3% are minerals and vitamins, and the rest are carbohydrates [4].

Another proof of the special status of the brain in the body is the presence of the so-called "blood-brain barrier", i.e. a layer of tightly interconnected cells whose functional orientation is the differentiated permeability and protection of brain neurons from potentially harmful substances that can circulate in the blood. It is a system of blood vessels and connective tissues that transmits only useful and safe substances for brain structures [6].

Thus, the cellular structure of the brain, its biochemical composition and effective intellectual and creative activity, all require balanced quality nutrition.

Formulation of the problem. The cellular structure of the brain, its biochemical composition and effective intellectual and creative activity, all require balanced quality nutrition. The development of food technology according to the relevant principles and the compilation of BRAIN FOOD menus is a relevant scientific and practical problem.

Analysis of recent researches and publications.The scientific and practical problems of special nutrition for preserving the intellectual potential and stimulating thinking processes are a separate area in dietetics.

Particularly, "Great brain", the study of the American neurologist David Perlmutter, described the features of the negative impact of certain carbohydrate products (cereals, sugar) on brain activity. It has been stated that they cause depressed brain condition, migraines, and increased excitability and anxiety. The author proposes a specialized menu that includes whole grains, fatty fish, and selected vegetables and

fruits, which contributes to the increase of cognitive reserves and health of brain cells.

A thorough study of the problems of healthy nutrition for complete brain activity and prevention of brain diseases is presented in the works of L. Mosconi. According to L. Mosconi [4], the nutritional needs of the brain are significantly different from that of other organs. First of all, the "orchestra" of our central nervous system, the "conductor" of which is the brain, consists of approximately one hundred billion neurons. Neurons are unique cells of our body, because they are able to send signals to other cells, regardless of the distance between them. It is the variety of shapes and sizes of neurons that allows them to do this. Brain cells or neurons are characterized by the fact that they are irreplaceable. If the rest of the cells in the body are constantly changing, then although the neurons grow throughout life, their major part remains in the body constantly, which makes them especially vulnerable to "wear", i.e. the aging process. This means that one needs to pay special attention to the health of brain cells.

In Ukrainian nutrition and dietetics, some issues of healthy nutrition for the brain that supports intellectual activity were studied by L. Kaprelyants, H. Hryban, L. Yatsun, G. Simakhina, N. Naumenko, T. Melega, and others. Scientists have developed specific recommendations regarding the use of products to overcome fatigue, increase concentration, etc.

Presenting main material. Basic principles and ingredients of BRAIN FOOD menu.

The first principle is sufficient water. It has been shown that reducing the water level by only 3-4% affects the water balance of the brain, causing a number of problems: fatigue, dimming of consciousness, lowered energy level, headache, mood changes, and brain reduction that occurs during aging and dementia. MRI images showed that some parts of the brain appear thinner and smaller in dehydrated state, which is a problem. However, the effects of dehydration can be completely overcome in a few days by drinking enough water. British researchers tested the potential effects of water on cognitive processes and mood. They asked several people to take a series of tests after they had eaten a cereal bar. Some participants only ate bars. The rest also drank water. Those who drank nearly three cups of water before the test showed a significantly faster response than those who only ate bars [7].

In this case, replacing water with beverages containing sugar and its

substitutes, preservatives, and dyes promotes dehydration and contains extra calories. Note that consuming liquid in the form of black tea or coffee is also actively dehydrating our body, so such water consumption is not effective, although many people are sensitive to the stimulating effect of caffeine. In addition, drinking green tea is much more beneficial, as it contains twice as many antioxidants that effectively fight aging. Green tea also has many special flavonoids called EGCG (epigallocatechin gallate) that protect the vessels in the brain from the accumulation of fatty plaques [4].

Longevity and brain and body health are highly dependent on the consumption of hard water. This term refers to ordinary water that contains many minerals, such as calcium and magnesium. Hard water maintains a much better water balance during sports activities than sports and energy drinks. For the most part, these drinks contain a lot of sugar and sodium, as well as synthetic minerals and salts, so they are not beneficial to the body [3].

BRAIN FOOD menu should also include coconut water, which is a natural thirst quencher, because it contains little sugar and plenty of potassium. Mostly, coconut water contains up to 300 mg of potassium and only 5 mg of natural sugar per glass.

A useful recipe for making hard water is the inclusion of aloe vera juice, which has antibacterial, antiviral, and antifungal properties. This juice contains 99% water and more than two hundred active components: from vitamins and minerals to amino acids, enzymes, and even fatty acids. The use of aloe vera juice is a great way to calm and saturate the body, reduce inflammation, and prepare the brain for action from the inside [4].

An important principle of BRAIN FOOD menu is the use of fluid-rich fruits and vegetables that help maintain water balance and provide nutrients, not to mention the natural sugar that the body uses for its benefit. Table 5.1 lists the fruits and vegetables that contain most water. Among the champions are cucumber and lettuce, which are composed of 96% water. Next are zucchini, radishes, and celery, followed by tomatoes, eggplants, broccoli, bell peppers, and spinach. Among all berries and fruits, watermelon contains the most water (93%); followed by strawberries, grapefruit, and cantaloupe (melon subspecies). In comparison, 74% of banana seems relatively small (Table 5.1) [4].

The second principle of BRAIN FOOD menu is products containing unsaturated fats: monounsaturated and polyunsaturated

acids, which are necessary to nourish the brain and maintain its structural health.

Table 5.1

The five fruits / berries and vegetables that contain the most water

Fruits / berries	Water content, %	Vegetables	Water content, %
Watermelon	93	Cucumber	96
Strawberry	92	Salad	96
Grapefruit	91	Zucchini	95
Cantaloupe	90	Radish	95
Peach	88	Celery	95

Monounsaturated fats are abundant in oils such as olive, in some nuts and seeds, in fatty fruits such as avocados, as well as in whole milk, wheat, and oats [2].

PUFAs are fatty acids that are most commonly found in the membranes of brain cells. The brain is arranged to collect these fats through a special gate in the blood-brain barrier. Therefore, a lot of PUFAs constantly circulate in the middle of the brain, provided that the person consumes them. These fatty acids are so necessary that once they enter the brain, it uses them immediately [4].

Polyunsaturated fats (polyunsaturated fatty acids or PUFAs) can be found mainly in vegetable oils and seafood, especially in oily fish such as salmon, mackerel, and cod, in seaweed, as well as in some nuts and seeds. Omega-3s and omega-6s are also found in fish and eggs. The need for these nutrients can be satiated by using fish oil capsules or specially saturated omega-3 flakes (Table 5.2). Special studies have found that the ratio of 2:1 (omega-6 to omega-3) is perfect. Currently, adult men are advised to consume 1.6 grams of omega-3 and 14–17 grams of omega-6 per day, and women are recommended 1.1 grams of omega-3 and 11-12 grams of omega-6 [4].

Thus, BRAIN FOOD menu will include dishes containing oil and flax seeds, walnuts, chia seeds, and wheat germ, as well as spirulina. It is also important to include fish dishes of salmon, mackerel, and cod. But the richest source of these acids is caviar. It contains three times more docosahexaenoic acid (DHA) than the highest quality salmon. In addition, caviar is a great source of choline that helps to improve memory. Black caviar contains the most of DHA required for the structure of the brain. These are the products that the human brain needs daily.

Table 5.2

Top 10 products with the highest content of omega-3s and omega-6s (in descending order) Omega-3 PUFA (g / 100g product)

Vegetable products	ALA	Animal products	DHA+EPA
Flaxseed oil	52.8	Black caviar	6.8
Flax seeds	22.8	Salmon caviar	6.7
Hemp seeds	12.9	Wild salmon	2.2
Walnuts, dried	8.7	Herring	2.0
Chia seeds	3.9	Mackerel	1.9
Black walnuts	3.3	Sardine	1.7
Soy beans, raw	3.2	Anchovies	1.5
Oat germ	1.4	Canned sardines	1.0
Spirulina	0.8	Trout	0.9
Wheat germ	0.7	Shark	0.8

Omega-6 PUFA (g / 100g product)

Vegetable products	Omega-6	Animal products	Omega-6
Grape seed oil	70	Indian fat	21
Sunflower oil	66	Chicken fat	19
Wheat germ oil	55	Duck fat	12
Corn oil	53	Lard	10
Soybean oil	51	Pork belly	5.2
Sesame oil	41	Bacon	4.5
Walnuts	38	Chicken yolk	3.5
Mayonnaise	37	Chicken	3.1
Peanut butter	32	Frankfurt sausages (beef and pork)	2.3
Salad dressing	23	Avocado	1.6

If one cannot consume fish, e.g. for therapeutic or allergy reasons, or is vegan or vegetarian, there are other ways to increase the omega-3 intake. For example, products containing ALA may be offered. A lot of this acid is found in plant products, especially flax, chia, hemp, and sunflower oils. However, the human brain still has to convert ALA to DHA to meet its needs, and 75% of ALA is lost in the process.

High quality fish oil containing DHA is a good alternative that can be easily purchased as a supplement or ingredient in a variety of products: milk, eggs, and bread. Vegan omega-3 source is seaweed. The advantage of these vegan supplements is that they do not contain any harmful environmental substances that may be present in fish oil.

The third principle of BRAIN FOOD menu is the inclusion of products containing proteins with essential amino acids, such as tryptophan (contained in turkey). They penetrate the brain very quickly thanks to special passages in the blood-brain barrier. Also, vegetable products, such as cocoa (chocolate), wheat, oats, spirulina, sesame, and pumpkin seeds, are some of the richest sources of tryptophan on the planet. Animal products, such as milk, yogurt, and chicken, and fish, such as tuna and salmon, will also help replenish tryptophan stock.

Proteins play an important role in the formation, structure, and regulation of brain cells. Protein amino acids are indispensable in every process that occurs in the body and brain. They support tissue health and hormone production, and launch various chemical reactions. What matters most to the brain is that amino acids act as neurotransmitters (or neuromodulators), the chemical messengers that our brain uses to inform, receive, transmit, and process information. Neurotransmitters are responsible for the way a person thinks, speaks, dreams, and remembers. They trigger impulses that wake a person in the morning, make them fall asleep, concentrate, or even change their minds.

Particular attention should be paid to the inclusion of yoghurts into the BRAIN FOOD menu, as they are a great source of protein with many health benefits, especially for the digestive system. However, these are not sweet, creamy, fruity, yoghurt-like substances whose bright packaging draws attention in supermarkets and during coffee breaks. There are far too many sugar substitutes and dyes in these products, not to mention preservatives. Proper nutrition of the brain requires natural, organic, pure, sour yogurt, preferably with a full range of fats and goat milk (more protein). The characteristic sour taste of yogurt is sweetened with honey, maple syrup or fresh fruit.

The fourth principle of BRAIN FOOD menu is providing the body with carbohydrates. The physiological essence of brain activity is the constant electrical impulses used by neurons to produce neurotransmitters and communicate with each other. This process requires a lot of energy, the source of which is glucose: the first and fastest way to get energy. When we eat foods that are naturally rich in carbohydrates, they eventually break down to glucose. It is, in turn, quickly absorbed into the bloodstream and spread throughout the body to be quickly used for energy through the process of metabolism. Glucose easily overcomes the blood-brain barrier to saturate all those billions of cells that inhabit our brains. Because the work of the brain is

extremely exhausting, there is a round-the-clock, continuous circulation of glucose. Glucose is used almost at the speed of light and simply does not have time to linger in the tissues.

Scientists have found that, on average, the brain burns 32 mmol of glucose per 100 g of brain tissue per minute. In simple language, this means that, in order to stay active and healthy, the brain requires an average of 62 grams of glucose per 24 hours. If at first glance it seems like too much sugar, it is actually less than 250 kilocalories, however, this is not any carbohydrate product, but only those that contain easily digestible glucose.

Among the recommended for BRAIN FOOD menu products rich in glucose, green onions, turnips, dried apricots, kiwi, grapes, and wholegrain bread should be noted (Table 5.3). In the context of brain activity, foods that are quickly converted to sugar and contain little dietary fiber, such as sugary drinks, sweetened fruit juices, pastries, candy, and white flour products, are the most dangerous to consume. Instead, complex carbohydrates contain more dietary fiber. Accordingly, it is more difficult for the body to split them and they do not cause a significant increase in sugar levels. Fiber-rich chickpeas, lentils, black beans, wholegrain bread, fruits (including berries and grapefruit), and vegetables (carrots, pumpkins) are a relevant component of neuro-nutrition with a low glycemic index.

Table 5.3

Top 10 glucose-rich foods (by glucose percentage)

Product	Glucose (g / 100g of product)	Total sugar content	Glucose %
Green onion	1.4	1.6	88
Turnip	1.9	2.5	76
Rutabaga	2.2	3.9	56
Dried apricots	20.3	38.9	52
Kiwi	5.0	10.5	48
Grape	6.6	16.4	40
Onion	1.9	5.0	38
Wholegrain bread	1.4	3.9	36
Red beets	4.0	13	31
Honey	24.6	57.4	30

Human brain cannot function properly without sufficient amount of vitamins and minerals. The following are particularly important:

- group B vitamins (especially B1, B12, B6, and folic acid B9);
- vitamin C (fruits, vegetables, juices);
- vitamin-like substances: B4 choline (milk, boiled eggs, cereal germs, legumes)
- minerals: chromium, potassium, magnesium, zinc, calcium, iron.

Consumption of fresh vegetables, wholegrain products, dried fruits, especially raisins, dried apricots, prunes, nuts, and natural milk products is recommended to ensure a daily rate of nutrition.

Analyzing the healthy brain food pyramid presented in Figure 5.1 shows that it reflects the varieties and portions of foods that should be included in the specialized BRAIN FOOD menu at restaurant establishments to stimulate brain activity and maintain the health of this important organ. In addition to the main product groups, there are useful beverages, fats, and natural sugar substitutes, which are arranged according to how many nutrients they provide to a healthy brain.

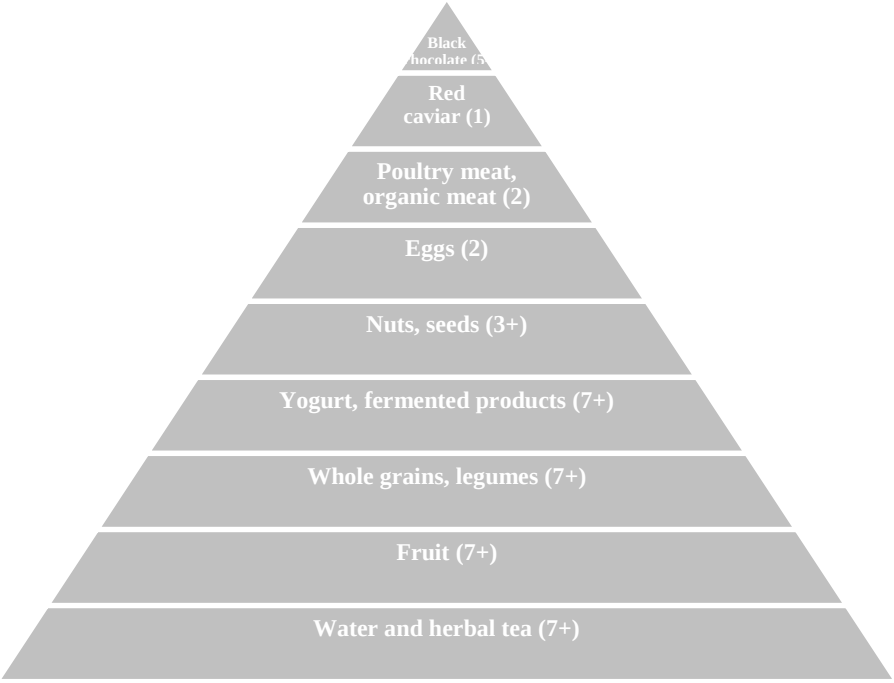

Figure 5.1 The BRAIN FOOD Pyramid (products and number of servings per week)

Source: compiled by the authors based on [4; 8]

The main component of the BRAIN FOOD menu is vegetables (sweet potatoes, carrots, cucumbers, onions, avocados, olives, red beets, etc.). Berries and fruits with a low glycemic index are also appropriate, such as cherries, oranges, grapefruit, apples, and pears. The neuro-nutrition diet should include wholegrain and legume dishes, cereals, and wholegrain bread, as well as organic yogurt and fermented vegetables, for example, sauerkraut and pickled cucumbers. It is mandatory for the brain to consume oily fish such as salmon, mackerel, trout, herring, bluefin tuna, sardines, and anchovies. Extremely useful are caviar (red and black) and shellfish. An important component of BRAIN FOOD menu is unsalted nuts and seeds, through which our brains are saturated with healthy fats and rare vitamins and minerals, preferably almonds, walnuts, chia, flax, and sunflower seeds; the size of the serving should be two teaspoons per day.

The products of animal origin are quite limited in neuronutrition. These are eggs (1-2 per week), organic chicken, and organic hard cheeses, particularly feta. Red meat (beef and pork) is not recommended.

It is best to use herbs and spices instead of salt and combine them with useful oils, e.g. extra-grade unrefined olive oil. Linseed, hemp, coconut, and avocado oil are also good options, the recommended dose is one tablespoon twice a day as dressings and sauces.

Here is a sample of Brain Food menu for restaurants. For example, breakfast options include a cup of coffee or herbal tea, oatmeal with maple syrup and walnuts, Sicilian fried eggs with vegetables, natural yogurt, feta cheese, avocado croutons, fresh fruit, and wholegrain bread.

For coffee breaks the following dishes and snacks can be offered: a cup of coffee or herbal tea, dried avocado, almonds and other nuts, salmon sandwiches, caviar sandwiches, natural juice, natural yogurt, honey, and fresh fruits.

The lunch menu can include minestrone vegetable soup, golden beans soup, brown rice risotto with mushrooms, Mediterranean salad with feta cheese, fresh tuna salad, vegetable omelet, grilled sweet potato, and perch filet with roasted Brussels sprouts. A popular dish in the Brain Food menu is the Buddha Plate, sometimes called the Triumph Plate or the Hippie Plate, which increases the consumption of healthy vegetables, grains, and legumes. To make a Buddha Plate, raw or baked vegetables, legumes (beans and lentils), and whole grains, such as spelt or brown rice are placed on a large dish. There are so many of these products on the plate that it resembles the rounded belly of an Indian deity. Depending on the dishes you choose, there can be a variety of

ingredients on the plate, you can add nuts or seeds of a rich sauce, such as maple dressing. The plate is quite easy to prepare, it is filled with nutrients and vitamins that saturate and protect our brains.

Moderate doses of alcohol should be included in the Brain Food menu, preferably red wine, long appreciated for its ability to protect and activate the brain. As the famous Italian Galileo Galilei said, “Wine is the sunlight that stores the water”. Both white and red wine contain resveratrol, an antioxidant that stimulates cognitive function. The choice of alcohol is a matter of personal taste, however, for men, the recommended dose is 250 ml per day (approximately two glasses), for women it is 150 ml per day (1 glass). It is important to ensure that the wine is of organic origin and high quality.

According to the research of N.V. Naumenko, we present the variants of the diet to improve intellectual activity:

- **to overcome fatigue**: 1 slice of wholegrain bread, 1 slice of cheese, 1 boiled egg, 1 glass of fruit juice or a glass of yogurt;
- **to improve the performance of the brain**: 1 slice of whole grain bread, 100 g of fish, 1 glass of vegetable juice (except tomato);
- **to increase concentration**: 1 slice of whole grain bread with butter, 1 glass of milk, 1 orange, a handful of walnuts (not peanuts, as the latter contains a lot of fats and in many cases causes food poisoning with aflatoxin) [3].

Conclusion. Brain Food nutrition guidelines are useful for those interested in enhancing brain function, improving memory, protecting their cognitive skills, maintaining brain health, slowing down aging, and minimizing the risk of Alzheimer’s disease. These tips are based on scientifically proven facts and key ideas in nutrition, microbiome study, and nutrigenomics, thus they are important for the restaurant business to choose food and its preparation technology for today’s healthy lifestyle consumers. This improves the quality of catering and provides additional competitive advantages for the restaurant establishment.

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DIGITAL MARKETING COMPONENTS OF PROVIDING INFORMATION ABOUT ENERGY SERVICE COMPANIES IN THE CONDITIONS OF GREEN ENERGY DEVELOPMENT

Climate change monitoring has led to a review of approaches in the usage of natural energy resources, conservation of biodiversity, reduction of environmental pollution through the promotion of sustainable development values and the use of green technologies by both the United Nations and the European Commission. The important direction for states is the transformation of energy policy in accordance with the European values of sustainable development, the formation of energy efficiency and energy saving of the economy, the use of renewable energy. In addition, the signing of the Paris Agreement in 2015 and approval of the 17 Goals of Sustainable Development, which

is part of the agenda for development to 2030 UN Summit, outlined new international commitments of States in the context of strengthening the climate policy.

The development of smart specialization in the economy, the establishment of the sustainable development principles provides the transformation of the marketing activities of the energy service companies towards increasing the role of the intellectual labor and formation of human capital. The pressing issue is the introduction of the innovative marketing technologies to form the brand of such companies as a reliable service provider. In addition, in the context of the business process digitization, the enterprises need to improve the use of the innovative marketing technologies to form the human capital of the energy service company. Accordingly, it is urgent to consider the implementation of the digital marketing technologies into a management system of energy service company, the innovative development and the promotion of the energy service company brand.

Organizational structure of the energy service companies management provides the functions of following departments: Energy Audit and Certification Department, Department of Energy Saving, Project Support Department, Risk Management Department, Construction and Installation Works Department. In Figure 5.2 an organizational management structure that can be applied to the energy service companies is presented.

In general, the competitiveness of an enterprise at the market is determined both by their range, quality and quantity of goods or services, and the degree of updating in the process of production activity on the basis of increasing the share of the intellectual labor, introduction of process automation [1, p. 103]. Instead, the desire of energy service companies to find their “cell” at the energy market, to consolidate it requires the synchronization of their goals with the digital marketing trends. As a consequence, the task of business managers is to implement such innovative digital marketing communication instruments as mobile (social) platforms which provide:

– free and convenient access to the relevant information (content clustering by the target audience categories, SEO promotion);

– pro-activeness of the client (employee) in the development of the company, solving social issues (priority from “storytelling” to “storymaking” by posting the online videos, comments to posts, reviews on the activity of the company, dissemination of recommendations for cooperation with the company on a personal page, groups, blogs);

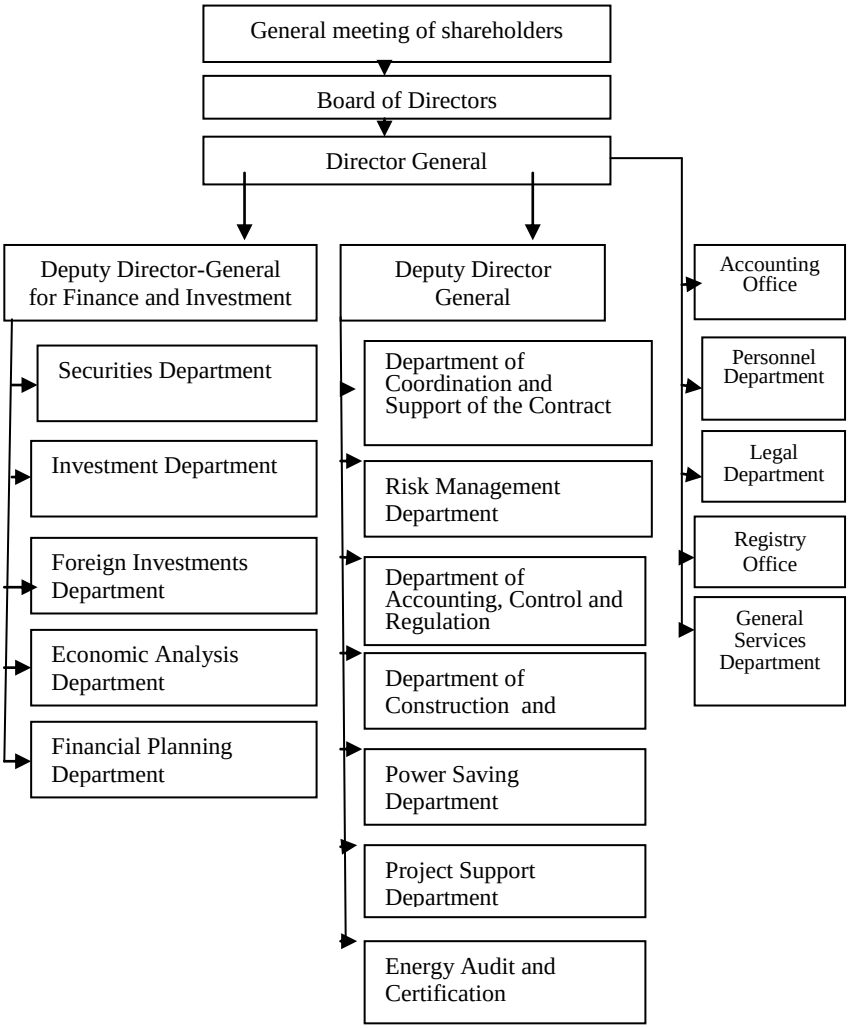

Figure 5.2 Organizational structure of management of energy service company

Source: composed by the authors

– orientation on the relevant target audiences, in particular the generation of Z employees (application of advertising design that harmonizes with the content of the page, chats, copywriting);

– synchronization of the site with the social networks (Facebook,

Instagram, Snapchat, YouTube, Twitter, LinkedIn, etc.), mobile communication channels (Telegram, WhatsApp, Viber, Skype, etc.), electronic document services (Google services: Gmail, Docs, Calendar, Forms, Sheets, Drive).

Digital technologies are a critical enabler for attaining the sustainability goals of the European Green Deal in many different sectors. Digitalisation presents new opportunities for distance monitoring of air and water pollution, or for monitoring and optimising how energy and natural resources are used [3]. As a result, the energy service digitization is considered as an environment for the development of the innovative types of services such as the use of the modernization facilities, placement of telecommunication equipment, various sensors and advertising on the supporting structures of the external lighting and other upgraded facilities [4, p. 52].

This makes to consider the digital marketing today as a technology of formation of the loyalty to the energy service companies brand. To understand the specifics of using such technology in Table 5.4 the components of the digital marketing (technologies, types, methods, instruments, etc.) that will serve as a basis for providing information to clients about the activities of energy service companies.

The definition of the instruments and technologies for the marketing of energy service companies in the virtual environment depends on the level of consideration of the mentality of the target audience. The concept of creating advertising the image should reflect the values of the national mentality, since the external image of the advertisement will reflect the inner world of the man and cause him to desire to materialize. If desired, there is a specific action – the acquisition of the desired thing, which, in turn, will lead to the expansion of the range of potential consumers and attract the new ones [5, p. 172].

In addition, for the introduction of the digital marketing as a technology of the loyalty to the energy service company brand, the management service should combine both paid and free digital marketing instruments. At the same time, the effectiveness of using such marketing technology to promote an enterprise brand in the energy service market depends on a clear understanding of the specifics of building a communication channel algorithm in the virtual environment. This is especially important when looking for the information in a virtual environment. In particular, the algorithm for using the digital marketing communication instrument involves identifying of the following steps in contacting a customer:

Table 5.4

Digital marketing components of energy service companies

Component	Characteristics
Instruments	- mobile technologies (text messaging (SMS); voice automatic menu (IVR); multimedia messaging (MMS); local radio communication between communication means (Bluetooth); wireless data transfer protocol (WAP); make payments or get discounts; QR code is a printed image that allows you to quickly migrate to a virtual environment; Click To, Flash SMS, Location Based Services (LBS) - technologies of convenient loading of software products; - Internet, cloud technologies; - social media (Facebook, Instagram, Twitter, LinkedIn, YouTube); - desktop computers, laptops, tablets; - digital television; - radio; - interactive screens (3D-mapping); - image projection technology on an environmental object (virtual reality); - POS terminals, camcorders (biometric technologies – automated consumer identification technology, based on physiological (fingerprints, face recognition, DNA, iris pattern, palm or ear shape, smell) or behavioral (handwriting or keyboard handwriting, voice, lip movement, gait) characteristics); - LCD exhibition stands with presentations, LED panels; - QR codes; - e-mail (sending to mobile devices of electronic advertising messages in the form of sms, ie combining telephone marketing with mail), etc.
Regimes of instruments use	– on-line; – off-line; – commercial; – free.

Table 5.4 (continued)

Methods of promotion	- Google Adwords contextual advertising, Yandex Direct (selecting specific interests that match the subject matter of the message, and displaying the relevant content) - smart advertising (Big Data technology – large volumes of data); - retargeting - mobile marketing; - Email; – RTB (real time bidding) – SMM (social media marketing) –marketing; – SMO (social media optimization); – search engines optimization); – SEM (search engine marketing); – e-Customer Relationship Management, ECRM); – (Video Search Marketing, VSM), – (Affiliate Marketing, AM); – crowd-marketing; – online video; – pop-up advertising; – native advertising; – Content Marketing involves the communication with the potential customers through the provision of specialized information that is useful to the target audience and is associated in some way with the company's products; – Online Advertising is a marketing instrument that engages the customers across the Internet through a variety of advertising options: display advertising; spam; teaser advertising (creating an informational message with part of an interesting phrase, picture or video); landing page (often a one-page site containing a product or service announcement); – Web-Analytics – a system for measuring and collecting the comprehensive statistics on site activity.
Target audience	– owners of computers, laptops, mobile phones, smartphones, tablets, TVs with Internet access; – owners of mobile phones, smartphones; – users of terminal services; – people who see electronic screens.

Table 5.4 (continued)

Form of advertising	– Content (blog posts, articles, publications, research, eBooks, sales copy, e-newsletters, social media campaigns, SEO); – design (including photos and images for content, infographics, diagrams, photos, videos); – statistics (analytics, key performance metrics, goals and objectives, conversion channels, client LTV).
Technologies of monitoring and relevance	– Google – search for questions and reviews concerning product on sites and forums; – Google Alerts i Talkwalker – notifications for new reviews and questions; – Disqus – tracking of comments about product on blogs; – Kribrum – monitoring social networks and forums;; – Tagboard, LiveTweet, Tweetdeck – monitoring of social network Twitter; – Facebook, Google Plus, Twitter – communication with potential clients; – Google Analytics – analysis of product site conversions and consumer behavior on that site; – CRM (Customer Relationship Management) – a customer relationship management system.
Media indicators of effectiveness	*traditional* (classic) indicators*:* – comprehension – the proportion of the target audience that has been exposed to a promotional message over a period of time; – OTS or Frequency (opportunity to see) – the number of promotional messages transmitted over a period of time; – GRP or gross rating points – a media plan performance metric calculated as a result of multiplying reach by frequency. *the latest (specific) indicators of interactive interaction*: – rollover – moving the cursor over an interactive object; – click – click by a mouse on an interactive object; – transits – moving a user by clicking on another URL; – user-generated content comments, user-generated links; – registration in the CMS-system – th act of providing content editing; – ROI – an estimation of the level of profitability and loss of investment.

Source: composed by the authors based on [6-10]

– placement of content on the appropriate platforms (eg descriptions of services), system of search optimization;

– preliminary contact with the customer: fixing the customer's request for information in the search system, sending a message about the service;

– offer of the most effective variants for meeting the request by applying inbound marketing or pull marketing.

When using the digital marketing in the energy service companies, the specifics of the passive and active partnerships should be taken into account. In particular, the level of development of passive partnerships is characterized by the significant costs of finding information about a potential partner, sending commercial offers and promotional products, and spending time to make the right decision regarding the prospects for further interaction. Instead, at the leves of development of active partnerships the transaction costs for processing information, conducting negotiations, legalizing the required documentation, sending tasting and sample products emerge [2, p. 32]. In this regard, the introduction of the digital marketing in the energy service company should be seen as a platform for integrating passive and active partnerships using the artificial intelligence, such as chatbots, virtual response platforms (3D, 4D design).

In this context, we agree with scholars [6] about the changing role of the enterprise site in the digital marketing system, which allows interacting with the social networks, mobile devices, provide the user traffic and measure visits and actions. There is a transition from the text-to-video, QR-code bindings, infographics, photos, navigation maps, comparative analysis of goods, posting of up-to-date content information about the business and activities [6].

Another digital instrument for the formation of loyalty to an energy service company brand, and especially establishing an effective youth communication channel (Generation Z), is the social networks. The use of such instrument provides the implementation of a personal approach to a potential customer, getting quick feedback. Creating pages and profiles in as many social networks as possible ensures a diverse audience. At the same time, it should be noted that the administrator of the pages in the social networks should adapt the content to the nature of the network and its target audience.

The introduction of European digital experience in implementing measures aimed at reducing energy intensity of the economy, diversification of sources and ways of energy resources supply,

increasing domestic production on the basis of sustainable development is a positive sign for states without a formed energy service market. Considering the above noted, the topical issues are to develop an algorithm for implementing of the digital marketing in the energy service companies by the functional areas of the management, methods of optimizing the use of digital instruments during the marketing activities in the company management system.

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THEORETICAL AND LEGISLATIVE PROBLEMS OF FRANCHISE NETWORKS DEVELOPMENT IN UKRAINE

The solution of many economic problems in the new economy requires the use of alternative organizational and management approaches and mechanisms that meet specific conditions of modern environmental. World practice has shown that the basis of successful development strategies of individual firms, industries, regions and territories is networked organization of modern business is based on the effective interaction of the network.

One form of networking is a franchise that is more than 100 years productively used by foreign companies. The theoretical basis of research franchise were laid in the works of foreign researchers – S. Burley, C. Davis, J. Delteya F. Lafontaine, C. Makkostera, M. Mendelson, D. Stenvorta that detailed specific questions on this subject.

Theoretical and practical aspects of research franchise essence, the history of its study, the principal advantages of form and franchising

system investigated by domestic and foreign economists: G. Androschuk, M. Bedrynets, S. Burley, Y. Bondarenko, A. Vinogradskaya, V. Denysyuk, V. Dovgan, A. Ermolinsky, T. Eroshkina, V. Zabrodin, I. Zaitseva, D. Zemlyakova, T. Kovalchuk, O. Korolchuk, G. Kochetkova, O. Kuzmin, V. Mavrid, A. Mayer, T. Mironchuk, G. Munina, T. Lopushansky, I. Rykova, O. Sablin, I. Salata, S. Silling, Y. Sidorov, S. Sosna, T. Sorokina, S. Spinelli, D. Stenworth and B. Smith, U. Sukhorskaya, M. Pivovarova, Z. Tsamalashvili, A. Tsirat and others.

The works of these authors analyze foreign and domestic experience of franchising, developed classification of its kinds and types, provided advice on building a franchise network, on accounting, taxation, legal and regulatory aspects of their activities [1, p. 115].

With the development of franchising practice in Ukraine, Ukrainian scientists are adapting the theory to a specific domestic reality. Scientific interest in the development of franchise networks in Ukraine due to its ability to wide practical use and rapid spread of franchising in all business areas.

Franchise networks that were established recently in Ukraine may be of different types. However, before considering them, it should be noted that today in the scientific literature there is no unified approach to the interpretation of the concept of “franchise network”. We systematize the basic definitions of franchising and franchising networks in Table 5.5.

The term “franchise” comes from the French word “franchise”, which means “privilege, bonus, exemption from taxes, fees” [2, p. 156].

Definitions and approaches to the interpretation of this concept are numerous. Franchising is considered as a type of license as selling system, a form of contractual relations, a way to promote and market goods, etc. [2, p. 156-159]. Despite the variety of approaches to the definition of this category, one of its most important components is trust, because the franchisor as a business owner, according to stipulated in the contract payment shares his best practices, experiences and achievements with franchisees (buyers, users, developments of existing business), taking into account the benefits and the potential risks of this process. In its turn, the franchisee, opening his own business, which he owns, gets advertised brand (brand name, trademark), commercial business model, unique developments, production technologies, consulting and marketing support, advertising within the strategy of franchisor development [2, p. 160-161].

Table 5.5

Anthology of franchising definitions

Author, year	Definition	Key feature
Singer I.M., 1853	Franchising is a type of business where an organization charges a variety of retailers (franchisees) for giving them the permission to sell products of right-holders and serve final consumers on the defined territory.	Income type of right-holder
Sinkota M., 1975, International Franchising Association	Franchising – a contract where the manufacturer or a single distributor of goods/services protected by a trademark, gives an exclusive right to distribute its products/services to independent entrepreneurs in exchange for receiving from them payments (royalty) under conditions of compliance with the technology of production or other operations.	Type of transfer the owner's rights to distribute products
Busching F., 1988	Franchising – a form of market promotion of goods/services/technologies, which is based on close and long-term cooperation between entity and financial independent parties – franchisor and franchisee	Type of cooperation between entities
Siling S.A., 1997	Franchising – a form of long-term business cooperation in which a large company grants an individual entrepreneur or group of entrepreneurs a license (franchise) to produce products, trade goods or provide services under the trademark of the company in a limited territory for a specified period of time.	Type of long-term business cooperation
Kuzmin O.,Miron-chuk T., 2011	Franchise network – a combination of franchisee businesses controlled by a franchisor [12, p. 8].	Franchise network relations
Association of franchising in Ukraine	Franchise network – a network of locations that use the same franchise, and consists of at least two entities – the franchisor and franchisee, which are at different levels of relationships [12, p. 183-184]	Franchise network relations

Table 5.5 (continued)

Spinelli S., Rozenberg Robery M, Berli S.	Franchising – "a form of organization and business, in which one of the business (the franchisor) develop models of business processes and transfers the right to conduct business in accordance with a model that other entrepreneurs (franchisees) ... in certain areas and certain period of time"	Franchising as a business processes model
Tsirat A., 2002	Franchising – "system of contractual arrangements under which one party – the franchisor under certain conditions grants to the other side – the franchisee the right to use its name (trademark, service mark, trademark, technology, business, etc.) while maintaining full legal and economic independence of the franchisee" [14, p.23]	Franchising as an arrangement between franchisor and franchisee

Source: compiled by the authors

Considering the franchise, it is important to understanding the concept of "franchise", which refers to a set of rights and conditions that buys one or more franchisees in the franchisor for the purpose of running business activities defined by the relevant agreement. Franchise agreement is part of the franchise and provides a number of benefits to franchisees in the organization and promotion of its business under the guidance already known in the market the brand franchisor. It defines the business environment and the use of its trade mark, which will enable future franchisees to confidently take its place on the market or improve existing positions. A prerequisite for this is a full and strict observance of proprietary technologies and methods of business offered by the franchisor, violation of which can significantly affect the reputation of its trade mark and termination of franchise agreement. That franchise agreement provides that:

- franchisee is a separate entity independent of the franchisor under contractual partnerships;
- franchisee's business activities are generally associated with the franchisor's brand (name, advertising, commercial symbols) and are carried out within the franchisor's strategic development;
- both the franchisee and the franchisor have a long-term financial interest in organizing the activities of the franchise outlets [3].

Under the franchise agreement, the franchisee is obliged to pay a one-time (lump sum) payment and regular payments (royalties) for the

entire duration of the franchise. Royalties are periodic payments from a franchisee for the use of intellectual property and operating systems owned by the franchisor. They are calculated as a percentage of gross income or as fixed amounts (rates).

In turn, the lump-sum payment or enrollment – the so-called value of the franchise; fee for use of the brand and business model, amount and order of payment is specified in the franchise agreement. It can be paid immediately after signing the contract, or can be divided into parts that must be paid within a specified period of time. In practice, the lump sum payment of different franchisors may vary significantly, although experts advise to take as a basis an amount that is 10% of the total investment required to start a franchising entity.

It is necessary to distinguish the concept of "franchise value" and the investment required to get started a new franchise point. The latter are all costs required to lease or purchase premises, repair, purchase of equipment, purchase of goods, etc., and include the cost of the franchise [3]. In general, there are several options for controlling such investments. The first assumes that the investment costs go completely available to the franchisor as payment for his retail outlets. In the second case, the amount of investment is a guarantee that the franchisee can receive in the event of going out of business by returning the franchisor to a point of sale with all available equipment. The third option is the disposal cost of investment by the franchisee under the control of the franchisor or without [3].

To better understanding of the nature of franchising, it is necessary to consider its current legislative and regulatory support. By the order of the CMU No. 331 31.05.2012 [4] provided to promote industrial cooperation on a franchise and other forms of use of trademarks entrepreneurs leading companies, including by introducing a mechanism of industrial cooperation between large and small companies. However, the Law of Ukraine "On Franchising" has not been adopted yet. The definition of franchising, as well as legal and economic principles for its implementation prescribed in the Law of Ukraine "On franchising" No. 7430 from 21.12.2017 p. It is interpreted as the franchise "business, for which a contract basis for one party (holder) undertakes to transfer to another party (user) for a fee for a fixed term of three years a set of exclusive rights, use rights (with the obligatory mark "the franchise") trademark, trade name, service, process, and (or) specialized equipment, commercial information protected by law, and other facilities under contract exclusive rights". Parties to the agreement may be business

entities regardless of ownership [5].

Current legislation in the franchise relationship is governed by the Commercial and Civil Code (Section 36 and 76 respectively). The peculiarity is that these regulations instead use the term franchise term commercial concession. “According to Article 366 CCU “under the agreement of commercial concession one party (holder) undertakes to provide the other party (user) for a period or without specifying the right to use the term in the business complex user rights of appropriate holder and the user agrees to the terms of use rights granted to him and pay compensation stipulated by the contract holder”.

If you do not take into account the possibility of undetermined term of the agreement, the essence of the contract is identical: the franchisee (user) from the franchisor (holder) passed a set of legal, commercial experience, reputation, with the right to use intellectual property with or without specifying the territory to use for a particular areas of business activity (article 366, CCU 1116) [6].

If the period of a commercial license is not installed according to article 1126 Civil Code of Ukraine, one party may at any time withdraw from it by notifying the other party not less than six months, unless otherwise agreed by contract [7].

According to Article 367 of the CCU, Article 118 of the CCU, the concession agreement must be concluded in writing as a single document. Otherwise, it may be considered invalid in addition the contract must be registered by the authority which carried out the state registration of the franchisor. In case a holder in a foreign country, such agreement is registered by the body that conducted state registration of the user. However, such registration procedure is not regulated by law, forcing the parties to the contract to seek other ways, for example by replacing complex contracts franchising agreement (service agreement, lease, investment contract, etc.) It must be emphasized that in none of the EU members sign franchise agreements is not mandatory and can be made only at the request of the parties.

In contrast to Ukraine, where legal regulation of franchising activity is insufficient in the EU is governed by a significant number of franchise regulations.

Franchising, the provisions of the franchise of the World Intellectual Property Organization – a “contract in which one person, the franchisor (holder) which has developed a system of business, allows another person – the franchisee – to use the system according to the requirements of the holder of the franchise in exchange for

compensation, and the franchise is treated as a package of industrial and intellectual property rights" [8].

In European countries, focuses on principles of good faith business, which greatly affects the transparency of the economy. In 1990, the so-called "constitution" of franchising was adopted – the European Code of Ethics for Franchising, resulting from the work of the European Franchising Federation, the Commission of the European Community and the franchising associations of Austria, Belgium, the United Kingdom, Denmark, Italy, the Netherlands, Germany, Portugal and France. It is a basic document in regulating franchising relations in each EU country, but it is advisory in nature and has no legal force [9].

The Code defined the concept of "franchise", its basic principles, especially franchising agreements and so on. The Franchising Code of Ethics of Ukraine, developed by the Federation of Franchising of Ukraine as a practical compendium of the most important principles of cooperation between the franchisor and the franchisee, complies with the provisions of the European Code of Ethics and adapted to the requirements of national legislation [10].

Given the importance of information exchange between partners of franchise relations in 2002 an independent intergovernmental organization has developed UNIDROIT Model Law on Disclosure [11]. This contains provisions governing pre-contract relationship (at least 14 days before signing the contract) to provide information about the franchisor (terms of the franchise, existing franchises, litigations, possible bankruptcy, etc.) and protects potential franchisees to sign the agreement which does not comply.

To this issue are devoted some laws and regulations on franchising in number of countries (USA, France, Spain) [12]. Particularly, in the UK, characterized as a country with high levels of franchised institutions is a separate register of accredited franchise companies with which we can conclude franchise agreements and operating its own arbitration rules to resolve disputes franchise that guides when considering such cases [8].

In Ukraine, where the franchise is developing quite actively, it is vital to the Law of Ukraine "On the franchise" and the completion of a number of other regulations that would help solve the key problems faced by participants in the implementation of activities. Among them, experts highlight the following:

- inability conceptual and categorical apparatus with international practice, which creates difficulties in cooperation with foreign partners (differences in terminology franchisor in Ukrainian agreement of

commercial concession – holder, and franchisees – user). Thus the essence of the contract remains the same – the user is given the right to use intellectual property that it gets ready to implement a business idea.

Given the inconsistency of domestic and international terminology, lawyers are advised to use domestic to draw up internal contracts. If used international terminology domestic courts treat such legal relations as relations of commercial concession [6].

- settlement procedures so-called “double registration” (registration mandatory treaty body which carried out the registration of the franchisor and, if the contract relates to the use of the object protected under patent law – registration in the central executive authority in the field of patents and signs for goods and services) (art. 4, part. 2) [5]. State registrars refuse to register the contract of commercial concession, do so only in court because there is no order of their registration, although in practice it is sufficient and lawful conclusion of the written contract.

- regulation of the royalty tax procedure as the primary income of the franchisor.

- to ensure the integrity of domestic counterparts, especially Ukrainian franchisee in contracts with foreign franchisor, during pre-contract relationship by fixing legislatively the institute pre-contract disclosure franchise.

An important fact is that the development of franchising cooperation in Ukraine is much slower than abroad. One of the main reasons is not sufficient understanding of formation and implementation of franchising mechanism.

Thus, the franchisor and the franchisee – key persons of franchise relations, but besides them develop franchise activities provide other participants, including management companies, associations, federations, investors, financial institutions, educational institutions, advising structure [13].

Effective cooperation between the franchisor and franchisee determined by the development of business relations between them, influence the cooperation of internal and external factors, as well as with the parties of their duties and rights. In addition, participants franchising activities must comply with franchise concepts being developed by the owner of the brand, and transmits information to its franchisees to further develop the franchise network.

A major problem for the development of franchising in Ukraine is its regulatory and legal regulation. Due to the lack of the term “franchising”

in the regulatory framework, representatives of business and the scientific community cannot agree on whether a commercial concession can be synonymous with franchising.

Addressing these issues will allow franchise relations in Ukraine to develop much more actively and at a new level.

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Chapter 6

MECHANISMS FOR ENSURING THE SECURITY OF ECONOMIC SYSTEMS IN THE CONDITIONS OF GLOBAL CHALLENGES

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CURRENT PROCESSES OF SOCIO-ECONOMIC CONVERGENCE AND DIVERGENCE UNDER THE COVID-19 PANDEMIC INFLUENCE

The leading role in ensuring effective functioning of international integration associations is played by the processes of socio-economic convergence (divergence) of the participating countries, which involve smoothing (increasing) the gaps between the corresponding parameters of their development. The stable economic growth, competitiveness and sustainability in the modern globalized world is determined by the successful convergence of the socio-economic systems of the states that form the integration union, – of course, the trend is towards higher leading levels of development [1].

A classic example is the European Union, where the convergence mechanism is enshrined in its founding treaties and in fact acts as an *integral structure* for the functioning of the EU Economic and Monetary Union, including the euro area.

Economic convergence has been one of the clear goals of the EU since its inception. The prospect of a higher standard of living mainly attracted prospective EU members and perhaps has been a counteragent to the growing number of euroskeptics. EU countries are expecting stronger political consequences than they planned ahead.

First, investment in physical and human capital improves growth rates both at the national and regional levels.

Secondly, rapprochement on the eve of and during the global financial crisis of 2008-2009 turned out to be unstable, indicating the need to avoid excessive imbalances. The completion of the EU integration process, including the Banking Union and the Capital Markets Union, may help in this regard.

Thirdly, heterogeneous models of regional development suggest the need for regional policies that take into account the particularities of places, depending on the specific situation in each region.

Indeed, optimal policy instruments may vary depending on whether regions are lagging or catching up with them. They may also vary between the capital, metropolitan and non-metropolitan regions. Along with national and regional authorities, the EU could play its role by increasing the effectiveness of the cohesion policy.

The coronavirus pandemic (COVID-19) announced by WHO in March 2020, acting as a catalyst for a new global economic crisis, has become one of the significant factors influencing the dynamics of convergence-divergence processes in the world. The indicated impact of the coronavirus infection pandemic is caused by violation of the main condition for cross-country convergence – providing outsider countries with higher growth rates of real GDP compared with leading countries in the conditions of the global crisis. Moreover, according to the forecasts of international experts, the new global crisis that arose at the beginning of 2020 will be marked by high rates of economic recession, especially in the countries of the European region, and may drag on for several years.

So, according to the IMF forecast estimates provided in April this year using the baseline scenario (assuming that the COVID-19 pandemic will begin to fade in the second half of 2020, and the anti-crisis efforts undertaken by national governments will help to avoid a large-scale reduction in production and employment), this year we should expect a decline in world GDP by 3.0%, and in the next 2021 – restoration of its growth to 5.8%.

In accordance with the IMF's alternative pessimistic scenario (the

peak of the pandemic will not be reached before the end of this year and its spread will continue in 2021), the global economic slowdown in 2020 will double to 6.0% compared to the baseline scenario, and will achieve almost 8% in 2021.

Thus, the COVID-19 pandemic might contribute to the strongest decline in the global production since the Great Depression and much more serious than during the global financial and economic crisis of 2008-2009 [2, pp. 5-9].

It is likely that the IMF forecasts can be revised even more, as published in May this year macroeconomic data showed a rapid decline already in the first quarter of 2020. Due to the strict quarantine measures taken to slow the spread of coronavirus, for the indicated period compared to the first quarter of 2019 (seasonally adjusted), China's real GDP fell by 36.6% , France – 21.3%, Spain – 19.2%, and Italy – 17.5%. IMF experts predict that in the second quarter of 2020, the macroeconomic recession in many countries might even worsen [3].

The significant negative impact of the coronavirus infection pandemic should also be expected for the dynamics of the cross-country convergence processes in the European Union, as well as convergence between the EU and the countries involved in the orbit of its interests, in particular Ukraine. Given the shock effects of the pandemic on production, trade, investment, as well as the most important aspects of formation of the human and social capital (healthcare, social safety net, education, employment, social contacts, social innovation, including digital, etc.), divergence is most likely to deepen significantly according to the most probable scenario, and it can eventually become a stable trend in the social sphere. To support this assumption, we highlight several reasons.

First, as indicated above, the rapidly unfolding new global crisis will contribute to the deepening of socio-economic divergence in the EU. Presenting the spring macro forecast prepared by the European Commission, the European Commissioner for Economics P. Gentiloni said that because of the coronavirus pandemic, the EU entered the deepest recession in its history: in 2020, the economic recession in the EU-27 will reach 7.4%, in the euro area – 7.7%, and the recovery expected in 2021 will not compensate for this decline [4].

According to the forecast estimates of the European Commission, the European Union will face a significant deterioration in the key macroeconomic and macro-financial parameters of its development by the end of 2020 (Table 6.1).

Table 6.1

Dynamics of selected macroeconomic indicators of the EU-27 and Ukraine in 2019 (fact) and 2020-2021 (forecast)

	Unemployment rate, %			***Total investment, volume, % on preceding year***		
	2019	***2020***	***2021***	***2019***	***2020***	***2021***
Belgium	5.4	7.0	6.6	3.1	-15.3	15.9
Germany	3.2	4.0	3.5	2.6	-5.8	5.9
Estonia	4.4	9.2	6.5	13.2	-8.7	6.3
Ireland	5.0	7.4	7.0	94.2	-41.6	16.9
Greece	17.3	19.9	16.8	4.7	-30.0	33.0
Spain	14.1	18.9	17.0	1.8	-20.7	10.3
France	8.5	10.1	9.7	3.6	-13.3	14.0
Italy	10.0	11.8	10.7	1.4	-14.2	13.0
Cyprus	7.1	8.6	7.5	0.1	-6.1	5.3
Latvia	6.3	8.6	8.3	3.1	-12.0	9.2
Lithuania	6.3	9.7	7.9	7.4	-5.0	7.9
Luxembourg	5.6	6.4	6.1	3.9	-12.0	8.5
Malta	3.4	5.9	4.4	7.2	-7.0	5.0
Netherlands	3.4	5.9	5.3	5.3	-11.2	5.9
Austria	4.5	5.8	4.9	2.9	-9.5	6.9
Portugal	6.5	9.7	7.4	6.3	-8.6	8.9
Slovenia	4.5	7.0	5.1	3.2	-13.0	11.7
Slovakia	5.8	8.8	7.1	4.4	-14.7	10.7
Finland	6.7	8.3	7.7	-0.8	-9.8	9.1
Eurozone (EU-19)	***7.5***	***9.6***	***8.6***	***5.7***	***-13.3***	***10.2***
Bulgaria	4.2	7.0	5.8	2.2	-18.0	1.0
Czech Republic	2.0	5.0	4.2	2.8	-14.5	9.6
Denmark	5.0	6.4	5.7	3.4	-9.5	7.9
Croatia	6.6	10.2	7.4	7.1	-8.2	4.2
Hungary	3.4	7.0	6.1	15.3	-18.7	8.9
Poland	3.3	7.5	5.3	7.2	-8.4	5.9
Romania	3.9	6.5	5.4	18.2	-15.0	5.0
Sweden	6.8	9.7	9.3	-1.2	-14.3	6.7
EU-27	***6.7***	***9.0***	***7.9***	***5.7***	***-13.2***	***9.7***
Ukraine	8.5	10.1	9.3	n.a.	n.a.	n.a.

Table 6.1 (continued)

	Real GDP, % on preceding year			***Gross debt, general government, % of GDP***		
	2019	***2020***	***2021***	***2019***	***2020***	***2021***
Belgium	1.4	-7.2	6.7	98.6	113.8	110.0
Germany	0.6	-6.5	5.9	59.8	75.6	71.8
Estonia	4.3	-6.9	5.9	8.4	20.7	22.6
Ireland	5.5	-7.9	6.1	58.8	66.4	66.7
Greece	1.9	-9.7	7.9	176.6	196.4	182.6
Spain	2.0	-9.4	7.0	95.5	115.6	113.7
France	1.3	-8.2	7.4	98.1	116.5	111.9
Italy	0.3	-9.5	6.5	134.8	158.9	153.6
Cyprus	3.2	-7.4	6.1	95.5	115.7	105.0
Latvia	2.2	-7.0	6.4	36.9	43.1	43.7
Lithuania	3.9	-7.9	7.4	36.3	48.5	48.4
Luxembourg	2.3	-5.4	5.7	22.1	26.4	25.7
Malta	4.4	-5.8	6.0	43.1	50.7	50.8
Netherlands	1.8	-6.8	5.0	48.6	62.1	57.6
Austria	1.6	-5.5	5.0	70.4	78.8	75.8
Portugal	2.2	-6.8	5.8	117.7	131.6	124.4
Slovenia	2.4	-7.0	6.7	66.1	83.7	79.9
Slovakia	2.3	-6.7	6.6	48.0	59.5	59.9
Finland	1.0	-6.3	3.7	59.4	69.4	69.6
Eurozone (EU-19)	***1.2***	***-7.7***	***6.3***	***86.0***	***102.7***	***98.8***
Bulgaria	3.4	-7.2	6.0	20.4	25.5	25.4
Czech Republic	2.6	-6.2	5.0	30.8	38.7	39.9
Denmark	2.4	-5.9	5.1	33.2	44.7	44.6
Croatia	2.9	-9.1	7.5	73.2	88.6	83.4
Hungary	4.9	-7.0	6.0	66.3	75.0	73.5
Poland	4.1	-4.3	4.1	46.0	58.5	58.3
Romania	4.1	-6.0	4.2	35.2	46.2	54.7
Sweden	1.2	-6.1	4.3	35.1	42.6	42.5
EU-27	***1.5***	***-7.4***	***6.1***	***79.4***	***95.1***	***92.0***
Ukraine	3.2	-7.7	3.6	62.1	n.a.	n.a.

Source: European Economic Forecast: Spring 2020. European Economy Institutional Papers. No. 125. European Commission, 2020, pp. 168-187; World Economic Outlook Database, April 2020. IMF, 2020. URL: https://www.imf.org/external/pubs/ft/weo/2020/01/weodata/

Along with the depth of the economic recession expected in 2020, the extraordinary spread of the forecasting parameters of its member states will contribute to strengthening the inter-country divergence in the EU, strengthening the asymmetry of the development of this integration project as a whole.

Therefore, the *unemployment rate* in the EU for this period will vary from 4% in Germany and 5% in the Czech Republic to 11.8% in Italy, 18.9% in Spain and 19.9% in Greece.

The reduction in total *investment* will be 5-7% in Lithuania, Germany, Cyprus and Malta, but will reach 20.7% in Spain, 30% in Greece and 41.6% in Ireland.

The lowest rates in *real GDP* decline will be demonstrated by Poland (4.3%), Luxembourg (5.4%) and Austria (5.5%) in 2020, while the highest are expected from Greece (9.7%), Italy (9.5%), as well as Spain (9.4%).

The *gross debt* of the general government, whose limit is set by the criteria of nominal convergence at the level of 60% of GDP, will reach 196.4% in Greece, 158.9% in Italy and 131.6% in Portugal, while this indicator is projected at 20.7% in Estonia and Bulgaria 25.5%, respectively (Table 6.1).

As for Ukraine, the higher GDP reduction rates this year (7.7%) compared with the EU-27 (7.4%) will contribute to the deepening of their divergence, which contradicts to its socio-economic convergence with the European Union for achieving the goals of the Association Agreement with the EU signed in 2014 and full-fledged European integration in the future.

Fighting this negative trend requires the development and effective implementation of not only anti-crisis, but also a pro-convergence policy of Ukraine, which, unfortunately, has not yet been observed. These tasks are especially relevant in view of the fact that the economic crisis in Ukraine may turn out to be much deeper than it is now projected.

According to the State Statistics Service (in annual terms) the decline in transport turnover in Ukraine amounted to 18.2%, the decline in industrial production reached 7.9%, including 21.3% in the manufacturing sectors in January – April 2020.

Secondly, a significant reinforcing factor for inter-country divergence is the extreme aggravation of the problems of employment, social and labour relations and social protection of the population during the COVID-19 pandemic, which poses a threat of a sharp increase in poverty, including labour (primarily in countries of the transformational

type and developing countries).

For example, a sociological survey conducted by the Eurofound in April 2020 showed that, due to the shock effect of the COVID-19 pandemic, more than 47% of EU households experienced financial difficulties over the past three months, with 10% experiencing hardest pressure, really making ends meet. At the same time, if the share of households reporting greatest financial difficulties in Denmark was 2%, in Estonia it was 4%, in the Netherlands and Austria – 5% each, then it reached 17% in Slovakia, 18% in Croatia, 20% in Bulgaria, and 24% in Greece [5, p. 9]. This sociological profile clearly indicates signs of the increasing poverty in the EU, the level of which will vary markedly in different participating countries.

A sufficiently high level of social protection in the EU countries and their active implementation of anti-crisis measures to mitigate the negative social consequences of the pandemic – first of all, within the framework of a set of measures taken by the European Commission in March-April 2020 to protect employment and labour income[3], the European temporary support tool to reduce unemployment risks in emergencies (*SURE*)[4], the *Coronavirus Response Investment Initiative*[5], and the temporary frame for government support for the economy during the outbreak of COVID-19[6], suggest that poverty increasing in

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[3] *COVID-19: Commission Sets out European Coordinated Response to Counter the Economic Impact of the Coronavirus. European Commission, 13.03.2020. URL: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_459*

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[6] *State aid: Commission adopts Temporary Framework to enable Member States to further support the economy in the COVID-19 outbreak. European Commission, 19.03.2020. URL: https://ec.europa.eu/commission/presscorner/detail/en/ip_20_496*

the European Union in the post-pandemic period will be incomparably lower than in Ukraine, which over the past few years has become one of the poorest countries in the European region.

According to UNICEF experts, which takes into account the forecasted decline in GDP of Ukraine by 7.7%, the reduction in population incomes as a result of the spread of the COVID-19 pandemic will lead to an almost twofold increase in the poverty level (by absolute criterion) in the country – from 27.2% up to 50.8% in 2020 [6]. This will not only significantly enhance the social divergence of Ukraine and the European Union, but will also make it virtually impossible to break this negative trend, even in the long term.

It is absolutely obvious that one of the key global challenges arising from the shock impact of the COVID-19 pandemic will be a *multiple increase in the need to implement a model of the social state* that can ensure the effective and stable operation of the systems of health care, education, social protection of the population, as well as the national labour market and sphere employment in extremely challenging, including epidemiological, conditions. The capability to implement such a model for so-called '*outsider countries*' (Ukraine) should be considered as the most important factor in overcoming their social divergence with the '*leading countries'* (EU).

Thirdly, with the spread of the coronavirus infection pandemic, the dynamics of convergence-divergence processes are largely determined by the effectiveness of anti-pandemic policies implemented by national governments. Such a policy can be based on the fundamental recommendations developed by international agencies.

In particular, the Recommendations prepared by the Organization for Economic Cooperation and Development regarding urgent measures of employment and social policies necessary to support the population and business in connection with the COVID-19 pandemic [7], as well as the Management Framework proposed by the International Labour Organization for anti-crisis measures to overcome economic and the social consequences of the coronavirus pandemic [8].

The effectiveness of the anti-crisis policy of '*outsider countries*' in such a situation will become decisive not only for their resilience to the threats of the unfolding global crisis and the economic and societal challenges of the post-coronavirus period, but also the possibility of overcoming divergence trends in co-development with the '*leading countries'*.

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THE IMPACT AND THE ROLE OF TOURISM IN EUROPEAN COUNTRIES DEPENDING ON IT

Statement of the problem

On average about 40% of all tourists in the world are accounted for the countries of Europe. Despite the fact that tourism has a positive contribution to the development of a country, excessive dependence on

one branch of economy is dangerous for the whole national economy. The countries dependent on such a fragile and unstable sphere as tourism are strongly influenced outside. These countries are the first to suffer significant and have financial losses with the destabilization of the situation in the global tourism market.

The search for alternative areas for development is the worthy way out of the situation. This will help to stabilize the cash flow into the country, and allow the locals not to depend so much on the number of tourists. This issue is especially relevant in 2019-2020, as global changes have provoked a very strong reduction in tourist flows, especially due to COVID-19 break out and an increase of terrorist attacks, especially in Europe. For example, the attack on the London Bridge occurred on November 29, 2019. Former prisoner Usman Khan attacked people who came to a conference to de-radicalize former prisoners of terrorism.

On October 9, in the city of Halle in Germany, two men opened fire near a Jewish synagogue, 2 people were killed and 2 wounded. Also in Limburg on October 7, 2019, a Syrian hijacked a truck and rammed cars that stood at traffic, 17 people were injured.

France suffers from terrorism most of all. In Paris on October 3, Mikael Arpon attacked the headquarters of the Paris police with a knife. As a result, four people were killed, one was injured. The criminal also worked in the police and was associated with radical Islam. Such attacks are the consequences of the migration of Muslims from Asia.

Natural disasters are another reason for the decrease in tourist flow. For example, the abnormal heat in the summer 2019 in the center and in the south of Europe – Italy, France and Spain suffered especially, the winter of 2019-2020 was unusually snowy throughout Europe, which caused additional problems and expenses for countries.

Analysis of recent researches and publications

Tourism development features, as well as tourism role and impact on the economy, were previously studied by such author as Kvartalnov V., Balabanov I., Turkish author Yusuf Akan and British Hall C.M. and Coles T.

Formulation of the purposes

The main purpose of the article is to reflect the real situation of small European countries' dependence on tourism, to determine the share of tourism revenue in the total GDP of countries, and to find alternative

fields of activity to diversify state revenues and reduce dependence.

Main material of the research

Tourism is one of the leading and most dynamic sector of the economy and it is recognized as an economic phenomenon of the century for the fast pace. Tourism plays a significant role in formation of GDP, activation of foreign trade balance, creation of additional jobs and employment in many countries. Tourism has a huge impact on such key sectors of economy as transport and communications, construction, agriculture, consumer goods production and others. Moreover, tourism acts as a kind of catalyst of socio-economic development.

The level of dependence of a country on tourist income can be calculated by analyzing the share of tourism revenue in GDP and in the country's total export.

Since Malta, Cyprus, Iceland, Croatia and Switzerland are the most dependent on tourism countries and are enormously affected by this business area, it is worth considering the characteristics of each country separately.

Malta is an island nation in the Mediterranean Sea, on the Maltese archipelago. Malta's main industry is tourism. The flow of tourists to Malta is constantly growing. Malta is one of the world's largest centers for learning English and accepts students from all over the world. Malta is a popular place for filming feature films due to the wide variety of urban and natural landscapes, and it is known for its decorative handicrafts too [1].

Croatia is a state in the south of Central Europe, partly in the west of the Balkan Peninsula. The Adriatic coast of Croatia and numerous islands are popular destinations for international tourism. Tourism industry in Croatia is well developed and is one of the important components of the Croatian economy. The Adriatic coast is a popular destination for sailors, divers and windsurfers. The tourist season on the Adriatic lasts is from the second half of May until the beginning of October. In the regions of the country, which are remoted from the sea, the most popular with tourists is the capital of Croatia – Zagreb, the city of Varazdin with a well-preserved baroque ensemble and the Plitvice Lakes National Park. Seven sites in Croatia are included in the UNESCO World Heritage List, another 15 are on the preliminary list. The country has 8 national and 11 natural parks [2].

Despite the fact that the country is recognized as the most expensive in Europe to visit, tourist flows to Iceland are not reduced. In 2018,

consumer prices in the country were 56 percent higher than in other European countries.

A third of Iceland's coastline is the fjords. In the western fjords is the Dinyandi region, where seven waterfalls are located. The Hornstrandir National Wildlife Refuge and the highest cliff Latrabjarg – the westernmost point of Europe, are the main places for tourism. Located in the western part of the Ayia Fjord, it is popular with skiers. The most popular place in this region is the Vatnajökull glacier the largest in Europe.

The main tourist flows come from the UK, Germany and the USA. Iceland is not a member of the European Union, but at the same time, the country is a member of the Schengen agreement.

Cyprus is the third largest and third most populated island in the Mediterranean. It refers to Asia geographically. The tourism industry is one of the main items of national income. The Cyprus Tourist Organization (CTO) is responsible for it. A significant part of the population works in this sector, and the profit brought by tourism is the main source of foreign currency to the republican budget. Many beaches of the Republic of Cyprus have been awarded the Blue Flag of the European Union for environmental cleanliness and infrastructure. This is the main reason for the development of beach holidays on the island. A feature of the island is the separation – on the southern and northern coasts, between which there is some political tension.

The northern part of Cyprus was captured by Turkey in 1974, the new republic was recognized only by Turkey. The conflict is frozen, but still relevant, between the northern and southern parts there is a buffer zone, which is protected by the UN armed forces.

Tourists who move in to the northern part of Cyprus from Turkey are violators of the law of Cyprus. It is possible to enter the territory of Northern Cyprus only from the southern part without breaking the law, but it is quite difficult. In addition, a visa is required to enter the Northern Cyprus, while only a passport is required to enter the southern.

These are additional problems and troubles for tourists, especially the presence of a large number of militaries in the northern territory [3].

As a traditional country of tourism, Switzerland holds a strong position in this area in Europe. The presence of a developed tourist infrastructure, a network of railways and highways, combined with the picturesque nature and successful geographical position, provides an influx of a significant number of tourists into the country, primarily Germans, Americans, Japanese, and in recent years also Russians,

Indians, and Chinese. The Alps occupy 2/3 of the entire territory of Switzerland and annually attract thousands of outdoor enthusiasts to Switzerland [4].

Tourism is often called “invisible export”. A feature of this industry is that tourism services or goods manufactured for export are not exported from the country; the consumer himself overcomes the distance separating him from the product of interest.

Such indicators as the contribution of tourism to GDP and the share of tourism revenue in the country’s total export most fully describe the dependence of the country’s economy on tourism (Table 6.2).

Table 6.2

Share of tourism revenue in countries’ GDP during 2016-2018

	2016			2017			2018		
Country	The contribution of tourism to GDP, billion $	GDP in 2016, billion $	**The share of tourism income in GDP,%**	The contribution of tourism to GDP, billion $	GDP in 2017, billion $	**The share of tourism in GDP,%**	The contribution of tourism to GDP, billion $	GDP in 2018, billion $	**The share of tourism income in GDP,%**
Malta	1,2	11,5	**10,4**	1,4	12,8	**10,96**	1,5	14,54	**10,3**
Iceland	6,7	20,7	**32,4**	8,2	24,5	**33,48**	8,5	25,88	**32,8**
Croatia	12,4	51,6	**24,0**	13,6	55,3	**24,59**	15,2	60,8	**25**
Cyprus	4,2	20,9	**20,1**	4,8	22,6	**21,2**	5,3	24,47	**21,7**
Switzer land	57,7	671,3	**8,6**	58,2	679,9	**8,56**	60,4	705,5	**8,6**

Source: compiled by the author based on [5] and [6]

Based on the data in Table 6.2, we can conclude that Iceland has the largest share of tourism contribution in GDP, the contribution is almost a third of the country’s total GDP in 2018. Croatia is in second place, the contribution from tourism is a quarter of GDP. In third place is Cyprus. Switzerland has the smallest share – 8.56% percent of GDP.

One of the key indicators of the country’s economy is export, export revenue allows to cover import costs, to ensure a positive balance. A

sharp change in the structure of exports can significantly affect the macroeconomic situation in the country, cause a shift in the exchange rate, provoke inflation, unemployment, etc.

The share of tourism revenue in export 2018 in Malta is 9,1%, Iceland – 26,7%, Croatia – 36,8%, Cyprus – 18,8%, Switzerland – 4,6% [7].

Having analyzed the position of tourism in the export structure of countries, we can say that inbound tourism has the most significant position in Croatia – more than a third of all export. Iceland also has a substantial share – 26.7%. The smallest part in export can be noticed in Switzerland, 4.6 percent of GDP.

From two main economic indicators, such as a share of tourism revenues in GDP and country's exports, it can be concluded that Iceland and Croatia are the most dependent on the tourism sector for 2018, and Switzerland has the most minor impact.

The indicator of the arrival of foreign tourists into the country during last years is also interesting. It is important that the indicator of arrival displays exactly the number of trips to the country, not the number of tourists. Thus, a person who makes several trips during a certain period is counted each time as a newcomer.

Table 6.3

The dynamics of the arrival of foreign tourists in the country from 2013 to 2017, thousand people

Country	2013	2014	2015	2016	2017
Malta	1582	1690	1783	1966	2274
Iceland	807,3	997,6	1289	1792	2225
Croatia	10948	11623	12683	13809	15593
Cyprus	2405	2441	2659	3187	3652
Switzerland	8967	9158	9305	9205	9889

Source: compiled by the author based on [8]

The dynamic of arrivals in 2013–2017 shows that absolutely in all countries the quantitative indicator of arrivals increased annually, except for 2015 in Switzerland. The number of arrivals has increased most significantly, compared to 2013 and 2017, in Iceland – 2.76 times, the same notable indicator in Malta and Croatia – about 1.4 times for 5 years. Switzerland showed the smallest increase in arrivals, only 10.28 percent growth during 5 years.

The increase in the number of arrivals in countries from 2013 to 2017 is shown in Figure 6.1.

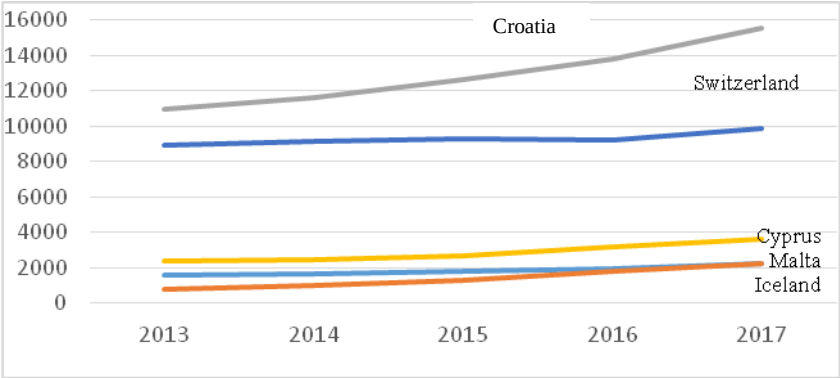

Figure 6.1 The dynamics of the arrival of foreign tourists in the country from 2013 to 2017, thousand people

Source: compiled by the author based on [9]

The graph shows that the active growth of arrivals in Cyprus, Iceland, and Malta began precisely in 2015, while the jump in Switzerland occurred in 2016. The most rapid growth is observed in Croatia.

Another indicator for analysis can be picked out as the expenses of foreign tourists into the country during the trip – mainly expenses for accommodation, meals, excursions, souvenirs, domestic trips, large purchases of personal items, equipment, etc. These expenses form the profit of companies engaged in tourism. The dynamics of changes in tourist spending in the analyzed countries from 2014 to 2018 is provided in Table 6.4.

We can observe a negative or insignificant positive increase in tourist spending in 2014 and 2015 in all countries. Only Iceland showed an incredibly large increase of 28.95% and 14.09%. Growth increased significantly in 2016–2017, and by 2018 again showed a decrease. The largest growth in Malta and Cyprus occurred in 2017, while Iceland showed an incredible jump in spendings in 2016 – 46.78%. The most rapid growth in Iceland (significantly reduced by 2018), Switzerland, in turn, shows the smallest increase in spending by tourists domestically. Nevertheless, in dollar terms, Switzerland is significantly ahead of other countries.

The dynamics of changes in expenses, as well as their magnitude, is shown on Figure 6.2.

Table 6.4

Expenses of international tourists in countries (billion US dollars)

Year	Cyprus		Iceland		Switzerland		Croatia		Malta	
	Expenses, billion $	The change, %	Expenses, billion $	The change, %	Expenses, billion $	The change, %	Expenses, billion $	The change, %	Expenses, billion $	The change, %
2018	3,3	8,35	4,1	2,48	20,2	5,28	12,6	13,22	2,1	8,98
2017	3,1	14,67	4,0	23,50	19,2	2,15	11,1	13,17	2,0	19,70
2016	2,7	11,72	3,2	46,78	18,8	-2,82	9,8	8,93	1,6	4,22
2015	2,4	-15,75	2,2	14,09	19,4	-8,67	9,0	-10,56	1,6	-10,02
2014	2,9	-4,10	1,9	28,95	21,2	5,34	10,1	3,57	1,8	9,65

Source: compiled by the author based on [10]

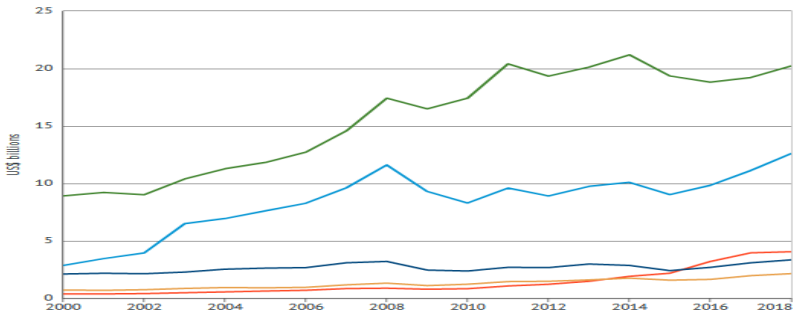

Figure 6.2 Comparative dynamics of cost growth in the analyzed countries from 2000 to 2018 in billion US dollars

Source: compiled by the author based on [10]

The quantitative superiority of tourist expenses in Switzerland is obvious on the graph, in 2018 they amounted to 20.2 billion US dollars, compared with expenses in Croatia, they are only 60 percent of the amount in Switzerland, in Iceland this figure is 20 percent, as in Cyprus, Malta. The comparatively lowest amount is 10 percent of expenses in Switzerland. It is also easy to figure out on the graph that during the period from 2015 to 2018, tourist spending in all countries increased, it

is due to both an increase in the flow of tourists to the studied countries and a general increase in the price level.

In the beginning of the year 2020, the tourism sphere has faced the most significant problems since the last century. Firstly, the spread of coronavirus completely limited the opportunity for people to travel, which means an almost complete stop of activity of the tourism sectors of countries. Secondly, climate degradation and increase in tension in relations with Muslims will continue to scare away tourists even after the stabilization of the situation with COVID-19.

So, the economies of the European countries – Malta, Cyprus, Switzerland, Croatia, Iceland and other countries are in jeopardy of a collapse. Thus, it is of the highest importance to stabilize their situation during the crisis periods of the tourism sector. The aluminum industry, as well as fish and seafood production, hold large shares in the export structure of Iceland in 2018, they make roughly speaking equal shares with tourism. At the same time, Croatia's incomes are more diversified, some strong areas are: mineral fuels, oil products, nuclear reactors and equipment, electric machines and pharmaceutical products.

Conclusions

While analyzing the degree of dependence of countries on the tourism sector, it was determined that Iceland and Croatia had the greatest dependence on the income of this sector, while Switzerland was the least affected by changes in the international tourism market, because the share of tourism revenue in GDP and exports are the smallest among 5 countries.

As a result, countries with the greatest dependence on tourism need to develop alternative areas of trade, particularly in export. Consequently, a conclusion is made, that the search and development of alternative areas in trade in goods and services provides the country with a more stable and strong position. It also minimizes the risks in periods of crisis for tourism, such as at the beginning of 2020 – increasing terrorist attacks around the world, natural disasters, virus outbreaks and financial instability.

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BUDGET SECURITY OF THE STATE IN TERMS OF SOCIO-ECONOMIC TRANSFORMATION

Long lasting military operations in the East of the country, the need to implement huge social benefits to the population, reducing the real economy, lack of revenue generating public enterprises led to certain imbalances in the structural components of the budget system. This raises concerns over the security budget and its development in the future. In fact, according to Tarasova O., fiscal security is understood as the level of ensuring the solvency and financial stability of public Finance that enables government authorities to most effectively carry out their functions [1].

Such opinion Zveruk L. and Bilyk O., defining budget security as the ability of the budget system to ensure financial independence and stability of the state, effective use of budget funds in the implementation of the functions of social protection; public administration and international activities; the funding of science, education, culture and health; national security and defense, implementation of investment and environmental policy [2].

Complementing the previous definition, Zveruk L. notes that “the budgetary security of the state – the state of solvency (level fiscal capacity) of States on the implementation of its functions, considering the balance of revenues and expenditures of state and local budgets and

feasibility, legality and efficiency of use of budgetary funds at all levels" [3].

O. Demeniuk notes that this category is inextricably linked to:

– fiscal policy in terms of ensuring the solvency of the state, considering the balance of revenues and expenditures of state and local budgets and the efficiency of use of budgetary funds;

– the ability of the budget system to ensure financial independence of the state and effective use of budget funds in the implementation of the functions of social protection; public administration and international activities; the funding of science, education, culture and health; national security and defense, implementation of investment and environmental policy [4].

O. Petrychko, exploring the rating of level of budgetary security of Ukraine, believes that the budget security is the ability of the state to effectively perform its functions and to ensure financial sustainability of public finances by balancing revenues and expenditures of the consolidated budget taking into account the socio-economic development of the economy.

Considering the essence of budget security in the given context, the author identifies the following key aspects:

– budget security is a component of the budget policy, aimed at ensuring the solvency and financial stability of state finances;

– management of budget security of the state is public authorities within their powers;

– budget security of the state is an integral part of the financial security, which aims to ensure resilience to financial shocks and imbalances in the financial system as a whole [5].

A. Borodii clarifies the concept of "budget security", which, unlike existing interpretations, is regarded as a protection from the effects of internal and external threats budget system, which is achieved due to the ability of the authorities to form sufficient budgetary resources to carry out their functions, to ensure the stability of the main parameters of the payment and settlement system to best attract and use borrowed funds for financing of budget expenditures, to prevent violations of the budget legislation with the aim of promoting sustainable socio-economic development of the state. Budget security is treated as part of the system of public Finance management, a set of methods, tools and institutional and legal levers of influence on formation and spending of budget funds in the planning and execution of the budget, systematic monitoring of implementation, accounting, internal and external risks in the financial

system [6].

Budget security is the financial sustainability of the public finances, as well as system assistance to public authorities to effectively perform their functions. Fiscal security is estimated using the ratio of deficit (surplus) of state budget to GDP, in %; the level of GDP redistribution through the consolidated budget, %; the ratio of aggregate payments for servicing and repayment of public debt-to-income of the state budget, % [7].

After analyzing the term fiscal security, you can see that the most important criteria is the efficient use of borrowed funds for financing of budget expenditures, identifying the necessary goals that would meet the interests of the state, control over efficiency of use of budgetary funds according to the budget legislation.

The most important criteria to fiscal security include:

– ensuring stability of the main parameters of the payment and settlement system;

– the reality of the goals of budget policy in accordance with national interests;

– empowerment of the state to exercise domestic and foreign policies on the basis of ensuring sufficient financial resources;

– to best attract and use borrowed funds to Finance the budget expenditure;

– to prevent violations of the budget legislation with the aim of promoting sustainable socio-economic development of the state.

Budget security of the state is protection from the influence of internal and external threats budget system, which is achieved due to the ability of public authorities to form sufficient budgetary resources by the state to perform its functions.

Threats to the fiscal security is a set of negative assumptions and factors hindering full implementation of the budgetary interests and causing full or partial disruption or destruction of the budget system and budget process. To the major threats that have a direct destructive impact on the fiscal security of the state in the form of a certain amount of economic damages include the following:

1) the inefficiency of the tax system;

2) understatement of business entities the tax base and tax evasion;

3) ineffective system of control over expenditure of budgetary funds;

4) inefficient allocation of public funds, most of which goes to consumption rather than development;

5) failure to comply with legal persons-residents of obligations under foreign loans received under government guarantees;

6) delayed adoption of the budget and reports on its implementation [8, p. 30].

Also a significant threat to the budget of security is the presence of excess tax burden. Today, taxes play an important role in the economic development of the country because it is the main source of revenue of the State budget. The levy is high enough and hinders the development of the economy, and this poses a threat to economic security of the state.

Forming fiscal security, the state is obliged to adhere to the following basic conditions:

1) subject to the requirements of the objective economic laws and regularities of society development;

2) study and based on previous experience of financial and budget development;

3) study and consideration of the experience of other countries;

4) taking into account the specific stage of development of society, the characteristics of the internal and international situation.

The main characteristics of fiscal security should be the ratio of revenues to expenditures of the state and consolidated budgets. If these characteristics do not meet the budget safety will be violated, and other indicators.

It is also believed that the ratio of tax to non-tax revenue provides the instability of budget revenues in General, but tax revenues are more stable, economically viable, and through this they affect the level of fiscal security of the state. The economic growth of our state will be achieved, if the reduced tax burden on domestic producers, reducing government spending will reduce the budget deficit of Ukraine. These indicators will be the priority directions of reforming the country's economy [9].

In Table 6.5 shows the values of the volume and dynamics of the public debt of the country.

According to them, the main threats to the budget identified the security: high level of public debt, which in 2019 was 2045442 mln. He grew up on 115683 mln. vs of volume 2016; the decrease in the volume of domestic debt, which is guaranteed by the government, the presence of significant non-guaranteed part. The external debt guaranteed by the state in much larger quantities than the internal.

Despite the gradual decrease in the volume of external public debt relative to GDP, the ratio remains quite significant. However, its critical value at the level of 80.9% in 2016 has been cut by a significant amount of 25.8%.

Table 6.5

The state debt of Ukraine, UAH mln.

Indicator	2016	2017	2018	2019
Public external debt	980185	1080310	1099408	976807
The government's domestic debt	670646	753399	761089	818181
Government guaranteed external debt	259843	294685	297810	239258
Government guaranteed domestic debt	19084	13280	10320	11195
Total	1929759	2141674	2168627	2045442

Source: based on data of the Ministry of Finance of Ukraine [https://www.minfin.gov.ua]

In Table 6.6 shows the data on the state budget deficit and its dynamics as an important indicator of the effectiveness of fiscal policy and fiscal security of the country.

Table 6.6

The state budget deficit and its dynamics, UAH mln.

Indicator	2016	2017	2018	2019
Borrowings subject to repayment	177261	120437	71681	65706
Revenues from privatization	189	3 377	355	17100
Income from financial transactions	-107319	-75964	22080	16576
Total	70130	47850	94116	99381

Source: based on data of the Ministry of Finance of Ukraine [https://www.minfin.gov.ua]

Analysis of the data Table 6.6 indicates significant variations in the budget deficit. So, in 2017 it was possible to significantly reduce vs 2016 – 22280 mln. or 32%, then in 2018, he has increased against the previous year by almost half – 46266 mln. or 96%. This despite the fact that in 2018 there were significant proceeds from privatization and financial transactions, but much lower borrowing is subject to repayment.

In 2019, the state budget deficit increased in comparison with 2018 5.3 million UAH.

The presence of the budget deficit is largely not only driven by reduction of production and economic indicators of development of the national economy, inadequate taxation of large businesses and reduced

revenues from its activities. We are talking about substantial costs of defence and the armed forces.

Thus, the volume of state budget expenditures for financing of needs of defence and security in 2016 was 58097 mln. in 2017 – 68859 mln. in 2018 – 98800 million UAH. in 2019 – 105744 mln. It 6944 mln. or 7% more relatively 2018 and, accordingly, in 47647 mln. and 82% against the level of 2016.

Thus, after analyzing these and other indicators of the effectiveness of fiscal policy and fiscal security, it is possible to conclude that today's public finances and the processes of their formation and reproduction, sources of revenue do not have sufficient stability. This adversely affects socio-economic development and fiscal security of the country. To strengthen the fiscal security to create a favorable institutional environment in the information, economic, social, political, and legal dimensions, which will balance the budget and tax processes. As their priorities are grounded: development of a set of indicators, tools, methods, and mechanisms for avoiding threats to the budget system of the country; support budgetary sustainability of the state; the development of fiscal decentralization; the reduction of budget deficit and public debt; system monitoring and control of financial resources; strategic planning and forecasting finance; the involvement of citizens in the management of public finances.

Fiscal policy is an important component of socio-economic policy of the state, which provides fiscal security, socio-economic growth and has a clear strategic direction. In the modern language of management it is aimed at reducing the external debt, the search for internal sources of Finance to strengthen the country's defense, ensuring the social protection of the population, the implementation of the administrative-territorial, education, health reforms, development of civil society in General in terms of maintaining and strengthening fiscal security.

After budget security is understood not only as a tool for promoting and regulating the social and economic development of the national economy. It is a guarantee of financial stability, unity and integrity of the financial system, overcoming various threats and risks in the financial sector. Therefore, the prospects for further research this important topic should be related to the further search of tools to improve financial policy and maintain fiscal security, including on the basis of digitalization, automation, and other innovative modes of higher order.

It should be noted that in the conditions of economic instability to

get rid of certain threats is impossible, therefore, budget security is a condition that is virtually impossible to implement in today's reality. The presence in the budget system and its environment elements (media) and threats leads to a state of budget risk. Thus, under the budgetary risk we understand that the state of the budget system, which is characterized by the presence of real and potential threats, which lead to a partial realization of national interests in the public sector. In this regard, the budget security as a condition in which there are no threats and performed all tasks for the realization of national interests, it is advisable to explore in the context of absolute security budget and the fiscal risk is considered identical to the relative fiscal security. Absolute budget security, in our opinion, is possible only in the short term, provided high level of prosperity, the lack of foreign economic, political and military threats. In the long term destabilization of the budget system will be inevitable.

It is important to note that the relative budgetary security covers three States budget process: crisis, stabilization, and development status [10]:

– the crisis involves the ability to minimize losses (both existing and possible), the ability to overcome the crisis, the efficient use of the existing mechanism for the survival of the system and exit from the crisis;

– condition of stabilization in which the implementation of the budget of interest is carried out in conditions of permanent reduction of real threats, prediction and prevention of potential threats, achieve the minimum required efficiency of functioning of budgetary system, the formation and development of stabilizers;

– development status is determined by the full realization of the interests of the public sector in terms of minimum effect real and timely warning of possible threats and maximizing the efficiency of functioning of all elements of the budget system, able to withstand existing threats.

The challenging macroeconomic situation in Ukraine, the presence of real and potential threats leading to partial realization of national interests in the public sector. Budget system of Ukraine is in crisis, given the fact that fiscal security is a basic component of the entire security system of the state, the inability to overcome the crisis affects the functioning of system of ensuring national security of the state.

The results of the assessment of the state budget of Ukraine for the period 2016-2019 allow to assert that the stabilization of the

budgetary system is a priority of state policy.

So fiscal policy should be balanced and adequate to the current economic situation, that is, in the context of economic slowdown to implement the holding of the event seems impractical in this case to stabilize the economy, even theoretically not possible. After all, the reduction of state budget deficit by reducing government spending will cause the deterioration of the living standards and the decline of the population. Therefore, the priority should be:

− improving the optimality of budget expenditures through the use of program-target principles of the activity;

− the optimization of operating costs and refocusing on capital article to ensure future economic growth;

− orientation of the budget system to achieve specific results;

− stabilization of the tax system in the context of the creation of fiscal conditions for business development and economic recovery;

− improving the system of public debt management in the context of the transition from passive to raise funds on the financing of the budget deficit to the system of debt management [11, p. 36].

It is an effective debt policy can improve the level of fiscal security, will reduce the size of state budget deficit and promote economic stabilization. Given this analysis of the indicators of a debt security as a component of financial security, should be a promising direction for further research.

Budget security is a kind of indicator of social and economic development of the state, the criterion that determines the effectiveness of its fiscal policy. A study of “budget security” should be based on the understanding of this phenomenon as a system. Under the budgetary security should be understood such as the budget system, the process by which, in the absence of real threats, a timely response to potential risks there is a complete realization of national interests in the public sector.

The fiscal security is dynamic. The presence of real and potential threats leading to partial realization of individual, corporate and public interests in the public sector. Therefore, the budget system of the media and threats leads to a state of budget risk or relative fiscal security, what characterizes this state of the budgetary system in which there is partial realization of national interests in the public sector.

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HARMONIZATION PROBLEMS OF THE EUROPEAN UNION AND CHINA COUNTRIES LEGISLATION FOR TRADE WITH UKRAINE

Problem formulation. In today's context, the issue of Ukrainian standards harmonization with the countries of the European Union and the PRC is a pressing issue. Harmonization of standards will allow to expand the market and increase the volume of Ukrainian products production, to activate trade relations between the countries, which will ultimately be in the interests of everyone – the state, business, consumers. The safety requirements for which foodstuffs must be produced and which they must meet in order to reach the European and Chinese markets are very high, which to some extent can guarantee the maximum protection of consumer's health. The more national food producers will produce their products in accordance with the best international practices, for example, will introduce HACCP and traceability system, system of rapid notification of dangerous products and their withdrawal from the market, the more protected consumers will be in our country.

Purpose – comparison of microbiological indicators in the European Union and the People's Republic of China (PRC), comparison of a number of food safety indicators, as well as hygienic criteria for food production in EU and PRC countries.

Materials and methods. Applied general scientific and special

methods of cognition of economic processes: analysis and synthesis, systematic approach, comparison and generalization. The methodological basis of the work is the official EU and PRC documents, EU Commission Regulation of 15 November 2005 № 2073/2005, which sets microbiological criteria for EU foodstuffs, and in national standards of the PRC (GV series documents).

Main material presenting.

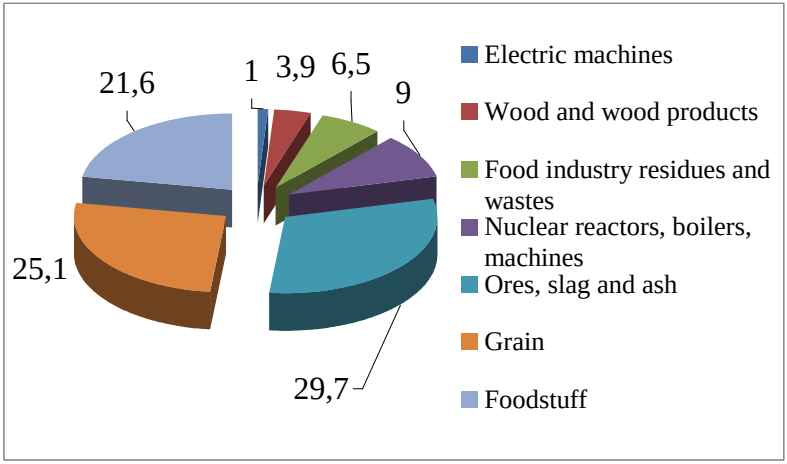

Figure 6.3 Share of total exports of Ukraine to China in 2018

As can be seen from Figure 6.3, share of food products in the export structure of Ukraine to China is 26.1%. Ukraine's exports to China in 2018 amounted to $ 2, 2 billion.

As can be seen from Figure 6.4, Ukraine practically does not export finished foods to the EU countries. Only individual producers have quotas for export and their share in the overall structure of exports is very small.

Harmonization of requirements will allow food market operators to export food products to the PRC or EU countries, as it will eliminate differences in:

1) requirements for the content of pathogens in different food categories;

2) sampling rules;

3) approaches to the normalization of certain positions.

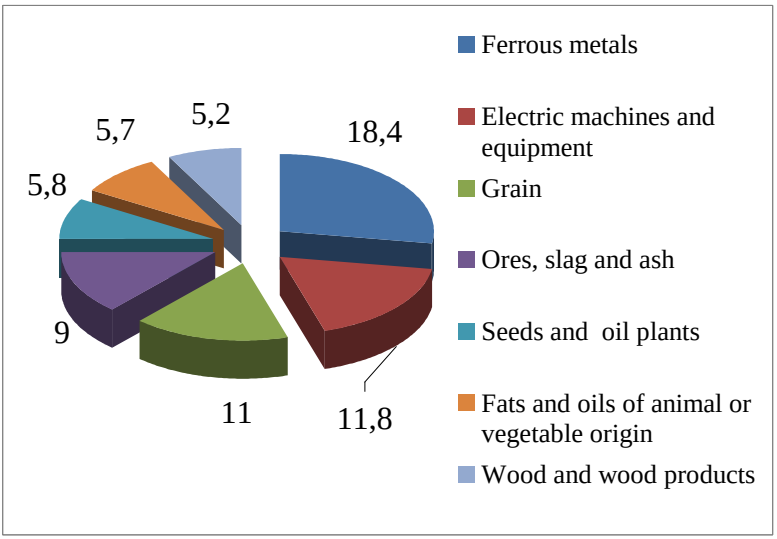

Figure 6.4 Share of total exports of Ukraine to the EU in 2018

In addition, this will eliminate other differences in European and Chinese approaches and techniques regarding food safety at different stages of production. Compliance with requirements will make it easier for national food producers and exporters to enter the PRC and EU markets.

Unlike EU legislation, there is no single regulatory document in the PRC that sets microbiological criteria for food of all categories, as is done in the EU in Regulation № 2073/2005. Instead, there are number of documents in the PRC regarding different categories of food [1-4]. These documents have been adopted at different times, mostly since 2010. They are updated periodically, due to the continuous improvement of the Chinese food safety monitoring system and its compliance with international standards, as well as the requirements of the EU, US, Canada, Australia, New Zealand, Japan, Hong Kong and Taiwan.

At the same time, China's basic document setting maximum levels for pathogens in food products is China's national standard GB 29921-2013, which came into force on July 1, 2014. GB 29921 applies to general standards and may apply to pre-packaged foods. GB 29921 requirements should be applied if the values in GB 29921 and other PRC standards differ.

It should be noted separately that in the case of food exports to the

PRC, the Chinese side is usually guided not only by its own standards and standards, but also by European or American ones, especially where there are no national requirements.

When comparing food safety indicators in the EU and the PRC, a number of differences were identified [5-6]:

1) there is no single consolidated document in the PRC that regulates hygiene requirements for all categories of foodstuffs that may contain potential risks and threats;

2) there are no or differing positions in the Chinese standards on foodstuffs that are subject to mandatory control compared to Regulation № 2073/2005;

3) Chinese standards sometimes have lack of product detail categories and subcategories compared to Regulation № 2073/2005;

4) a number of product categories available in Chinese documents are absent from European ones, such as casein, cereal products, legumes, chocolate and cocoa products, nuts and seeds;

5) the overwhelming number of product categories does not include the list of pathogens that must be monitored;

6) in some cases there is a discrepancy in the maximum permissible standards for the content of pathogens in food;

7) Chinese standards sometimes do not meet the European standards for the number of samples required;

8) for a number of items existing in the EU (eg. raw meat of poultry and poultry that require heat or special treatment and are not intended for direct consumption), there are no microbiological requirements in the PRC;

9) Based on the hygiene standards of the PRC, China does not have a system for monitoring the presence of pathogens and other micro-organisms in food during their production; such control is regulated only for ready-to-sell (pre-packaged) food / semi-finished products.

Given the fact that the names of the categories and products themselves differ significantly, Ukrainian exporters need to consult substantially with Chinese partners on a case-by-case basis.

1. The purpose of implementing standards. Pathogens often cause a variety of diseases for both humans and animals. Among the pathogens found in food are salmonella, paragemolytic vibrios, Escherichia coli, Staphylococcus aureus and more. According to statistics, the number of diseases caused by foodborne pathogens in the PRC annually in the PRC is about 40-50% of all reported cases.

The Law on Food Safety stipulates that food safety standards

determine the permissible levels of content in food and related products of pathogens, plant protection residues, veterinary residues, heavy metals, contaminants and other substances harmful to the human body. There are more than 500 applicable standards in the PRC regarding restrictions on the content of pathogenic microbes in foods, with indicators sometimes duplicated, overlapping, contradictory, or simply lacking.

In order to control the contamination of food by pathogens and prevent the occurrence of diseases caused by food in microbes, as well as to combine all the scattered standards for the permissible content of pathogenic microbes, the State Committee for Health and Birth Control Food Safety Prepare Draft Standard GB29921-2013 "Maximum Allowable Levels of Pathogens in Food". The document was reviewed and agreed by the Committee on the Evaluation of State Standards for Food Safety and released on December 26, 2013. It entered into force on 1 July 2014.

GB29921 regulation relies to general standards and may apply to pre-packaged foods. All relevant rules that differ from this standard must be complied with. All requirements for the permissible content of pathogens in foodstuffs specified in other standards should be abolished or aligned with this standard.

2. Standards requirements. Until the entry into force of the standard (01.07.2014), food manufacturers and distributors could, at will, comply with this standard and the authorities encouraged them to do so. Since its entry into force, manufacturers, food safety authorities and inspection bodies have been required to comply with this standard. Pathogenic microbial content is monitored according to the methods described in GB29921.

Manufacturers and distributors must adhere strictly to the standards and rules of food production and distribution, or take measures to strictly control pathogens during production and distribution to ensure that products meet the requirements of GB29921.

China's State Committee on Health and Birth Control will monitor and evaluate the implementation of this standard and as a result propose adjustments to improve the standard.

3. Principles and procedure for defining standards.

1) The main purpose is health protection. The purpose of GB29921 is to control the contamination of food products by pathogens and to prevent diseases caused by them. The Editorial Expert Group analyzed the causes of foodborne microbial diseases and, based on international

management experience, undertook a comprehensive risk assessment of the pathogenic microorganisms – food line. Based on the results of the monitoring and risk assessment, maximum levels of pathogenic micro-organisms in high-risk foodstuffs have been determined to reduce the risk of foodborne diseases.

2) Definition of indicators by scientific approach. Based on the monitoring and assessment of the risks associated with the presence of pathogens in food, the Editorial Expert Group conducted a comprehensive analysis of:

- the potential adverse effects of pathogenic microorganisms or their products on human health
- the content of pathogenic microorganisms in the raw material;
- changes occurring with pathogens at each stage of food processing, storage, sale and consumption.

At the same time, the ratio factors of the consumer groups of each product category and the cost (economic effect) of ensuring compliance with the standard on the permissible norms of the content of pathogenic microbes were fully taken into account. In general, this has led to the application of a scientific approach to the determination of acceptable levels of pathogens in food.

3) Consideration of foreign assessments and standards – improvement of standards. GB29921 took into account the results of a risk assessment related to the presence of pathogens in food by relevant international organizations such as CAC, ICMSF, etc., and the principles used to set standards. The regulations, standards and standards of the US, EU, Australia, New Zealand, Japan, Canada and some other countries and regions regarding restrictions on the content of pathogens in food have also been taken into account.

4) Consideration of proposals from all stakeholders, ensuring openness and transparency. In the process of standard formation, meetings and seminars were repeatedly convened to hear proposals from relevant agencies, research organizations, industry professional associations and enterprises, and open Internet surveys. On this basis, the text of the standard was finalized and the process of its approval was open and transparent.

4. Areas of application and main content of standards. GB29921 can be applied to pre-packaged foods. GB29921 establishes permissible levels of five pathogens (Salmonella, Listeria monocytogenes, Escherichia coli, Staphylococcus aureus and Paragemolytic Vibrion) in 11 food categories.

Manufacturers and distributors of pre-packaged foods must adhere strictly to the hygiene rules for the production and distribution of food to minimize the risk of contamination with pathogens.

Canned foods must meet the requirements of commercial sterility, so this standard does not apply to them.

5. The main categories of food to which the standard applies:

1) Meat products cooked (thermally processed) or intended to be eaten raw: products made from prepared (marinated, stewed, smoked, fried, steamed, boiled, etc.) and raw (fermented or processed by special technology) meat (pork), beef, lamb, chicken, rabbit, dogfish, etc.), suitable for direct consumption.

2) Aquatic fishery products: cooked (thermally processed) aquatic fishery products (products made from fish, crustaceans, molluscs, invertebrates, echinoderms and other aquatic organisms that have been heat treated – steamed, boiled, baked, fried – fried suitable for direct consumption); intended for consumption of raw aquatic animal products (products that have been purified but not heat-treated and are fit for direct consumption, including live, fresh, frozen fish (fish pieces), shrimp, cephalopods, live crabs, live molluscs, as well as products made from live snails, crabs, shellfish, caviar by non-thermal processing (pickles, marinades, alcohols – suitable for direct consumption); intended for consumption vegetable products of watercraft – algae (products made from algae, suitable for direct consumption, which have undergone some processing, including thermal – cooked, deep-fried).

3) Egg products intended for consumption: products suitable for direct consumption made from poultry eggs, including cooked eggs.

4) Cereal products: prepared (thermally processed) cereal products (including baking); cooked (thermally processed) flour-rice products with stuffing (filler); instant flour meal: products prepared from rice, wheat, other cereals, root crops, corn, etc., with or without filling, suitable for direct consumption (cereals, cereals / cereals / instant noodles, etc.), and products made by baking, with a basis of cereals, fats, eggs, sugar and food additives, suitable for direct consumption (cakes, cakes, cookies, bread, etc.).

5) Intended bean products (fermented and unfermented): fuji (soybean salted beans), fermented black bean sauce, natto and other products prepared by wet fermentation, as well as soy milk, tofu (soy cheese), solid soy cheese, soy protein, and other wet-fermented products.

6) Chocolate and cocoa products: chocolate, including cocoa butter

substitutes, toppings and creams; cocoa products (liquid, solid, cocoa powder).

7) Fruit and vegetable products (including pickled): products intended for direct consumption made from vegetables and fruits: frozen vegetables / fruits, dried vegetables / fruits, fruit in vinegar, oils or salts, jams, jams, jam , candied fruits, syrup fruits, pickled vegetables, vegetable pastes and sauces (except tomato), fermented vegetables and fruits.

8) Beverages (except bottled drinking water and aerated drinks): fruit and vegetable juices, protein drinks, water-based mixed drinks, tea, coffee, vegetable drinks, dry drinks, other drinks.

9) Frozen beverages (ice cream, food ice): all types of ice cream and food ice, made on the basis of drinking water, sugar, dairy, fruit, legumes, food fats and oils, with the addition of food additives.

10) Seasonings: soy sauce (fermented and mixed), soy paste (fermented and mixed), seasonings from aquatic products (fish, oyster, shrimp sauce), combined seasonings (mayonnaise, broths, juices and other condiments with animal and plant bases). This standard does not apply to spices and seasonings.

11) Nuts and seeds: nuts and seeds paste, pickled nuts and more.

6. Determination of indicators for pathogens within the standard.

1) *Salmonella* (2nd risk group). Indicators of the standard were approved taking into account similar standards in force in the CAC, ICMSF, EU, Australia, New Zealand, USA, Canada, Hong Kong SAR (Hong Kong), Taiwan. General requirements: n = 5, c = 0, m = 0.

2*) Listeria monocytogenes* (2nd risk group). Due to the lack of sufficient clinical observation data in the PRC, the indicators of the standard were approved taking into account the reporting data of FAO, WHO, as well as the standards in force in CAC, ICMSF, EU, etc. General requirements: n = 5, c = 0, m = 0.

3) *Escherichia col*i O 157: H7 (2nd risk category). Although no cases of mass destruction of finished meat and meat products by the micro-organism have been reported in the PRC, this standard has been adopted at a high level to reduce the risk of disease. General requirements: n = 5, c = 0, m = 0.

4) *Staphylococcus aureus* (3rd risk group). For China, it is one of the main agents of food poisoning associated with the enterotoxins it produces. Indicators of the standard were approved taking into account similar standards in force in CAC, ICMSF, Australia, New Zealand, SAR Hong Kong (Hong Kong), Taiwan. General requirements (for 8

product categories): n = 5, c = 1, m = 100 CFU / g (ml), M = 1000 CFU / g (ml); for seasonings: n = 5, c = 2, m = 100 CFU / g (ml), M = 10,000 CFU / g (ml).

5) *Paragemolytic Vibrion* (3rd risk group). For the coastal and some inland regions of the PRC, it is one of the main agents of food poisoning. It is predominantly found in water-based products and – crosswise – in meat products. Indicators of the standard were approved taking into account similar standards in force in ICMSF, EU, Canada, Japan, Australia, New Zealand, Hong Kong SAR (Hong Kong). General requirements: n = 5, c = 1, m = 100 MPN / g (ml), M = 1000 MPN / g (ml).

7. *Other*. The permissible standards of pathogenic microorganisms for milk, dairy products, special supplementary foods are determined by separate state standards for food safety.

As the risk of contamination by pathogens of such products (or raw materials) as honey, fats and oils, emulsified fats, marmalade, candy, edible mushrooms, etc., is extremely low, in view of CAC, ICMSF rules and regulations, it has not been decided to set appropriate standards so far these products. However, the indicators and standards of the standards can be refined and modified based on the results of monitoring and risk assessment.

Contamination of food by the Shigella micro-organism can occur as a result of contact with dirty hands or carriers, improper treatment of drinking water, sewage leakage, etc.

Based on the situation in the PRC and long-term monitoring data, it is extremely infrequent to detect this microorganism in food. In view of the regulations and regulations in force in the CAC, ICMSF, EU, USA, Canada, Australia, New Zealand, this item was not included in the list of food content restrictions under this standard.

Conclusions.

Standards harmonization of the Ukraine with the countries of the European Union and China will allow to expand the market and increase the volume of Ukrainian products production, to intensify trade relations between the countries, which will ultimately be in the interests of the state, business and consumers. It is important to eliminate differences in the requirements for the content of pathogens in different food categories, sampling rules, other differences in European and Chinese approaches and techniques related to food safety at different stages of production markets of the PRC and EU countries.

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Chapter 7

MODERNIZATION OF THE EDUCATION SYSTEM MANAGEMENT AND THE INTRODUCTION OF THE LATEST TEACHING METHODS

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PROBLEMS OF PROFESSIONAL TRAINING OF MANAGEMENT PERSONNEL IN UKRAINE AND PROSPECTS OF DEVELOPMENT OF THE THEORY OF UKRAINIAN MANAGEMENT

The stability of socio-economic systems is inextricably linked to the development of management and the professional training of management personnel. Nowadays, not only Ukraine but the whole world is experiencing not only a global economic crisis but also a methodological decline in management. One reason for this was the fact that the classical approaches and methods of management do not provide reliable functioning and formation.

Problems in entrepreneurial activity were still before, but these difficulties in management activity were solved within the framework of bilateral or tripartite relations. What was significantly lower was the intensity of the subjects' interaction, the speed of business processes and the flow of information. Catastrophic results were rare.

The events of the last twenty-twenty-five years in Ukraine have led to mass training of managers in institutions of various profiles, and this is a problem that persists to this day. One of the most important issues to be identified is that there has been a significant decrease in the level of basic education, that is, the share of basic disciplines that create fundamentality is decreasing.

The scientific and technological revolution, the development of the information society, and globalization require the development of the intellectual potential of managers. But intellectual potential is not just a set of achievements of bright personalities, it is a constant self-

improvement, a demand for both others and yourself. New conditions of management require new approaches to management, so it is particularly important to review the fundamental changes that are taking place in the field of governance as the socio-economic system changes. There is a need to break decisively the stereotypes of thinking that have developed over a long time [4, p.56].

Management permeates the entire organization, touches almost all areas of its activities. Management as a set of principles, methods, functions and forms of corporate governance in the West is known in our country for a long time. However, ten years ago, our experts believed that its main goals were to earn high profits and to keep ahead of countries in productivity. In recent years, the attitude to management in Ukraine has changed significantly. The works of well-known management theorists and practitioners have been published, and the active preparation of managerial managers has begun. However, there are still many problems in Ukrainian management [9, p. 231].

B.P. Budzan highlights some of the negative aspects of management in Ukraine, namely:

1. High need for managers.
2. Neglect on long-term management planning.
3. Inability to import new technological techniques.
4. The professional level of directors of enterprises is not high enough.
5. Low corporate culture [1, p. 166].

G.V. Shchokin outlines the main disadvantages which are inherent in organizational structures of domestic enterprises:

1. Excessive centralization of management, unwillingness to delegate authority, move employees of the management apparatus closer to production.
2. Poor differentiation, as a reflection of administrative-command methods of management.
3. Excessive numbers and low efficiency of the staff.
4. Lack of attention to market analysis.
5. Insufficient communication between sales and technical departments.
6. Lack of clear division of functions and powers between organizational units.
7. Low efficiency of technical and economic planning;
8. Poor motivation of employees [9, p. 285].

First of all, Ukrainian companies, and not only Ukrainian ones, are

profit oriented. Unfortunately, the economic situation in our country gives rise to money woes, a lack of creativity. Of course, there are managers who want to improve the management method, but to the best of their ability. Therefore, it is important to train managers, apply new methods of management education, improve the skills of top managers. This is due to the fact that the level of education and knowledge of the managers of this link today is on average lower than the level of knowledge of their subordinates, who mainly have professional education [4, p. 57].

An important sphere of management activity is the professionalization of management activity, i.e. training of management personnel, creation of conditions for their work. Today, the economy of the Ukrainian regions is considered to be a mixed economy, which requires professional management training. The activities of management in Ukraine are related to the peculiarities of the transition economy and specific cultural market behavior, which complicates the transfer of Western methods of market regulation to the Ukrainian economy and requires the formation of a personal theory of management development, and, accordingly, the state model of management training.

Complicating of the system reduces its stability potentially and requires from the management new principles and tools. It became clear that the main element of financial formation is the interdependence of business members, and it requires new approaches to management. That is, management is required, to guarantee the elasticity of the enterprise to environmental factors, timely adaptation to the changing conditions of doing business.

In this connection, more significant problems in the field related to the state of Ukrainian management education have been considered.

First of all, I would like to emphasize that there is difference between such concepts as “education” and “teaching”. Teaching, or transferring knowledge from a teacher to a listener, is not education, and as advanced information technology becomes advanced, the value of teaching is rapidly devalued. Knowledge in itself costs less and less. Education, however, involves not only the transfer of knowledge, but the development of a specialist who understands the nature of the processes and phenomena, with the likelihood of their further practical use depending on the situation. It is the compilation of a particular way of thinking.

Managerial professional education has evolved along the path of specialization. There were such areas of management as innovation,

production, financial management, personnel management, etc. As a result, there is a holistic understanding that no management is taking place in the management of the entity. Specialists receive only a one-sided view of only one component of the management system and do not have a proper understanding of the integration and coordination of all its elements [5].

The fundamental education of the manager should be holistic when the subjects taught under the educational program are not only a set of separate autonomous courses, but are integrated into each other, that is, connected by a common motivated function, methodology and interdisciplinary communication.

One of the most important characteristics of management education is systematic nature. The systematic approach allows the educator to gain a comprehensive and complex understanding of the processes and interconnections of constituents in the entity and the management entity. Systematicity depends on many factors. First of all, it depends on the systematic level of management science, which is based on management theory.

Meanwhile, I would like to point out that the share of basic disciplines that create the fundamental (management theory, organization theory, systems theory, etc.) in curricula is decreasing.

The development of professional management activity in Ukraine took place in the following stages: the first education, the additional education, then another education, advanced training, retraining. These stages did not interfere with each other, but on the contrary, they made it easy to distinguish problems and methodology in the training of management personnel. The first education is basic, because it is during this period that the basic approach to professionalization, methods of effectiveness of management activities and analysis of existing problems are drawn up. Additional education characterized the practical need for knowledge and a set of more relevant problems of management development [5].

In Ukraine, there are 4 groups of educational institutions that are involved in professional management training (Figure 7.1).

The first group includes state economic HEI – which in Soviet times trained specialists in economics or management.

The second group includes the faculties of the sectoral state HEIs focused on business training. These faculties can be attributed to business education institutions conditionally, because they usually do not have the necessary methodological base and qualified research staff

to ensure that their activities meet the standards of business education (except those faculties that were formed for training and training of managers (by industry)). The third group includes business schools at HEI, which have a high degree of autonomy from the founder organization. These business schools have the ability to develop educational programs for study autonomously, to involve well-known specialists and to award diplomas. They are close to the Western understanding of the term “business school”, but there are a number of differences.

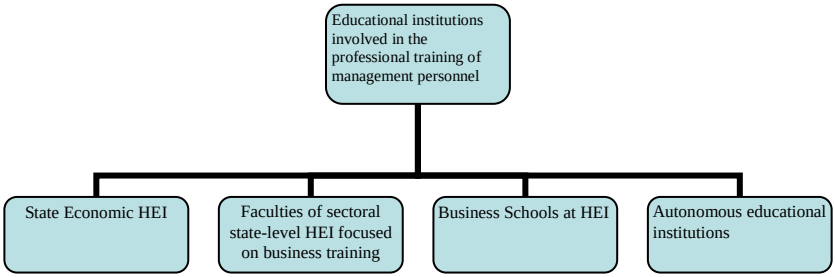

Figure 7.1 Educational establishments engaged in professional management training

The fourth group includes autonomous educational institutions, which mostly implement educational programs with a degree award [6, p. 72].

In recent years, a number of HEIs, independently of the need for a market of educational offerings and taking into account personal potential, have been developing autonomous educational programs for the specialty “management”. However, there are a number of problems here.

1. Confusion of the concept apparatus. At present, a single conceptual apparatus in the field of education management has not been formed yet. As a result, educators cannot properly study the discipline on their own, i.e. remotely.

2. Confusion of the subject area. Actually, what relates to management activities, what are its limits, compliance with management? There is no single concept in these issues, in fact, what creates a large number of tasks with educational materials.

3. Absence of a unified theory of management activity. Books called

“management theory” are often a digest of literature related to the management of an enterprise that conducts business. That is, the book may contain several topics on strategy and organizational structures, several topics related to legislation, and several topics on personnel management. As a result, there are books that cannot be said to be unrelated to collective management, but to study the process of collective management, to learn to work is impossible, because they do not have complete information.

4. Confusion is in the end result of specialist training. This confusion makes it difficult to coordinate specialist training programs [3].

When developing the content of a specialty education curriculum, it is important to remember that it is not possible to become a professional manager only by listening to the relevant training direction, but it is possible to form / consolidate some of the core competencies that, with the required instrumental abilities, will be the basis for professional career development manager that will transform you from an educational program listener to an effective manager.

Management education programs should include programs of two types, which are completed alternately by educators throughout the study cycle.

The first type is the disciplines that answer the question “what for”? and why”?. Students gain general knowledge of a management organization that performs a particular form of creative work. This knowledge enables them to build a systematic approach to the management process.

The second type is the disciplines that answer the question “what”? and how”?. They provide knowledge and skills in management analytics, diagnostics, project management, ways of solving problems issues and problems. These courses should be taught in the form of business games, workshops, consulting with students to develop their personal management projects, etc.

In Ukraine, two parallel management communities have emerged that oppose each other. The basic essence of this opposition is that these two communities use different tools and technologies. The first management community should include teachers, consultants and trainers in management. The second group is executives at enterprises If the first group is focused on Western culture and models of management, the second one being in the realities of national culture is critical of the theoretical structures of the first [8, p. 46].

One of the most important problems in Ukraine with regard to

management education is that teachers of HEI translate foreign textbooks and monographs that are not adapted to Ukrainian conditions. Lacking basic training and practical work in management, trainees cannot properly understand and recognize Western practice and eventually begin to think and practice without understanding the right activities.

It should be noted that in the process of obtaining management education teaching methodology is very important. A key issue is the relationship between management education and practice. Effective governance of management is based on the integration and coordination of all processes, functions and aspects of its activities. Strategic directions for the formation of management education should be the formation of a holistic view of enterprise management.

Until recently, “traditional”, that is, empirical approaches to management were absolutely in line with the needs of the business, because, due to the large number of resources, the deficiencies in the management of the enterprise were hardly noticeable to the subject of management. On the one hand, this contributed to the formation of standards, for example, an idea of the separation of theory and practice, on the other hand it prevented understanding of management problems.

Because of the absence of a rigorous theoretical base, teachers can invent any name and design an educational program for them to study. From the outset, this approach to management education should be considered futile. The future is for educational organizations and programs that are not aimed at expanding the list of disciplines to be taught, but at drawing up an educational environment in which the thinking of a manager will be developed. Due to this thinking a manager will be able to respond to a particular situation in the enterprise in the course of managing management activities and choose a methodological base that will ensure reliable management [2, p. 23].

Almost all industries and businesses are in need of professional managers. Autonomous forms and mechanisms of the role of employers and professional communities in solving educational policy issues and in the processes of independent social assessment of the quality of management – education have not been developed to a sufficient extent. Poor integration of educational and scientific activities into production has the potential to lead to a final detachment of theory from practice. The difficulties of business education in Ukraine are of a systemic nature and to correct this it is necessary to use a systematic approach, the essence of which is to correct system defects (prerequisites), not

consequences.

There are a number of current problems that reduce the quality of management education in Ukraine. Let's distinguish 3 of them, which in our opinion are the main ones.

1. Lack of relevant literature. Although a large number of books are written on the socio-economic topic, articles are published in periodicals, but the current situation in the field of management education in Ukraine regarding the scientific literature is not satisfactory.

I would like to point out that not many books that are commercially available can be classified as "business fiction". These types of books are potentially more popular because of their easy reading and emotional presentation of the material, which actually makes the content of the books comprehensible to many readers. The style of teaching text in such literature helps to promote and understand the text, but such text does not highlight the problem. In fact, it contributes to the formation of illusion, that, there are the usual ways to solve every problem virtually. The demand for such literature is higher, that is why it is much more advantageous to print this type of literature than more difficult, well-crafted works. Therefore, it is difficult to find serious books on sales management. There are practically no such books.

Also, there is no important theoretical basis that sets the benchmarks for evaluating one or another literary source, the formation of managerial knowledge. All management books contain similar information. The difference is only in the style of its presentation. As a result, developments in science do not occur, new management methods do not appear.

2. Weak interaction of the HEIs of Ukraine with business practices. An example of this is that there are difficulties in organizing student internships. Entrepreneurs are not interested in trainees, as they need to be further trained. In addition, the short time of the internship does not allow the students to be applied effectively, it takes time. And by the time they learn, and understand how to conduct practical activity in the enterprise, the practice will be completed.

The long-term interaction of the HEIs of Ukraine with enterprises is required. It would be more prudent to open a unit in the HEIs Ukraine, which would organize connection with the subjects of management activity. This would allow to implement targeted training programs for specialists.

According to prominent experts in the field of management of T.

Morita (Japan), G. Mintzberg (USA), etc., it is not possible to prepare an effective and efficient manager within the walls of an educational institution. A combination of hands-on training and practice is a must.

3. There is no interest in innovations in organizational and management sphere. Ukrainian enterprises face a severe shortage of skilled innovation management professionals. According to the results of numerous Ukrainian and foreign researches, in the conditions of mass competition it is impossible to achieve success in business activity without introduction of organizational and managerial innovations [7, p. 111].

The training of managers based on advanced management tools and technologies should be based on three areas:

1. Continuous study of the profession and internship.

2. Mastering the technologies of public relations within the hierarchies of management in organizations and the external environment.

3. Management as a process of economic, technological and social management to achieve organizational goals [6, p. 73].

In connection, I would like to state the newly formed education system is not able to fully meet the business needs for innovation. The first and the main reason is that there is no clearly spelled out list of competencies of innovation managers. Also, a conceptual approach has not been formed in the training of management personnel in the field of organizational and managerial innovation.

In order to address the issue and improve the professional training of management personnel, it would be advisable to ensure scientific cooperation with professional associations, research organizations and educational institutions on the formation of the state model of training of managers taking into account sectoral needs. Next, learn how to create an educational application for an accredited HEI, organize the selection of applicants for training and their subsequent support until employment. The quality of training of managers in the Ukrainian HEIs meets the requirements of employers, but you only need to find “touch points” of science and practice. An important factor is the ability to evaluate and select business programs for staff, taking into account the prospective needs of the organization.

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EFFECTS AND MEASUREMENTS OF ENHANCING FINANCIAL LITERACY

The process of country-level and global information flow[7], digitalization and technological trends as well as the search for equal possibilities including equal access to financial services, and on the other hand, frequent financial distress naturally calls for enhancing financial literacy starting from financial education at school up to the inclusive targeted financial education for the parts of population involuntarily excluded from financial relations (Figure 7.2). Financial education goes hand in hand with financial inclusion leading to social welfare through access to thoughtful use of financial services (having access to microcredits, target services for the financially weak, work with the entrepreneurs to offer jobs in localities).

As known, exclusion can be voluntary, sometimes resulting from misunderstanding of the risks of financial system, and involuntary caused among other by lack of information (Figure 7.2). Here lack of financial discipline coming either from lack of knowledge or voluntary incompliance hinders eagerness to use and to provide financial services.

Within the correct cooperation of the state (e.g. represented by financial regulators), entrepreneurs and individuals, financial education facilitates financial mobility of social groups. Fiscal policy subsidizing

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[7] *That is forming clients' databases to ease and quicken the access, identify their demands, credit risks; performing AML&KYC, currency control and reporting procedures. An outstanding example of database is the Aadhar biometric database embracing 90% of population is India, allowing fast KYC, mobile penetration, digital payments etc., providing a unique identity to each Indian, no-frills savings bank accounts, direct transfer of social benefit payments, digital payment infrastructure. Further steps include cooperation of the government and private sector to build a superstructure of economic prosperity, employ people in localities, structure financial services according to businesses' cycles, involve rural areas. Now ca. 80% of adult Indians have bank accounts (according to the World Economic Forum data, retrieved on May 28, 2020 from: https://www.weforum.org/agenda/2019/01/financial-inclusion-in-india-is-soaring-heres-what-must-happen-next/).*

reserve is constrained[8], especially in crisis times, besides, misunderstanding of financial market processes by individuals can result in non-performing individual loan portfolios, losing deposits, losing funds in other financial operations, exposed to fraud and theft. Financial education, therefore, is another reserve, which imposes responsibilities for losses also on consumers (in part of their understanding of the product they use and estimating their risk), and helps to remove individual finance flow and consumption gaps.

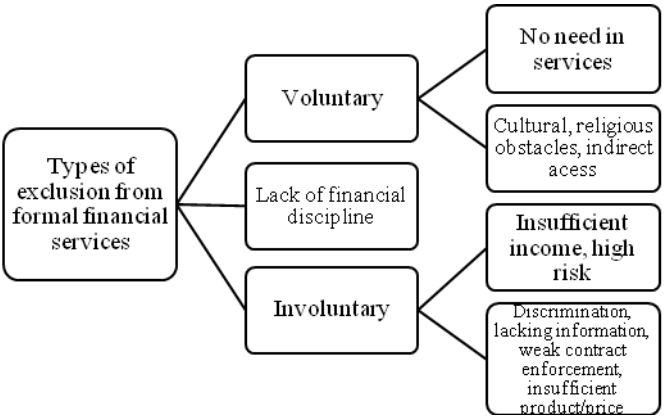

Figure 7.2 Financial Exclusion. Source: Adapted from (Amidžić et al., 2014)

Certainly, financial education can become such a reserve in case of adhering to financial discipline by all the parties to a financial transaction. Financial discipline[9] is another prerequisite of financial

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[8] *During the current COVID-19 crisis, for the individuals, countries have implemented measures for those facing payment difficulties through loan moratoria, restructuring of loan term or repayments without lowering loan classification, or credit guarantees. Central bank instrument cushion (discount rates and forward guidance) exhausts, countries are releasing the countercyclical capital buffers during the virus outbreak. Thus, the importance to educate personal planning and savings behavior with proper provision of customer protection is the responsibility of the state represented by a market supervisor (according to Global Financial Stability Report, retrieved on May 28, 2020 from https://www.imf.org/en/Publications/GFSR/Issues/2020/04/14/Global-Financial-Stability-Report-April-2020-49020).*

[9] *Financial discipline is the condition of compliance by the entities of all forms of ownership, communities, officials, individuals of the legally provided financial and*

education and very much depends on rule of law and institutional development in the country.

Financial literacy embraces: knowledge (e.g. understanding of the essence of interest, inflation); attitude (preferring spending to savings); behavior (planning and saving, counseling, using financial services). Effectiveness of enhancing financial literacy is related to customers' rights protection and trust to financial intermediaries. E.g. this is the case of Ukraine with lack of trust in the system, which is also the factor of poorly developed voluntary individual insurance market, failing mortgage market and voluntary pension planning, lack of savings or investment. According to the OECD survey conducted in December 2018 and presented in June 2019[10], in the population groups of 18 to 79 years old, Ukraine has lower financial literacy (11.6 points out of 21 awarded for financial knowledge, attitude and behavior). This is in row with Poland's 11.6, but below the average of the 6 neighboring countries (Belarus, Georgia, Hungary, Poland, Russia, Turkey) – 12.1 points.

The OECD research highlighted worse attitude to financial issues – that is non-term planning or non-saving attitude in Ukraine among the 30 countries viewed, where the citizens do not trust financial institutions and prefer cash or saving in cash outside of the financial system, probably owed to the two financial crises during recent 15 years, inflation and abrupt devaluation (in 2014-15, Figure 7.3). Merely 12% of the respondents hold funds in banks. Lowest financial literacy was revealed among young people aged 18-24.

Simultaneously, the literacy in general in Ukraine and the neighboring countries has been historically high (Figure 7.4), so the financial literacy issue is more a matter of trust and the outcoming attitude and protection.

When economic activity remains paralyzed, the importance of savings becomes obvious (as such, in Ukraine, consumption took 88.8-89.2% of total expenses in 2017-19, whereas savings growth percentage took 1.0-1.2% in 2017-18, and turned into outflow in 2019, in

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legal norms (Voronova, 2011). The discipline concept can be thus used in the sphere of providing services by financial intermediaries and clients referred to their liabilities.

[10] *In frames of USAID Financial Sector Transformation Project (Financial literacy, financial inclusion and financial well-being in Ukraine, Retrieved on May 28, 2020 from: http://www.fst-ua.info/wp-content/uploads/2019/06/Financial-Literacy-Survey-Report_June2019_ua.pdf?fbclid=IwAR1VG2hi6WKhMbbFoJdKxlRNG5NbUZj0rnhtBNhU9EAjlajpnbMjSTHLPmM [in Ukrainian])*

accordance with the State Statistics Service of Ukraine, data retrieved on May 28, 2020 from: http://www.ukrstat.gov.ua).

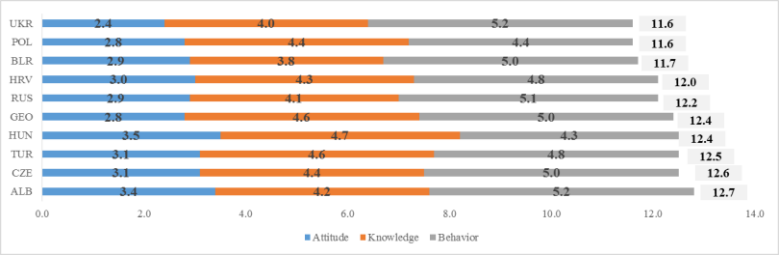

Figure 7.3 Financial literacy index in select countries (deviation in sum due to rounding)

Source: USAID

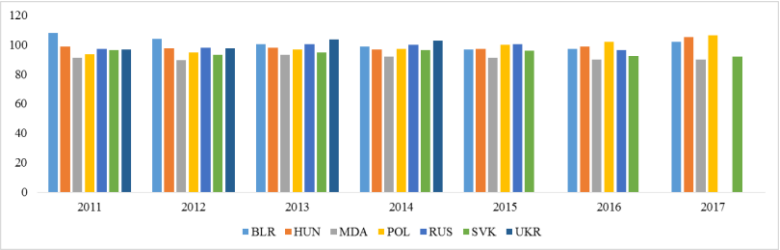

Figure 7.4 Primary completion rate, total (% of relevant age group)[11].

Source: the World Bank Database, https://data.worldbank.org

The sociological research dated June 2018 conducted by the "Social Monitoring" Centre and the Ukrainian Institute of Social Research named after O. Yaremenko (Titar, 2018) has shown that among financial indicators, the Ukrainians are most interested in the US dollar exchange rate (knowledge accuracy among the questioned population is avg. 95.7% compared to statistical data), a bit less in the average salary level

[11] *Gross intake ratio to the last grade of primary education, is the number of new entrants (enrollments minus repeaters) in the last grade of primary education, regardless of age, divided by the population at the entrance age for the last grade of primary education. Data limitations preclude adjusting for students who drop out during the final year of primary education.*

(avg. 8.4%) and have weak knowledge about inflation (avg. 6.2%) and unemployment (avg. 0.5%), whereas in Western Europe people are more focused on the unemployment level. Obviously, exchange rate and salary are most influencing the Ukrainians' welfare. The information about the exchange rate can be politically speculative and impact political stability via social unrest (Balakirieva, 2015). Attention to the exchange rate shows lack of trust to the local currency. The authors of the research claim for the state information campaign on the economic performance indicators considering population demand for indicators.

Among the peer countries, in Ukraine, Moldova, Georgia and Kazakhstan, the lower percentage of the population aged 15+ with primary or less and secondary or more education have an account in a financial institution (banks and other; Figure 7.5-7.6). Among the prevailing financial knowledge-related reasons there is lack of trust to financial institutions in Ukraine and Moldova. Other knowledge-related reasons can be religious reason and no need for an account (Figure 7.7).

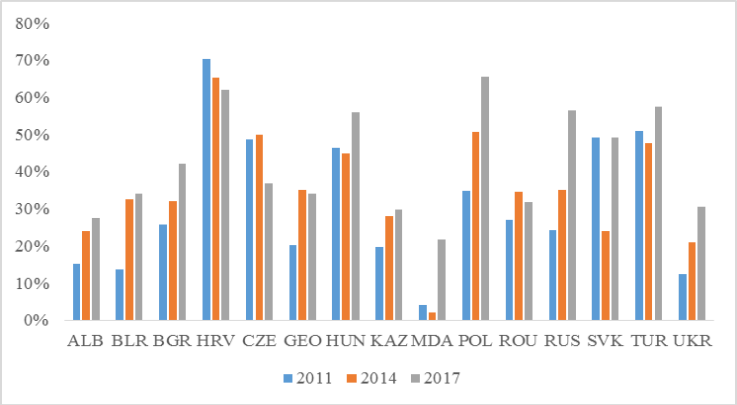

Figure 7.5 Account, primary education or less (% age 15+)[12]
Source: the Global Findex Database, https://globalfindex.worldbank.org

[12] *The percentage of respondents who report having an account at a bank or another type of financial institution or report personally using a mobile money service in the past 12 months.*

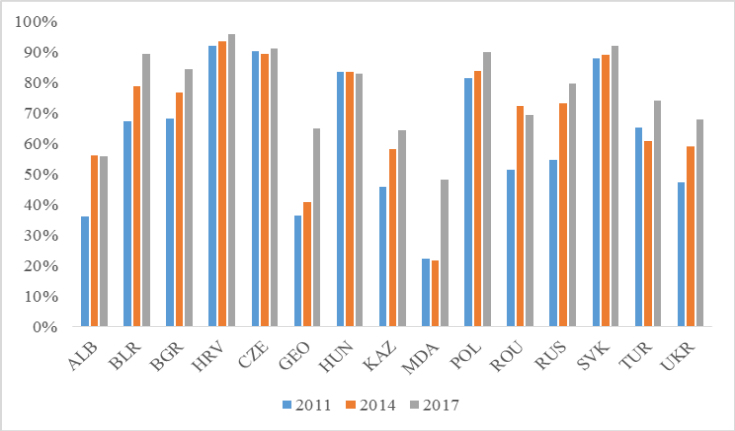

Figure 7.6 Account, secondary education or more (% age 15+)
Source: the Global Findex Database, https://globalfindex.worldbank.org

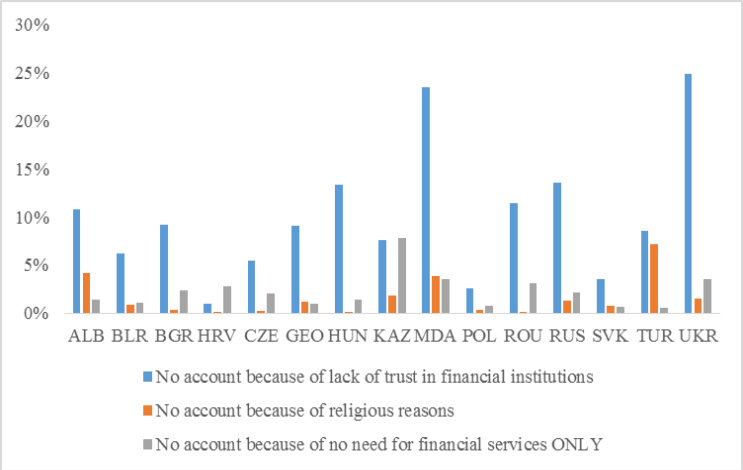

Figure 7.7 Absence of account by financial knowledge-related reasons (% age 15+)
Source: the Global Findex Database, https://globalfindex.worldbank.org

Besides, people are reluctant to open an account for insufficiency of funds or too costly services as well as far location of the closest financial institution. On the other hand, not many got used to operate

with mobile financial services and those via the internet[13].

The savings in the observed countries grew in 2017, but were down in Croatia, Ukraine and Russia, remaining lowest in Georgia and Ukraine (Figure 7.8).

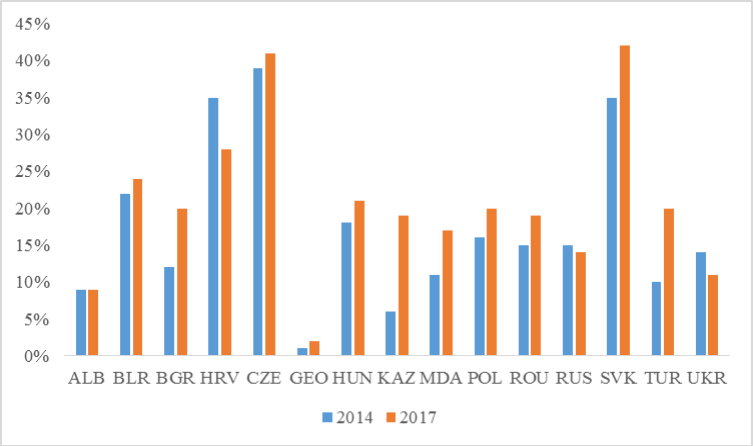

Figure 7.8 Saved for old age (% age 15+)

Source: the Global Findex Database, https://globalfindex.worldbank.org

For the targeted financial literacy enhancement programs, the chapters which are important to include are as follows:

- knowledge of finance basics (inflation, exchange rate, interest rate and their factors, cycle off providing a financial product etc.) and consumer rights;

- training financial behavior (train planning, understanding terms and conditions and comparing financial products);

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[13] *The examples of Kenya, Philippines and Uganda, where the access to financial services was spread due to mobile technologies outline the importance of the targeted state policies directed to provide proper infrastructure, institutional development and public-private cooperation along with proper educating of the consumers (Zephirin et al., 2012). As such, the Kenyan M-Pesa system, launched in 2007 allowed instant remittances without opening an account at low cost of the mobile provider. Use of mobile services allowed economies of scale including lower transaction costs as well as cooperation with the banks in creating financial products and involving low-income population into financial relations, especially population in rural far locations.*

- formation of attitude and preferences (savings versus spending, short- versus long-term depositing, risky versus non-risky finance etc.).

Understanding of finance basics helps to secure smooth funding of private life cycle, pension and business planning, withstand financial fraud. The learning should consider social status, age, culture and place of residence to give imagination what financial products can be made best use of. Many countries implement public-private partnerships to help the unemployed, studies to cultivate entrepreneurial skills (Table 7.1). Well-informed customers in their turn have higher requirements to the quality of products, increasing market competition, whereas the latter helps to reduce prices.

Table 7.1

Financial education program examples by country

Program	Description
"Understanding money", Australia	Thematic games for teenagers, "developing career" program
Economic and financial literacy program, Austria	Specialized excursions
Learning to borrow money on early stages, the Netherlands	School lessons, guidebooks for parents, games for teenagers
"Ensuring the future" program, the Netherlands	Pension planning for the students of higher educational institutions
"Mymoneyweek" program, Canada	Game-based developing shows ("Financial genius", "Investor")
Financial education for schools program, Italy	Trainings for school teachers
National bank program, Poland	Scenarios of lessons and consultancy for teachers, online courses and education for teachers and parents
"Finance for all" program, France	Games, books, forums for teachers and parents
"Life lessons" program, the USA	Guidelines and plans for teachers, parents, games and cases

Source: High School of Economics, Russia, retrieved on May 28, 2020 from: https://iq.hse.ru/more/finance/neobhodimost-povishenia-finansovoj-gramotnosti

Financial literacy gains more significance, and can be achieved either at school or in the process of providing financial services to target groups. Financial education is factored by digitalization, state legislative and financial subsidizing, socioeconomic conditions and new demands provided for by the globalization and economic cycles. Effective financial education in its turn facilitates the formation of financial

culture, social mobility and socioeconomic development. Financial literacy is viewed as a prerequisite of effective financial inclusion, beneficial not only for financial service providers, but also for consumers. Should the economic institutions be extractive (as the opposite to inclusive ones), larger financial inclusion combined with low protection of customers' rights and their low understanding of financial services, their benefits and risks, would lead merely to redistribution of financial resources, and namely to extraction of funds from population and funds' misuse. Financial sector stability is provided by regulatory limitations in relation to aggressive consumer credit and proper capital requirements to force financial institutions cap responsibility for losses instead of the state[14] as well as proper regulations to prevent fraud and cyberattacks in the process of provision of financial services.

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IMPLEMENTATION OF THE PRINCIPLES OF INTERDISCIPLE RELATIONS IN HIGHER EDUCATION (FOREIGN EXPERIENCE)

Today, the world community faces the problem of ensuring the quality of higher education in response to modern challenges (use of modern technologies, ensuring quality higher education, transformation of societies, falling funding due to the economic crisis). The problem is especially relevant for Ukraine, which is reforming higher education in difficult conditions.

According to the Paris Communiqué by the Ministers of Higher Education of the European Higher Education Area, the priority is to promote and support institutional, national and European initiatives for pedagogical training, continuous professional development of teachers and finding ways to better recognize high quality and innovative teaching in their careers.

In order to coordinate legislative and other normative legal acts of Ukraine with European ones in the field of higher education, the most important provisions of international documents are implemented, and the priority of international treaties of Ukraine is confirmed (The Law of Ukraine "On Higher Education" (Chapter XIII "International Cooperation").

The Law of Ukraine "On Higher Education" states the orientation of the State policy in the field of higher education, which is based on the promotion of sustainable development of society by preparing competitive human capital and creating conditions for life-long learning; international integration and integration of the higher education system of Ukraine in the European Higher Education Area, state support for the training of specialists with higher education for priority areas of activity, including scientific and pedagogical and pedagogical activities (Law of Ukraine "On Higher Education").

The Concept for the Development of Distance Education in Ukraine states that development f the higher education system in Ukraine should

lead to (The Concept for the Development of Distance Education, 2000):

- the emergence of new opportunities to update the content of education and methods of teaching disciplines and dissemination of knowledge;
- expanding access to all levels of education, realizing the possibility of obtaining it for a large number of young people,
- including those who can not study in higher education in traditional forms due to lack of financial or physical capabilities, employment, distance from major cities, prestigious educational institutions, etc.;
- implementation of a system of lifelong learning.

Analysis of scientific and pedagogical literature showed that the problem of integration of knowledge at the interdisciplinary, philosophical and pedagogical levels are devoted to the works of such scientists as S. Goncharenko, M. Yevtukh, V. Kremen, V. Lugovoi, V. Ognevyuk, S. Sysoeva, etc.

Nowadays, the quality of professional training largely depends on the relationship between disciplines, as well as the ability of the teacher to arouse and constantly maintain the interest of subjects in such relationships. In view of this, the question arises of using interdisciplinary links in order to enhance the independent cognitive activity of students in foreign language classes.

Today there are disciplines that are constructed on an interdisciplinary basis (for example, linguistics, psycholinguistics, linguistics, etc.), where you can observe the origin, evolution and prospects of a particular discipline).

In the countries of the European Educational Area and the United States, the use of interdisciplinary links is given considerable attention, as evidenced by numerous studies.

Scientists in their scientific research use different terms for this approach: interdisciplinary, interdisciplinary, multidisciplinary, crossdisciplinary, transdisciplinary.

The term “interdisciplinary” or “cross-disciplinary” is considered as an organizational unit that includes two or more disciplines. It is related to interdisciplinarity, but it is a noun used for a certain type of unit (academic discipline).

The concept of interdisciplinary research is based on the premise that concepts and facts are not studied in isolation from each other (Wolins, Inez S., 1992).

Susan M. Drake uses terms such as multidisciplinary,

interdisciplinary, and transdisciplinary (Susan M. Drake, Rebecca C. Burns 2004). A significant difference between the three approaches is determined by the existing level of division between subjects that cover a certain area. Susan Drake and Rebecca Burns believe that three approaches fit the evolutionary continuum (Susan M. Drake, Rebecca C. Burns,). Researchers have established relationships between three different approaches. Given the differences, the three approaches have much in common.

Thus, at the multidisciplinary level, disciplines are studied on the basis of topics. Interdisciplinary skills and concepts are embedded in the standards of the discipline. The transdisciplinary approach takes into account the real life context

The meaning of the term "integrate" was considered by Ineta Helmane and Ilze Braska. The term refers to integration, adaptation, synthesis, inclusion, integration and coordination. Integrate means combining two or more things to become more effective. Integrated means to combine to form a single object, combining or coordinating individual elements, to ensure a harmonious, interconnected whole organized or structured so that the constituent units function together. Related words: complete, whole, integral, inherent, inseparable, united. The word "integration" is an act of unification as a whole. Synonyms of the word "integration" are consolidation, combination into integrity. From the integration aspect, it is important to point out the internal balance, so that in the process of teaching / learning all the goals and objectives of the individual elements, as the content of independent school subjects was achieved and implemented in the learning process. Also important is the aspect of the integrity of the individual, how the student acquires knowledge and skills in the process of learning and how they will be used and developed, guidelines for full participation in the learning process. The effectiveness of integrated teaching / learning is justified by the connection between learning and life (because life is a whole), gaining the unity of the spiritual development of the individual and understanding the coherence within knowledge. Integrated teaching / learning or the process of teaching / learning must be linked to the whole, which not only assimilates the learning content, but also provides "a holistic approach to personal development contributes to the intellectual, emotional and social development of the student in the relationship" (Anspoka, 2003). Integrated teaching / learning related to the whole provides a predominant embodiment of teaching / learning ideas (Anspoka, 2003), because during the mastering of one subject,

studying one question, the student will get an idea of the content of another discipline, which is also to be mastered. An integrated learning process that creates a whole creates motivation for the student to learn. Thus, the action of the teacher is important, as a result of which conditions are created when the student sees the integrity of the learning content, and not the teacher points to the connections that should be seen. Awareness of motive in integrated learning is an internal driving force, a subjective component, individual and different for all (Petere, 2014, 116). Integrated learning can be a condition for providing learning that involves structured work with a clear concept, methods and principles, combining several educational paradigms in such a way that allows each student to learn in their own style and guidelines in an officially recognized learning environment (Csorba, 2013).

The prefix "multi" is described by Ineta Hellman and Ilize Brazhka as a combination of forms meaning "many, many, many, many times, more than one, more than two" and is used in the formation of complex words (slovnik.com). In practice, this may be related to each case where more than one subject is studied at the same time. Multidisciplinary approaches focus primarily on disciplines. Teachers who use this approach organize standards for disciplines around the topic.

The word "inter" is used to form adjectives meaning "between or among the people, things, or places mentioned" (Cambridge Dictionary). The word "interdisciplinary" combines or includes two or more disciplines or combines two or more professions, technologies, departments, etc., both in business and industry. Interdisciplinary disciplines are those that cover more than one field of study; inter- (Latin) means "between", and disciplinary, which is derived from Latin (discipline) and means teaching or knowledge. In an interdisciplinary approach, teachers develop a curriculum around general learning in different disciplines. They combine collaborative learning embedded in disciplines to emphasize interdisciplinary skills and concepts. Disciplines are identified, but they are less important than in the multidisciplinary approach.

Scientists conclude:

- the purpose of integrated learning is the holistic development of the student's personality through the unity of learning with real life;
- all approaches to the integrated curriculum are more effective for teaching students than the traditional approach based on one discipline;
- the main differences between approaches to curriculum integration are the understanding of strategies, relationships and complexity of

contexts;

- effective realization of educational goals is possible under the condition of understanding the types of integration, as well as ways of planning and cooperation;

- in the context of new requirements for education (competence development) – transdisciplinary approach can be considered as the most productive type of integration.

General standards and forms of accountability bring approaches closer in practice.

Researchers offer three types of analysis: cross-disciplinary analysis (cross-disciplinary analysis), multidisciplinary analysis (multi-disciplinary analysis) and interdisciplinary analysis (inter-disciplinary analysis).

The approach to future education through several and often integrating disciplines helps to realize the holistic goal of interdisciplinary and multidisciplinary approach, to create a holistic futuristic educational experience that uses different modes of consciousness and understanding. According to Thomas Lombardo, future education can be taught as a course of integrative research, or integrative studies in the context of the future. This approach to future education is both multidisciplinary and interdisciplinary.

The International Bureau of Education (IBE-UNESCO) identifies three main types of modern approach to curriculum integration: multidisciplinary, interdisciplinary and interdisciplinary).

A multidisciplinary curriculum is the study of a topic in terms of more than one discipline and problem solving using a different disciplinary approach (Klaassen, 2018). For example, the study of the topic “Higher education of the country whose language is studied” in the discipline “Practical English course” is possible if you study the course of the discipline “University Studies”.

An interdisciplinary curriculum is an understanding of theories that cut out different disciplines and shed light on the process and meaning, rather than a combination of different disciplines. For example, modern pedagogical research in the subjects “Pedagogy”, “University Studies” requires knowledge of a foreign language to study English literature.

A transdisciplinary curriculum is the elimination of boundaries between major disciplines, integrating them to build a new context of real topics and conducting a core course (Doyle et al., 2018).

Interdisciplinary integration can take place at different levels, but when planning combined programs and creating models of integrated

learning, according to M.O. Owls, should adhere to such principles as integrity, system, structure, multilevel, compliance with all spheres of social and cultural life. Subject to these principles, the learning process becomes complex, and students, realizing the relationship of learning with everyday life, acquire knowledge faster and longer (Sova M.O., 2009). Thus, such results significantly optimize the learning process.

Basically, an interdisciplinary curriculum is seen as a course based on two or more disciplines using knowledge and methods of working from one discipline and applying them to another discipline to ensure a broader and deeper acquisition of knowledge and acquisition of relevant competencies. As for the curricula of individual courses, they include interdisciplinary links, which include information from various subjects, namely the task of enhancing the cognitive activity of students.

In addition to working with a wide range of knowledge, students engaged in interdisciplinary research work with several departments, exposing them to different ways of thinking and developing communication skills.

Cross-disciplinary analysis – studies a problem that usually turns into one discipline through the prism of another discipline (for example, the study of a foreign language of professional communication is studied through profiling disciplines).

Multidisciplinary analysis – considers the problem from different points of view, without making a joint effort for the systematic integration of disciplinary views.

Interdisciplinary analysis – considers the problem from different points of view, which leads to a systematic effort to integrate alternative views into a single or holistic framework of analysis.

Group of European scholars Lina Xue, Bart Rienties, Wim van Petegem, Astrid van Wieringen exploring the educational relationship of knowledge transfer and integration in online interdisciplinary learning, the idea that the learning relationship of knowledge transfer (KT – transferring knowledge from one person to another) and knowledge integration (KI – knowledge integration) play an important role in the process of interdisciplinary learning. (Lina Xue, Bart Rienties, Wim van Petegem, Astrid van Wieringen,).

In the context of interdisciplinary links, we find it interesting to integrate scientific literacy using information literacy skills. Elizabeth Berman and Jody Caden focus on information literacy in their research. According to scientists, it is extremely important to introduce the basics of information literacy (Framework for Information Literacy), which

aims to improve both scientific and information literacy of students, the introduction of the concepts of scientific literacy in courses related to relevant topics. This model allows students to better understand scientific information and expand the scientific topics on which the research is conducted. The purpose of introducing the basics of information literacy is to promote cooperation between librarians and faculties. Thus, information literacy does not belong exclusively to the scope of the library. At the same time, scientific literacy goes beyond pure scientific examination. Researchers believe that collaboration between librarians and teachers in teaching the convergence of scientific and information literacy helps to expand students' understanding of science. Such a partnership creates a platform for change that benefits all parties – librarians, teachers and students, and promotes knowledge transfer. By integrating the concepts of scientific literacy into their lessons, librarians will further help to contextualize a complex information environment for students, providing them with lifelong critical thinking skills and successful literacy in both science and information (Elizabeth A. Berman, Jodee L. Kuden, 2017).

Conclusions.

The unifying processes of the European continent, the dynamic development of modern technologies, fierce competition in the labor market, the high level of requirements for the specialist necessitate a comprehensive study of the conceptual foundations and search for effective mechanisms for training. Today, the prospects for professional training are impossible to imagine without such phenomena as globalization, integration and the Bologna Process, which are external factors influencing the system of professional training.

The global process of transition from an industrial to an information society, as well as social-economic changes taking place in Ukraine and in the countries of the European Union, require significant changes in many areas of state activity. First of all, it concerns the modernization of professional training.

One of the general trends in the professional training of future teachers is the use of interdisciplinary links. The interdisciplinary context of professional training of specialists is a new scenario for the development of higher education,

The interdisciplinary approach and problem-based learning highlight the awareness that knowledge of various disciplines is required to fully understand this topic. The synthesis of knowledge from different disciplines, elements of interdisciplinary teaching is an activity that most

scientists and educators in the European educational space and the United States are engaged in today. The implementation of the interdisciplinary approach in higher pedagogical education is considered in the countries of the European educational space and the United States as a promising method. This approach is proposed as a means of improving the effectiveness of learning and the formation of cognitive needs.

Thus, the main purpose of higher education is to form knowledge about a particular discipline that can provide students with the ability to analyze information and apply it to real life. To improve students' understanding and make the learning process more productive and enjoyable, students need to feel the connection between the different subjects of the curriculum.

Interdisciplinary research is the best option for developing students' creative thinking, allowing them to explore and make connections between a wide variety of ideas, methods and ways of thinking. The study of two or more related subjects is useful for a better understanding of the subjects, as they allow students to apply the knowledge gained in one field to improve their understanding of the subject in another.

A promising area of application of interdisciplinary links is also the integration of scientific literacy using information literacy skills.

Particularly relevant is a special project of subject-language integrated learning (Content and Language Integrated Learning (CLIL)), which is to teach a foreign language, using the content potential of other disciplines. Thus, another promising area of using the experience of Western countries is the application of the principles of interdisciplinary links in the teaching of a foreign language.

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CONCLUSION

In the context of global change one of which is the COVID-19 pandemic, the most important factor in ensuring the sustainable functioning of economic entities is the introduction of new models of economic systems management. Achieving sustainable functioning of economic entities largely depends on the available resource potential, its preservation and maintenance of value, expanded reproduction and innovation ensure. Due to the changes in the market environment caused by the pandemic, the theoretical foundations and methodology of economic systems management need to be improved and substantially supplemented. The problem is partly solved by the introduction of modern information technology in the economic systems management and the transition of individual economic entities online, which have such an opportunity. For other economic entities, digitalization has become an effective instrument for growth and expanse of volumes of activity, which has formed a new model of economic systems management.

The results of the author's research in the collective monograph are devoted to solving the problems of formation and implementation of new models of economic systems management and mechanisms of their implementation in modern global challenges based on strategic management and making management decisions.

An important component of the collective monograph is the developing of new models of innovation management, financial-credit and investment ensuring, approaches to modeling socio-demographic processes, directions of rationalization of marketing ensure for economic systems management.

The results of the research presented in the collective monograph reflect the theoretical and practical aspects of the implementation of economic systems management mechanisms that ensure the preservation of resource potential of economic entities in the current perspective and the possibility of developing scenarios for its development in the future, including in various sectors of the economy.

It is established that ensuring the efficiency of economic systems management in the current global challenges is based on improving the management process of innovative economic entities.

Overcoming the crisis provoked by the COVID-19 pandemic and creating conditions for preserving the resource potential of economic entities require the developing and implementation of a balanced economic policy aimed at economic systems managing in the country, ensuring optimal use of resources on this basis. In a complex set of priority changes one of the important places belongs to the rational ratio of self-regulated and regulated levers functioning of economic systems, the formation of a balance of interaction of market self-regulation and the role of the state in ensuring favorable economic conditions.

The current global scientific-technological, information, cyber and environmental revolution require appropriate changes in the models of economic systems management. Each economic entities, based on available resources and capabilities, market conditions, should developing its own model of economic activity management, which, based on the latest global challenges and opportunities, would ensure the preservation, efficient function and development in the future.

That is why we believe that the innovative model of economic systems management in accordance with the current state of economic entities and global challenges has no alternative among other models of economic functioning (such as the model of traditional development, the model of catching up, etc.). And only the transition of economic systems to the model of conservation and progressive development, in which the main source of economic growth will be scientific knowledge, technological innovation and information, can ensure the effective functioning of economic entities, create conditions for solving socio-economic problems and challenges caused by the COVID-19 pandemic.

The results of the study of world experience show that recent history knows no example of the formation of a highly developed, flexible, efficient functioning economy without a market, or a highly efficient socially oriented market economy without a leading regulatory role of the state. Therefore, the state should make efforts to maximize the preservation of economic entities by providing appropriate financial assistance, various social transfers and develop public-private partnerships in the most attractive areas and directions of economic activity. Such measures will promote the formation of parity of state regulation of the economy and market self-regulation, which will ultimately ensure effective management of economic systems.

Effective management of economic systems requires financial-credit support for the creation of new technologies, first of all, the emergence of social innovations, the development of online technologies and digitalization. In the context of globalization challenges, dynamism of external and internal processes there is a need for a fundamental understanding of the theory of management of economic systems in the transition to the principles of conservation of resource potential, formation of ecological systems and development of theoretical-methodological provisions and methods of making flexible management decisions.

The impact of the pandemic and the dynamism of the market environment require the introduction of organizational-economic measures by economic entities aimed at maintaining stability, adaptability and flexibility of functioning. However, maintaining an appropriate level of functioning of economic entities necessitates their sustainable development, which can be defined as balanced quantitative, structural and qualitative changes that meet the objectives and take into account the constraints imposed by the external environment and resource potential. Ensuring the effective functioning of economic entities is possible only through the formation of an appropriate management mechanism, which should be understood as an integrated system of organically linked economic, organizational, social, financial and other forms and methods of management, ways, tools and levers of influence on the processes of functioning that meet the parameters of the internal and external environment, restrictions and conditions of economic activity. The creation of such a mechanism should be based on the principles and methods of developing and implementation of management decisions, certain objects and subjects of development management, clearly defined management functions, selected structural elements of the mechanism and the peculiarities of their use.

The process of implementing economic systems management models taking into account the available resource potential, innovations and processes of transformation of economic entities should be planned and managed in advance, which is possible to create an optimal program of change. Its development should be based on the parameters of changes in economic activity, certain options for implementing the developed program and approaches to the transformation, the proposed method of optimal use of resources for the development program and taking into account the presented system

of constraints.

In general, the authors of the collective monograph are convinced that in modern conditions the innovation and knowledge should be the main factor in stabilizing the socio-economic state of economic entities. Ensuring the sustainable functioning of economic systems will help to form an appropriate science-innovation policy in accordance with the strategy of preserving, maintaining and increasing the resource potential of economic entities, which will gradually restore business activity and normalize the economic situation in the pre-pandemic period.

New trends in the economic systems management in the context of modern global challenges

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