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THE MECHANISMS OF STATE MANAGEMENT IN AGRICULTURAL SECTOR OF GEORGIA

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Abstract: *The paper studies the current situation in the agricultural sector of Georgia, its impact on the country's economy and possibilities of development. Agriculture is a traditional sector and it has always played an important role in economic and social development of Georgia. The country has favorable conditions for the development of agricultural sector. Despite urbanization processes in recent years, about half of Georgian population still lives in rural areas and most of them are employed or self-employed in this sector. Therefore, the level of development of agriculture in the country impacts the lives of significant share of the country's population.*

Agriculture has been paid more attention by the government of Georgia in recent years. In particular, various programs and projects have been initiated and implemented in this direction. These programs aim at encouraging the development of various agricultural activities as well as development of processing industry, which will lead to increasing production and export of Georgian agricultural products. However, currently, development of agricultural sector in Georgia significantly lags behind other sectors of the economy mainly due to insufficient financing of this sector, lack of access to relevant technologies and lack of development of processing industry for raw agricultural materials. Therefore, a number of measures, like scientific-research activities, increasing the awareness of farmers, introduction of technological novelties and improvement of agro-insurance system that will enhance the competitiveness of the sector still need to be implemented.

Keywords: *Management, Agricultural Sector, Economic development, Agricultural Cooperatives.*

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Introduction

Georgia is a small country. The territory of the country is 69,700 square kilometers. The agricultural land covers about 3 million hectares. According to the National Statistics Office of Georgia, approximately 43.3% of the territory of Georgia is considered as agricultural land, including: homestead -1%; permanent crops -9%, permanent meadow - 5%, arable - 27%, pasture - 58%. 41.7% of the population live in rural areas. The country is diverse in nature as well as in physical-geographical and soil and climate characteristics. Nearly one third of the area is covered by forest. Only about 40% of all the arable land available for agricultural use is utilized, which is quite low and amounts to 0.16 ha per citizen. The biosphere of the country is very diverse that is determined by the existence of 12 different zones and 49 types of soil [3]. Climatic diversity allows the production of the crops that are typical for tropical zones. These include grapes, subtropical crops, fruit varieties, early and late vegetables, grass, etc. Despite the favorable natural and climatic conditions existing in the country, the growth rate of this sector has significantly lagged behind the growth rate of other sectors [4].

Agricultural sector is important for Georgia not only from economic perspective, but it also impacts over 3500 villages of the country. The growth trend in agriculture occurred by the end of 1990. The situation was quite different compared to the current one. At that time, the share of agriculture grew year by year and export exceeded import by 70%. Despite the above mentioned positive tendency, commercialization in the sector still remained very low and households mainly produced for self-consumption. During this period agriculture has played a significant role in providing food for people. Since 1990, production of agricultural goods began to decrease continuously and its share in GDP is still decreasing, while the number of self-employed people in the sector is increasing.

41.7% of Georgian population (1,555.1 thousand people) live in rural areas. 48.6% of the employed people work in agriculture, fishery, hunting and forestry. According to the data of 2017, agriculture accounts for 8% of the country's gross domestic product (GDP).

Revenues in foreign currency are received as a result of export of agricultural raw materials and manufactured goods. This has a positive impact on foreign trade relations. Production of the goods that can replace the imported agricultural products leads to the reduction of import, which is positively reflected on the trade balance and contributes to the reduction of the trade balance deficit.

In modern conditions, the study of the peculiarities and tendencies of economic and social development of Georgia, theoretical and methodological research of the actual factors for activating food and industrial potential and efficiency of economic resources are of great importance for the development of agricultural sector.

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Economic resources in the agricultural sector of Georgia should be rationally utilized according to individual regions for ensuring economic growth, creation of new jobs, increase in household revenues and real improvement in living standards.

Literature Review

The study in the article is conducted based on the appropriate bibliographic research. The scientific papers by Georgian and foreign scientists, analytical reports, publications and EU research materials on similar issues are studied. Also, there are used the official documents and reports regarding the topic of the article.

According to the National Policy of Cultural Heritage Sector of Georgia, agriculture plays an important role in the economy of Georgia since it is important not only from socio-economic perspective but also it is part of the country's cultural heritage [8].

Taking into consideration that Georgia is a small country, the focus should be made mainly on the quality of the goods produced; therefore, development of bio farming is one of the best ways for the development of agricultural sector. The state should ensure the preferential lending of these farmers. Development and implementation of such state policy will enable the country to actively utilize its largest agricultural and export potential [15, p. 49].

Taking into consideration the experience of forein countries, farms and cooperatives play a leading role in the development of agriculture. The EU countries have realized that formation of strong, competitive agricultural sector is only possible through joint efforts and activities by farmers. This results in the creation of jobs, improvement of economic conditions, prevention of internal migration and achievement of economic balance between the urban and rural settlements. The problems in Georgian agriculture can be overcome by appropriate knowledge and policies through the development of agricultural sectors. Development of the sector is impossible without cooperation between the participants. This is why formation of agricultural cooperatives is important for restoring and development of agriculture in Georgia [18].

The goal of forming cooperatives are as follows:

- Support restoration of agriculture;
- Eradication of poverty in rural areas;
- Reduction of migration from rural areas;
- Increasing productivity of agricultural production.

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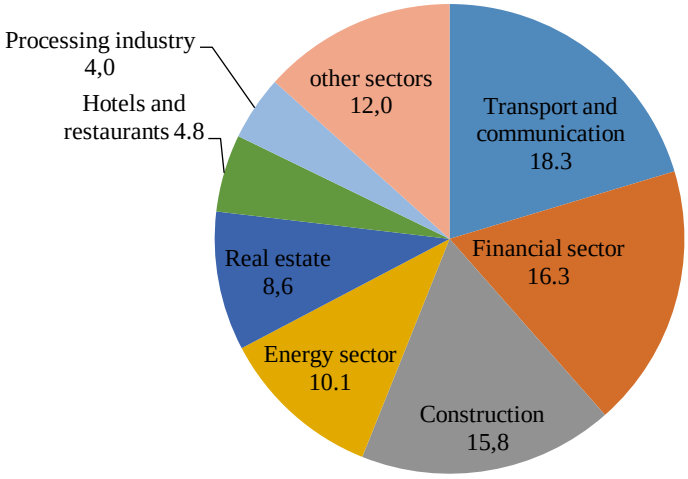
Not long ago, the importance of cooperatives was either ignored or misunderstood in Georgia. They have been often associted with the Soviet collective farm. Currently, the situation is completely different and people are much better informed about agricultural cooperatives, which is the result of the efforts made by the Ministry of Agriculture and the EU and FAO (Food and Agriculture Organization) experts working to help the ministry. As of 2016, 1586 agricultural cooperative were registered in Georgia, including 484 cooperatives which were granted the ststus of agricultural cooperative in 2016 [14].

Methodology

The following research methods are applied in the presented paper: statistical such as selection, grouping, observation, trend as well as analysis, induction and comparison methods. The article presents the data by the National Statistics Office of Georgia and the Ministry of Agriculture of Georgia.

Agricultural sector can play passive or active role. The passive role implies development of agricultural sector only from the point of social goals, i.e. to implement the policy against poverty. The active role is expressed when infrastructure and investments in this sector are actively increasing and the sector gains commercial importance. Dynamic development of agricultural sector, development and implementation of a long-term program is very important for economic development of the country [10].

Foreign Direct Investments, 2017



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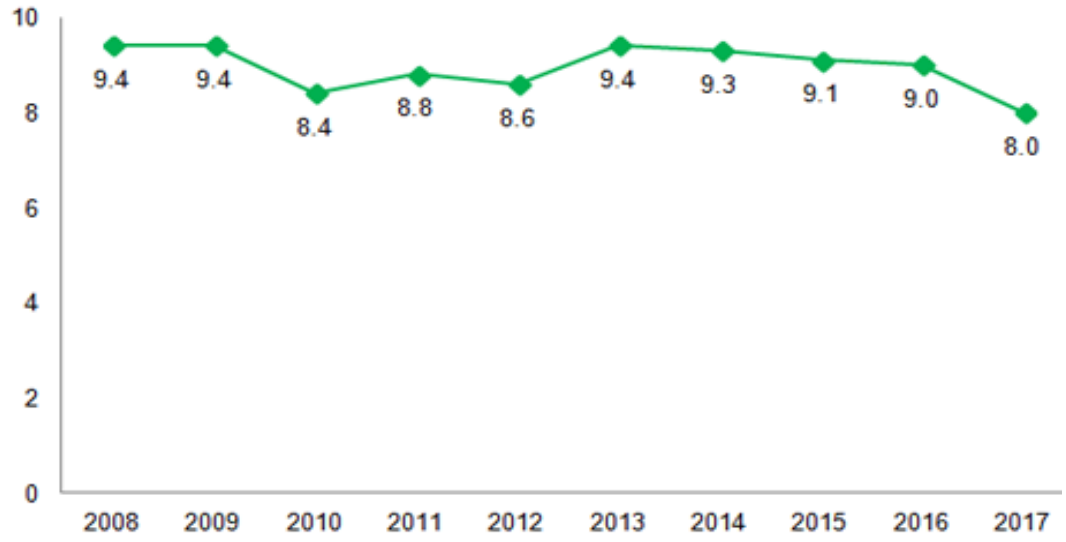
As the Figure shows, in 2017 the largest three sectors accounted for 60.5% of foreign direct investments. The largest share of foreign direct investment went to the transport and communication and amounted to 527.1 million USD, which is 28.3% of the total foreign direct investment. It is followed by financial sector with 304.3 million USD, while the construction sector takes the third place with 294.6 million USD. Agriculture accounts for only 3% of investments [12].

There is some skepticism whether the state can play a significant role in helping the sector overcome the crisis and whether benefits received from the sector exceeds the large amount of expenses it requires. The traditional approach to agricultural sector is determined by the open trade relations, according to which it is advisable to develop the sectors which have relative advantage. Georgia consumes more imported products than it produces. Therefore, the question arises whether it is advisable to focus on agricultural sector and declare it as a priority [10].

According to the data of 2017, agriculture accounts for 8% of GDP in Georgia. According to the data provided by the National Statistics Office of Georgia, this indicator has changed over the past years, which is illustrated on the figure below.

Share of agriculture in GDP (%)



As the figure shows, the share of agriculture in the country's GDP was highest in 2013. Since that year, the contribution of agriculture to GDP has been continuously decreasing. According to the data of 2016, agriculture accounted for only 9% of GDP. This indicator was 8% in 2017 [5].

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High level of poverty in rural areas plays a significant role in hindering agribusiness development. The people employed in agriculture are paid only about 64% of the average salary in the country. In addition, almost nothing has changed in terms of poverty reduction and improving welfare in recent years. Although the state pays some attention to this sector, the measures taken in this direction may not bring the desired result. Some types of investments like seeds, pesticides, fertilizers and other similar materials are relatively available for the people operating in this sector. However, some of the major problems that negatively reflect on the development of the sector need to be highlighted:

- Lack of education and qualification;
- Quality of the goods produced;
- Falsification of products;
- Lack of access to information;
- Lack of funding;
- Lack of technical equipment;
- The use of unproductive and poor quality seed material.

These are some of the important problems that do not allow the agricultural sector to develop. As a result of these problems, the efforts made are often vain and it is not possible to get relevant return. [13].

The world experience of the development of agricultural sector of economy shows that high level of solvency of the population does not ensure profitability of agribusiness. The practice shows that the countries where living standards and income of the population is high, allocate most money to support manufacturers of agricultural goods. For example, it amounts to 46.5 billion USD (1% of GDP) in the US, 107120.4 billion USD (1.3% of GDP) in the EU countries and 48.7 billion USD (1.4% of GDP) in Japan.

Agriculture has held a minor place in the policy implemented by the government of Georgia for the last twenty years. Priority was given to the sectors that urgently needed reforms. In particular, these were effective governance and encouragement of free trade. Development of agriculture has become a priority in Georgia in 2010-2011. In the 2014 state budget the funding for the Ministry of Agriculture increased by 60% and funding (76.16 million GEL) allocated for agricultural sector increased by 80% compared to 2013. This growth of funding was determined by the need of implementation of the agriculture strategy. In 2015 the budget of the Ministry of Agriculture amounted to 119.998 million GEL - 1.5% of total state budget, which is quite small compared to the contribution of agriculture in the economy as the share of this sector in the GDP is 8-9% and the contribution in employment reached 54%. 88.8% of the 119.998 million GEL (106.575 million GEL) was focused on the agricultural development program; 4.7% (5.674 million GEL) on the rehabilitation of food safety, plant protection

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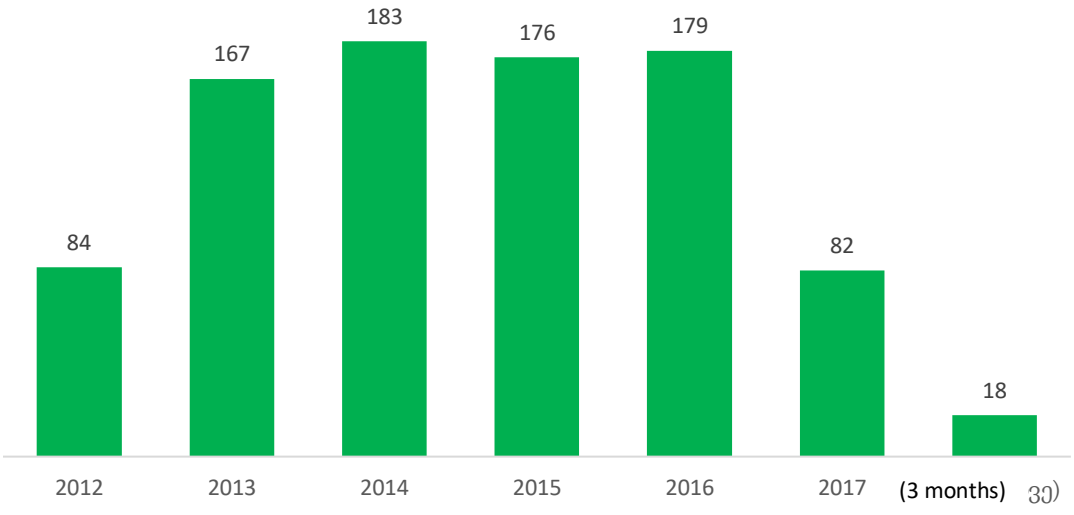
and diseases and 6.5% (7.750 million GEL) on the development of viticulture and winemaking. However, the projects funded by 108 donors were not included in the 2015 budget, which amounted to 16% of the budget. According to the 2017 budget proposal, 238.140 million GEL was allocated for the Ministry of Agriculture, which was 57 million GEL less compared to the planned indicator of 2016. 176.444 million GEL was allocated for agricultural development program compared with 251.870 million GEL in 2016. In 2018, 276.0 million GEL was allocated for the Ministry of Agriculture [11] and the corresponding figure for 2019 is 298.1 million GEL [12].

The difficulties in agricultural sector of Georgia require rational utilization of resources in the country, which can be achieved by optimal evaluation of these resources. Under the current circumstances in our country, it is essential to fully mobilize resources and use them efficiently. Perfect organization of this process leads to economic growth and increase in general welfare [1, p. 4-5].

Currently, for Georgia it is important to encourage the development of the sectors, which have evident growth potential. Production of hazelnut is one of the important directions from this perspective. For Georgia hazelnut is one of the important agricultural cultures. Georgia is one of the top five largest hazelnut exporters around the world. Hazelnut is grown almost in all the regions of the country, however, Samegrelo and Zemo Svaneti (52%), Guria (24%) and Imereti (12%) are the most prominent in this direction. According to the data of the past five years, average hazelnut production in Georgia is 30 thousand tons on average. Georgia held the third position following Turkey and Italy in the top three largest hazelnut exporters but in 2017 the country moved to the forth position after the US. Georgian hazelnut is mainly exported to the EU market.

Hazelnut export from Georgia in 2012-2018 (million USD)



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In 2016-2017 hazelnut production decreased mainly due to fungal and bacterial diseases (gray and brown rot of hazelnut) as well as spread of invasive pest Asian Parosana. These circumstances have had negative impact on the quality and export of hazelnut. In 2017, export of Georgian hazelnut amounted to 82 million USD, which is 54% lower compared to the previous year. In 2017 export of hazelnut accounted for 11% of the total agricultural export of Georgia [21].

It is also worth mentioning that there is a good possibility of devlopment of viticulture, which has historical and traditional character. The majority of vineyards are situated in Kakheti. Georgian wine is exported to over 40 countries. Development of milk and dairy products and livestock sector is also a priority.

Agricultural cooperatives play a significant role in the development of agricultural sector. According to the Law of Georgia on Entrepreneurs, „A Cooperative shall be a company based on the labour activity of its members or established for developing the business and increasing the income of the members. The objective of a cooperative shall be the satisfaction of interests of the members. A cooperative shall not aim primarily at gaining profit.“ Cooperatives are fully free in their activities in the frames of their charters. The Parliament of Georgia has adopted some relevant laws like the Law on Agricultural Cooperative, under which a corresponding agency was established. This agency grants and terminates status to agricultural cooperatives and monitors them.

Discussion

The possibilities of agricultural sector to develop are related to meeting the modern standards. Sharing the world experience is necessary for keeping in touch with the current global events. Contemporary world experience of the production and consumption of organic products and modern trends of global agri-market development indicate that organic farming is the dynamic and highly developed direction of the agrarian sector. Bio-farming is one of the most important trends in the modern world and is met in 120 countries. It implies farming and production methods, which contributes to the interaction between living organisms and environment so that equilibrium in nature is protected. Fertilizers, pesticides and other chemical supplements that can affect health of people are not used in bio-farming. Currently, in Georgia there is one bio-farming association Elkana with about 400 farmers [15, p.1-3].

Development of agro-tourism is another important issue related to the development of agricultural sector. It implies the involvement of tourists in local farming activities taking into consideration their interests. Tourists

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get engaged in traditional agriculture without damaging ecosystem. As a result, households receive additional economic benefits and additional incentives as well. There are important resources for the development of agro-tourism in Georgia: hospitality, diverse cuisine, beautiful landscapes, etc. Since 2006 the Biological Farming Association Elkana has been implementing the project "Rural and Tourism Development in Georgia" aiming to promote the increase in tourism and local production, resulting in the increase in the income of local population.

In addition to the above-mentioned, for the development of agricultural sector it is very important that the government creates a framework, which, together with other activities, will help the sector to develop. For this purpose, a number of programs and projects have been implemented:

The Preferential Agro Credit Project is a national project initiated by the Ministry of Environmental Protection and Agriculture of Georgia and it has been implemented by the Agricultural Projects Management Agency since 2013 under 'The United Agro Project'. The purpose of the project is to support the processes of primary agricultural production, processing, storage and sale by providing both individuals and legal persons with cheap and preferential funds.

Rural young entrepreneurs supporting program 'Young Entrepreneur' – the program focuses on young people, who are citizens of Georgia and wish to carry out some business activities in Georgia. The program is initiated by the Ministry of Environmental Protection and Agriculture of Georgia and is implemented by the Agricultural Projects Management Agency with the financial support of donor organization - Danish International Development Agency "Danida".

Agro insurance – the agro insurance program was launched in 2014 and it aimed at the development of insurance market in agricultural sector, encouraging agricultural activities, maintaining income and reducing risks for the people working in this sector. Insurance is provided by 7 insurance companies operating in Georgia [2]. According to the agro-insurance program of 2018, the beneficiary can insure up to 5 hectares of land (30 hectares in case of cereal culture). Each insurer will receive co-funding in the amount of 70% for all the cultures envisaged by the program and 50% for the vine. In addition, both cereal and other cultures can be simultaneously insured by the insurer. According to the program, fixed insurance rate was determined.

Georgian Tea Plantation Rehabilitation program, which aims at:

- Effective use of the potential of tea plantations in Georgia, encouraging increase in the production of local tea (including bio-tea) and, as a result, improving self-sufficiency rate and increasing export potential;
- Rehabilitation of both private and state-owned abandoned tea plantations;
- Employment of the population and improving their socio-economic conditions;

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- Encouraging establishment of tea primary processing modern enterprises.

The activities needed for the rehabilitation of both private and state-owned tea plantations are co-funded from the program.

"Produce in Georgia" is a program implemented by the Ministry of Economy and Sustainable Development and the Ministry of Agriculture of Georgia. The program aims at:

- Encouraging development of the industries which focus on production;
- Encouraging establishment of new enterprises as well as the expansion and refurbishment of existing enterprises;
- Agricultural development.
- The enterprise financed within the state program has to meet the following minimum requirements:
- Funding of the loan or signed lease agreement must be directed to the creation of new enterprises or expansion and refurbishment of existing enterprises;
- The enterprise should meet the safety, environmental protection, sanitary and food safety requirements determined by the legislation of Georgia.

In 2014 the Association Agreement was signed between Georgia and the European Union. This agreement provides increased possibilities for Georgian agri-food products. Unlike other free trade agreements signed by Georgia, Deep and Comprehensive Free Trade Area (DCFTA) implies liberalization of trade both with goods and services. In addition, DCFTA includes a wide range of trade related issues like food safety, competition policy, etc. It is the instrument for bringing Georgian trade related legislation closer with the EU legislation gradually. DCFTA provides a possibility for Georgia to benefit from three out of the four EU internal market freedoms – movement of goods, services and capital. The forth freedom, free movement of persons, is supported by the visa liberalization process [5]. It is essential to develop the economic collaboration not only with EU, but with the rest of the world, in order to strengthen relationships with international organizations, to achieve successes on the way to labor distribution and settling placement within world market. The objective of the economic strategy is to accelerate economic ties with other friendly states. One example of such kind of collaboration is the Charter between Georgia and United States of America. Mentioned document, affirms the importance of The United States of America and Georgia's relationship as partners and strategic allies. The Charter intends to deepen partnership to the benefit of both nations and expand cooperation across a broad spectrum of mutual priorities (USA, Department of state, 2009) [16, p.58].

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Conclusions

Thus, the current situation shows that the agricultural sector in Georgia significantly lags behind other sectors of the economy, which is mainly conditioned by insufficient financing of this sector, lack of access to relevant technologies and lack of the complex structure for processing of raw materials. According to statistical data, almost half of the population is dependent on income from agriculture. The state is trying to use various ways to help farmers but development of agriculture cannot be achieved by one-time assistance. Agricultural sector has suffered from recession for a long time already resulting in the reduction of efficiency in production, decapitalization and poverty.

Natural and climatic conditions of Georgia provide good possibility for producing ecologically friendly products, which is becoming more and more demanded on the global market.

Agricultural sector plays a significant role in economic development of the country and it is essential to support development of this sector and carry out a number of measures in this direction, in particular, these are development of scientific-research activities, increase awareness of farmers, introduction of technological novelties and improvement of agro-insurance system that will enhance the competitiveness of the sector.

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INNOVATIVE APPROACHES TO DETERMINATION OF ECONOMIC DIGITIZATION IN THE MODERN STAGE OF ENTERPRISE DEVELOPMENT

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Abstract: *The article deals with the concept of digitization of the economy. There is the comparative interpretation of it in different sources by different authors. The author's approach to the content of the definition of the digitization of the economy is given. The innovative approaches to the definition of the digitization of the economy at the present stage of enterprise development are presented. The conclusion is made on the importance of developing digital technologies on the basis of innovative development.*

Keywords: *definitions, digitization, digital economy, digitization of the economy, innovative approaches, innovative development.*

Introduction

Today's digitization of the economy covers almost the entire world, it is becoming globalized. If on the global scale the first digital platforms appeared in 1961, then in Ukraine, in general, digital transformations began in 1990 and they became very rapid development.

It is likely that the digital economy has its disadvantages in comparison with traditional ones, such as rising unemployment, digital divide in education and access to digital services, cybernetic threats, and so on. However, increasing productivity and competitiveness of enterprises, reducing costs, creating new jobs are its advantages. Some scientists believe that the digital

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economy has replaced the innovation. But, in our opinion, digitisation and innovation are integral components. Therefore, at the current stage of development of enterprises, the question of the digitization of the economy on the basis of innovative development is very relevant.

In order to accelerate the digitization of the economy, it is necessary to develop at the macro level the domestic IT sector, to stimulate the creation of innovative technologies, to deepen the cooperation in the international market. At the micro level, you have to realize the need for digital transformation and update knowledge of the technologies that appear in the modern digital world.

Definition translated from Latin (definition) means "setting limits", "determanation". According to the explanatory dictionary of the Ukrainian language, the definition is a brief logical statement, which contains the most significant signs of a definite concept [8].

Unlike other terms, digitization of the economy does not have such distant roots, so in the national scientific and economic literature this issue is not given enough attention. It also adds relevance to this issue.

In the context of Digital Agenda - 2020, digitization is a recognized mechanism of economic growth through the ability of technology to positively influence the effectiveness, efficiency, cost and quality of economic, social, public and personal activities [6].

Rudenko M.V. believes that "the specificity of treating the category of "digitisation" directly depends on the subject of the definition, which causes ambiguity in the interpretation of the concept under study and underlines the controversy of individual definitions and statements." He also emphasizes that the process of digitization of the economy is based on a synthesis of existing practical experience, that is, on a set of generally accepted rules, which serve as the basis for the implementation of this process in the daily life of economic entities". The author also proposes to consider the category of "digitization" from different points of view: from the standpoint of scientists it is a process of evolution of economic, social, industrial, technical and technological relations in society caused by the development of information and communication technologies; from the side of practice is a mechanism for changing business models to improve the efficiency of functioning; for the state - the saturation of society with digital devices and the exchange of information among them; from the perspective of society it is a new paradigm for the development of life processes, the basis of which is digital technology. [5, p. 61-65] However, he does not provide a generalized definition of digitization.

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Kraus K.M. indicates that the most important result of digitization in modern conditions is the automation of services, and the main "value" is the client (because without him the economic activity is not meaningful). [3] However, the importance of digitization for other business activities, in particular supply, production, management, etc., is effaced.

Dannikov O.V. and Sichkarenko K.O. consider digitization of the Ukrainian economy "a natural continuation of the international trend of the proliferation of digital technologies and a dramastic increase in their impact on all sides of economic life, as well as a new paradigm of development of the country, economy and society as a whole. The authors include the digitalization of the economy to the components of a broader, in their opinion, the concept of "information and network economy"[2,p.73-79]. One can agree with Vice-President of " Association Innovative Development of Ukraine", Fischuk V., who points out that digitization is no different from modernization, and the state should stimulate business to introduce digital technologies through access to capital, tax credits, and so on [7]. However, according to some practitioners, and to our belief, state intervention will only hinder the proliferation of digitization due to the emergence of artificial and not always "healthy" competition among transforming enterprises.

The term "digitization" comes from the English "digital", which is why many domestic scientists and practitioners widely use synonyms for "digitalization" and "digitization".

Guseva O.Yu. and Lehominova S.V. suggested to understand the digitization as the transformation, penetration of digital technologies for optimization and automation of business processes, increase of productivity and improvement of communication interaction with consumers [1, pp. 33-39].

The same opinion is shared by most leading managers who understand digitization as using modern technologies to improve the company's productivity or value, or in general, as an automation of internal processes, rather than a business model.

Ligonenko L.O., Hripko A.V. consider digitization as one of the "business cards" of the new economy (neo-economy) - a new type of socio-economic structure, which is gradually formed within the post-industrial period of economic development by introducing the achievements of scientific and technological progress and innovative methods of management, intellectualization of human capital, the use of advanced cutting-edge technologies , accelerated development of high-tech branches of the economy, giving priority to the production of knowledge and services, the development of the mentality of creative, effective, sustainable business. The new economy is

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formed on the basis not only of the intellectualization of production, but also of the whole economic life, based on the widespread and massive use of information and communication technologies (ICTs) [4].

It is quite understandable that a digital economy is an economy based on the use of digital technologies, and digitization of the economy, as a category, is the process of transforming the generally accepted economic system into a digital one.

We consider the false assertion that the digital economy is a totally new economy, because digital technology makes the production of goods, works and services more high-tech, and does not replace it.

No matter how perfect digital technologies are, they do not replace either natural products or high-quality goods and services. They can only contribute to improving quality, cheapening production and accelerating their advancement to the end consumer.

In our view, the term digitalisation of the economy is more acceptable than the digital economy. Let's agree with some scientists and practitioners who believe that the global economy is one, but in the transition to digital technology in all spheres of life there is a partial or continuous digitalization of all or some of its branches. It is important to remember that any automation should increase the profit of enterprises, the level of GDP, otherwise it does not make sense.

In view of the above, we propose an author's approach to the definition of the digitalization of the economy, which will be considered as automating the interaction of all participants in economic processes in order to simplify, accelerate and increase the effectiveness of such interaction through the use of information technology. In other words, it should be determined which technology is necessary to produce a product whose consumption is a society's demand. The synergistic effect here will be achieved by setting up the direct links at all levels and affecing the intermediaries.

To determine the category of "digitization of the economy", such scientific methods as abstract-logical (in the determination of the properties of the term and features, distinguishing it from other similar phenomena), the method of complex analysis (in the study of existing interpretations of this concept and their analysis), the method of system analysis (when studying the conditions of existence of the term).

To implement the process of digitization of the economy, it is necessary to use such innovative approaches that will allow forming economic relations at a new "digital" level (Fig. 1).

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In general, digitization is a process that can not be stopped anymore. The number of spheres, industries and specific enterprises that are penetrated by digital technology is constantly increasing. Accordingly, the activity of the enterprise at the present stage is changing directly proportional to the digital transformation. The growth of digital technologies on the basis of innovative development requires the improvement of enterprise management, the active use of modern information technologies (including for automation of business processes), the introduction of new business models.

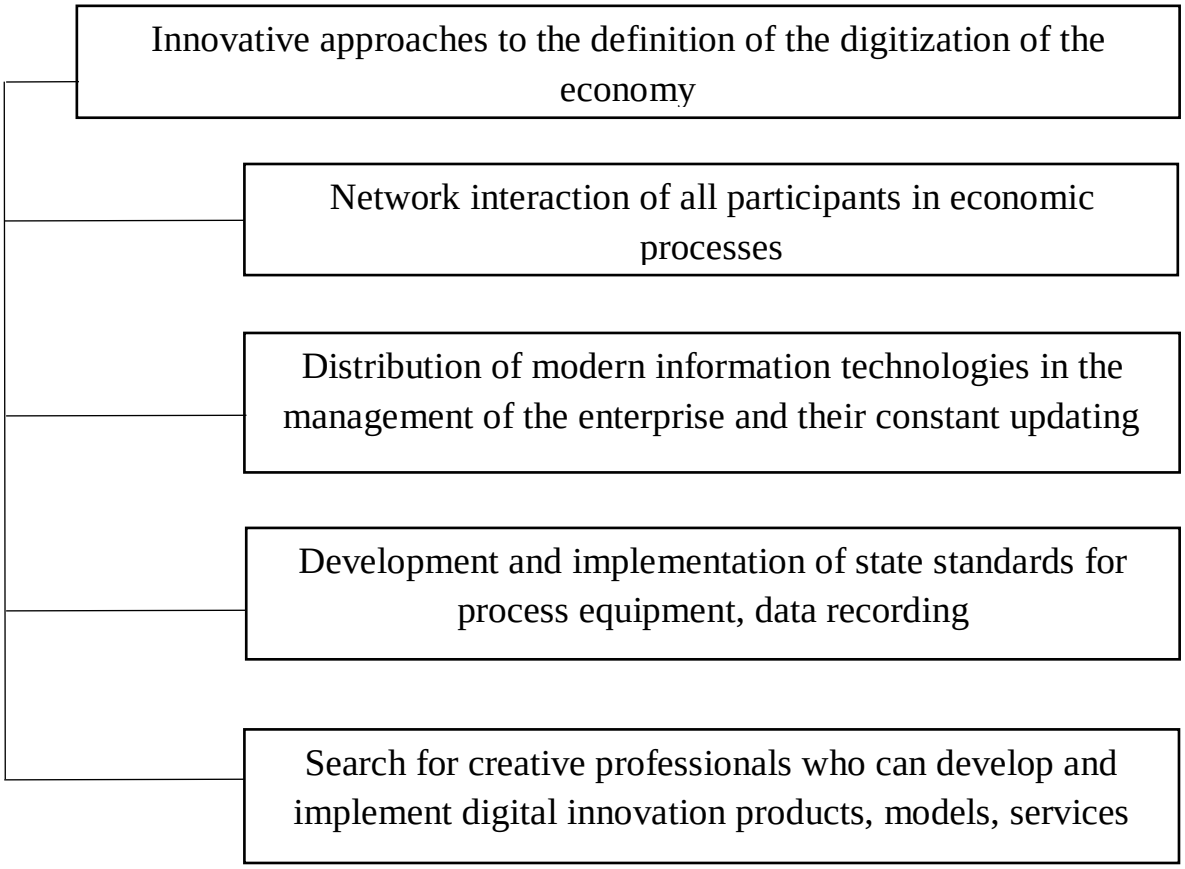

Fig. 1. Innovative approaches to the definition of the digitization of the economy at the current stage of enterprise development.

The fulfillment of these conditions will lead to improved quality of goods, works and services, shortened time for all digital transfer operations and management decisions, reduced operating costs and increased profits, improved and strengthened competitive positions.

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INTERNAL RESOURCES OF INCREASING RETAIL EFFICIENCY

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Abstract. *Despite the difficult period for retail, Russian retail chains continue to develop and find new resources to improve the efficiency. The largest retail chains are expanding markets and continue to grow steadily. However, modern economic conditions place high demands on the activities of managers and staff in retail. Moreover, the unstable external environment forces the management to look for new opportunities of improving their enterprises competitiveness. An organizational culture is the important resource for improving the retail enterprise efficiency. Nevertheless, the effective organizational culture can be built only on the shared values of all staff. The article describes the results of the study of value orientations of managers and subordinates in connection with their work activity. We analyzed the "TD Intertorg" ("Narodnaya 7-ya Family") which was one of the largest food retail companies in St. Petersburg. We used the formalized survey methodology to study the value orientations of 170 employees of the company. We identified and characterized the differences in the value orientations of the administrative, retail and operational staff with high and low labor activity. Also we defined the key values for the creation of the organizational culture that increases the efficiency of the personnel of the retail company. We offered the mechanism of development organizational culture for the trade enterprise on the basis of values compatibility of the managers and subordinates. The results help us to optimize business communication process and improve the efficiency of the retail enterprise.*

Keywords: *management in retail, human resources management, values, motivation, organizational culture*

Introduction

Russian grocery retail is represented by 10 major players. The level of competition is quite high; no one can maintain a competitive advantage for a long time. Therefore, retail chains are looking for additional resources to improve the efficiency of their enterprises, which will create a sustainable advantage and help to optimize business processes. Traditionally, the staff turnover rate in trade enterprises is high. This is due to the

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specifics of the activity and the lack of career opportunities for young professionals[1]. The organizational culture of the enterprise is an internal resource that can increase team cohesion and reduce staff outflow[2]. Cohesion is formed with the help of organizational culture accepted by all staff as an ideological basis for the active participation of all employees in achieving a common goal. Studying the structure of value orientations of employees of a trading enterprise, it is possible to determine the basis for the creation of a single organizational culture. The "working effect" of the organizational culture is manifested in the reduction of staff turnover, increasing the motivation of staff, cohesion and manageability of the workforce and, as a result, improving the performance of the enterprise.

Enterprise Characteristics

Supermarkets “Narodnaya 7-ya Family" is under the management of "TD Intertorg". "TD Intertorg" grocery retailer that owns retail chains in the North-West region: supermarkets "Narodnaya 7YA Family", supermarkets "idea", "Spar", "Standard". In 2008 production of own production (pickles, salads, pastries, hot dishes, cooking) was opened especially for these networks. In 2011, the company began to develop a network of stores Spar franchise.

The company is represented in such cities and regions as St. Petersburg and the Leningrad region, Moscow, Veliky Novgorod, Murmansk and Vologda regions, Republic of Karelia and Arkhangelsk oblast. The company is included in the top 10 Russian retailers.
In carrying out its activities, the trading network "Narodnaya 7-ya Family» is guided by the following principles:

- close location to the house;
- democratic price;
- the optimal ratio of price and quality of goods;
- diverse range of products;
- the presence of accompanying goods of daily demand;

[1] Krasyuk, I.A., Bakharev, V.V., Kozlova, N.A., Mirzoeva, D.D. Staffing in the sphere of trade: The main issues and prospects of solution. 2017. Proceedings of 2017 IEEE 6th Forum Strategic Partnership of Universities and Enterprises of Hi-Tech Branches (Science. Education. Innovations), SPUE. P. 48-50.
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— products of own production.

The strategic goal is defined as follows: to maximize profits and ensure the optimal functioning of the organization. Despite the fact that the strategic goal does not reflect the work with the staff, the social sub-goals focus on the cohesive work of the staff and include the following:

— recruitment and placement;
— formation of personnel reserve; social development of the workforce;
— ensuring a management process understandable to the whole team.

The Enterprise Problems in Human Resource Management

Management of "TD Intertorg" in St. Petersburg was interested in reducing staff turnover. In this regard, the personnel service studied the reasons for the dismissal of employees and the motives for their departure in the supermarkets "Narodnaya 7-ya Family" in St. Petersburg. The most frequent reasons for dismissal on their own were the following:

— Poor working conditions 6,2%
— Conflicts in the team 11,1%
— Low level of management attention 14,1%
— Big salary elsewhere 21,2%
— No career growth 22,3%
— Firing friends 3,3%
— Bad emotional situation in the team 16%
— Manager's mistakes 5,4%
— Other cause 0,4%.

The reasons for dismissal were traditional for commercial enterprises. They were caused by the lack of career growth and the opportunity to receive more material remuneration in another enterprise. However, the reasons for dismissal, which are characteristic of those labor collectives, where there is no effective organizational culture, were revealed: bad psychological climate, lack of attention from the management, conflicts in the team. The percentage of the reasons for the dismissal of employees of the "Narodnaya 7-ya Family" is shown in figure 1.

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Figure 1 – The percentage of the reasons for the dismissal of employees

Research Description

To clarify the current personnel situation in the supermarkets of the "Narodnaya 7-ya Family" was conducted an additional study of labor team. In research took part the employees 4 of the supermarkets "Narodnaya 7-ya Family" in Saint-Petersburg located at: Babushkina str. 97, b.1, Babushkina str. 111, Tkachy str. 6, and Sedova str. 154.

The study involved 170 people of staff, who are represented by the following functional groups:

1. Administrative staff: Director, Deputy Directors, managers, shop floor, merchandisers, PC operators.
2. Trading operational staff: cashiers, senior cashiers, salesmen divisions, packers-the packers.
3. Support staff: movers, pickers, cleaners, guards.

Table 1 shows the number of staff who participated in the study.

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Table 1. Structure of the personnel involved in the study

	Babushkina str. 111, Amount of people	Babushkina str. 97, b.1, Amount of people	Tkachy str. 6. Amount of people	Sedova str. 154 Amount of people
Management staff	5	6	5	5
Sales staff	24	26	25	26
Support staff	11	14	11	12
Total	40	46	41	43

The structure of staff shows that the largest percentage occupied by sales staff – 59.4 %. However, the support staff is also important in the activities of the workforce and is almost 28.2%. Management is 12.4%. The goal of the study was to identify hidden resources to improve the efficiency of food retail enterprises. In accordance with the purpose, the following tasks were defined:

— identification of opportunities to improve the efficiency of the enterprise;

— study of value orientations of personnel with different indicators of labor activity;

— definition of key values for creation of organizational culture of the enterprise providing high efficiency of activity.

Employees of the supermarket "Narodnaya 7-ya Family" is a small group with traditional group dynamics. The small group is limited in size and is characterized by frequent interactions between its members to address formal and informal challenges to achieve a common goal. The main criterion for a small group is the presence of opinions and perceptions of the group members about each other. A small group united by a common goal of activity is always characterized not only by formal relations, but also by informal ones. Thus, the labor collective of the trade is a formal and informal group at the same time, being at a certain stage of development. In the process of formal and informal communication in a small group formed and changed value orientations that are implemented in professional activities. The carriers of common value orientations in a small group are informal leaders. Their values are accepted by the whole group.

The methodological basis of the study was chosen stratometric concept of group activity, developed by A.V. Petrovsky[3]. The chosen methodological basis allowed to take into account in the study of the activity of a

[3] Petrovsky, A.V. The Personality. Activity. Collective. M., 1982.

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small group not only the features of interaction and communication acts, but also to take into account the content of professional activities of the group.

The stratometric concept allows us to describe the labor activity of a small group in accordance with its level of development and accepted value orientations. The labor collective, as the highest level of development of a small group, is considered in various aspects, the most significant are the value-orientation unity, the degree of reference of this group for its members, cohesion, commitment to a common goal, etc.[4] The use of the stratometric concept of group activity as a methodological basis of the study allows to determine the psychological correlates of the effectiveness of professional activity of staff. In order to use quantitative characteristics in the study of individual characteristics and the status of the individual in the group, sociometry is used[5]. Sociometry allows assessing the status and system of interpersonal relations in a small group. In the study conducted on the basis of the supermarkets "Narodnaya 7-ya Family" in St. Petersburg, the parameter was used – the efficiency of the employee's work. The efficiency of the employee's work was defined as the contribution of a particular employee in achieving the goal of the whole team. Each member of the staff received an assessment of the effectiveness of labor activity. Groups with high and low scores were formed. The comparative analysis of value orientations of extreme groups was made. The survey was conducted anonymously. The study of value orientations of administrative and managerial personnel and trade and operational personnel was carried out by the method of M. Rokeach[6]. The technique allowed distinguishing the leading value orientations in extreme groups – with high and low efficiency of labor activity. Table 2 shows the main terminal (goals) and instrumental (tools) values of the management, sales staff and support staff of the supermarkets "Narodnaya 7-ya Family".

Among the terminal values managers have a high rating of interesting life, family and Self-Respect Managers have more pronounced cognitive orientation. Among the instrumental values, that is, the means to achieve the goal, good manners, responsibility and ambition are highly valued. We can say that instrumental values contribute to the achievement of goals by combining ambition with responsibility and correct behavior with the staff. Sales staff, support staff appreciates the inner harmony, family and comfort in life. Discipline, cleanliness and politeness occupy high positions in instrumental values. Terminal values sales and support staff

[4] Psychological theory of the collective / ed. by A. Petrovsky. M., 1979.

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have an egoistic orientation, while instrumental values assume a stance appropriate to commend and encourage the work. This combination of terminal and instrumental values will contribute to the achievement of individual goals that may conflict with the goals of the team. However, the means of achieving these goals are those that are supported by social norms.

Table 2 – Basic terminal (goals) and instrumental (tools) values of administrative, commercial, operational and support personnel

Personal	Terminal Values	Instrumental Values
Management staff	An Exciting Life Family Security Self-Respect	Responsibility Ambition Politeness
Sales staff, support staff	Inner Harmony Family Security A Comfortable Life	Obedience Cleanliness Politeness

The results obtained in the course of studying the value orientations of employees were correlated with the performance rating, which revealed the following pattern presented in tables 3 and 4.

Table 3 – Value orientations and labor efficiency rating of management

Values	Rating of work efficiency	
	High rating	**Low rating**
Terminal Values	An Exciting Life Family Security Self-Respect	A Comfortable Life Family Security Pleasure
Instrumental Values	Cheerfulness Responsibility Ambition	Logic Broad-Mindedness Politeness

Comparative analysis of the extreme groups showed a difference in the structure of terminal values among managers with high and low labor efficiency. Managers with high labor efficiency appreciate interesting work, at the same time; life wisdom prevails in the value orientation of managers with low labor efficiency.

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This can be explained by extroversion in the former and introversion in the latter. In a group with low labor efficiency, the lack of cognitive interest is replaced by a wise attitude to life, thereby reducing the value of active knowledge. This is confirmed by the comparative analysis of instrumental values. Managers with a high level of efficiency in choosing ways to achieve the goal are based on cheerfulness, responsibility and ambition. It can be concluded that the instrumental values of management optimize the process of enterprise management and correspond to an active life position. Managers with a low level of labor efficiency prefer rationalism, broad-mindedness and good manners. This may explain the choice of a less efficient way of managing the enterprise. Both groups are characterized by responsibility, which is a positive trend in the group dynamics of the team.

Table 4 – Value orientations and labor efficiency rating of sales staff and support staff

Values	**Rating of work efficiency**	
	High rating	**Low rating**
Terminal Values	An Exciting Life Family Security A Comfortable Life	Inner Harmony A Comfortable Life True Friendship
Instrumental Values	Obedience Cleanliness Politeness	Cleanliness Politeness Logic

The similarity of the terminal values of managers is a prerequisite for the formation of an effective organizational culture of the entire enterprise. Through a close-knit team of managers, the director of supermarket can carry out work aimed at all personnel. Analysis of terminal and instrumental values of sales and support staff showed the presence of both differences and similarities in groups with high and low labor efficiency. Life comfort is highly valued in both groups. The group with high efficiency of labor is higher values happy family life, with low – availability of good and true friends. This difference can be explained by the age or marital status of the employees. Most of the trade and operational personnel are young and middle-aged women.

Instrumental values of extreme groups of sales and support staff differ in one position. All personnel highly appreciate accuracy and good manners that can be explained by specifics of professional activity, financial responsibility and aspiration to non-conflict service of customers. In a group with high performance,

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employees emphasize the importance of diligence, with low – higher value rationalism, as in the same group of managers. The fact that all staff with low labor efficiency indicators highly appreciates rationalism allows us to speak about this value as an indicator of the tendency to passive professional behavior. Rationalism can also act as a protective mechanism of the individual, explaining the low efficiency in the work, ensuring successful adaptation to the surrounding world.

Conclusion.

It can be concluded that the values of responsibility and diligence are key to the formation of an organizational culture aimed at active life position of employees and high efficiency of work. The value of rationalism can be an indicator of the propensity to a certain type of protective mechanism of the individual, explaining the low efficiency of labor. The use of key value orientations allows forming the organizational culture of retail chains, focused on the effective work of staff. Used in the study, the system of forecasting the efficiency of personnel on the structure of value orientations can improve the efficiency of the enterprise with minimal cost.

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SCENARIO MODELING OF FINANCIAL RESOURCES AT THE ENTERPRISE

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Abstract: *It's proved that one of the main factors of effective activity of agrarian enterprises is the effective scenario planning, which would ensure qualitative and most complete modeling of the development options of the enterprise. A focused strategy is a prerequisite for ensuring strong market positions of the company and achieving its high financial performance in the long run. The aim of the work is to study the scenario approach as a method for managing the development of agrarian enterprises. The authors formulated the main uncertainties that have an impact on the future development of agrarian enterprises by using the scenario approach. The developed scenario is the preliminary information on the basis of which further work is performed on forecasting of the main indicators of the production activity of agrarian corporations or the development of an information project option. It enables the presentation of a complex problem, provides a transition to a formal image of the system in the form of charts, tables for conducting expert surveys and other methods of system analysis.*

Keywords*: screenwriting, planning, scenario modeling, analysis, strategy*.

Introduction

Modern reformatory, scientifically grounded methods of managing the finances of business entities provide for the consideration of advanced economic laws of governance, the reasoning system for the formation, distribution and use of funds, a clear system of organization of financial management, the use of economics and mathematical methods and computer technologies (Bakaev L., 2005, Vovk V., 2007).

Scenario planning is an approach to studying and monitoring the dynamic changes in the institutional environment and its likely future impacts on the functioning and further development of a particular economic system (industry) or individual entity.

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The basis of the scenario approach is the selection and analysis of the main driving forces of the subject's development, the goal of which is the most complete identification and identification of both existing tendencies and those that are envisaged in the external and internal environment.

There is no single approach to understanding the essence of scenario modeling in the scientific literature. However, scenario planning is widely used by Western corporations and has a success.

P. Schoemaker (Schoemaker, P., 1995) P. Shoemaker considers script planning as "a rational method of representing probable options in the future, in which they will be able to implement a solution adopted by the organization ...".

According to G. Ringland (Ringland, G., 2008) «The scenario approach is a set of processes that allow you to raise the quality of reasonable assumptions and make it possible to understand what the consequences can be if you risk and act in accordance with these assumptions and make it possible to understand in which cases there is a justifiable risk».

Materials and methods

The toolkit for optimizing financial management is complex and multifaceted.

Mathematical modeling of the financial processes of an enterprise can be presented as a set of tasks, the solution of which should be carried out in several stages (Babenko V., 2017; Davydenko N., Wasilewska N., 2018). It is assumed that the solution is implemented on six levels of a detailed integrated management system (IMS) of business processes. At the upper level, the goal (main targets) of the realized development is formalized (IMS). The next step is to carry out management functions and tasks that can be detailed for each decision maker. In the general case, the task of constructing a management structure in terms of an integrated management system can be represented by the following set of information (< A, B, C, D, F, G, K, W >), where:

A – a set of production goals and achievement of planned profit;

B – a set of tasks implemented by an integrated management system;

C – a set of management functions implemented by an integrated management system;

D – a set of control objects;

F – a set of business processes;

G – a set of people who makes decisions and a hierarchy of management;

K – a set of criteria that provide performance evaluation;

W – a set of alternative options for a management structure implemented by the functions of an integrated management system.

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At this stage, it is also necessary to form the essence of the problem, the preconditions and accepted assumptions. It is necessary to highlight the most important features and properties of the object being modeled, to study its structure and the relationship of its elements, at least in advance to formulate hypotheses that explain its potential behavior and development in time.

This is the stage of formalizing the problem under study, that is, its expression in the form of specific mathematical dependencies. In turn, the construction of the model is divided into several stages. At first, the type of EMM is determined, the possibilities of its application in this problem are studied, a specific list of variables and constraints, parameters and the form of interconnections are specified. If an object has a complex structure, several different-dimensional models are developed. At the same time, each model highlights only individual parts of the object and may be an input for another, etc.

If you use a model that relates to a well-studied class, then the main thing is the substantiated assumption of the use of primary data. There is also a situation where a mathematical structure that was previously unknown was formed in the same way.

At this stage, mathematical analysis of the model is carried out, the general properties of the model are revealed through its possible solutions. In this case, it is important to prove the existence of a solution to the formulated problem. An analytical study shows that not the only solution is what variables can be included in the decision, in what limits they can change, which tendencies of these changes, etc. (Zagorodniy V., Kadievsky V., 2007).

$$q_j^{min} \leq x_j \leq q_j^{max}$$

The third stage of simulation is the most complex one - it is the preparation of the information support of EMM. EMM imposes harsh conditions on the information system, while one must keep in mind not only the creation of information of the required quality but also minimize the cost of forming information arrays.

The third stage consists in transferring the knowledge from the model to the original. As a result, we form a plurality of knowledge about the initial object, while moving from the language of the model to the original language. And this is only possible if the result is consistent with the signs of current (ie, adequacy).

The fourth stage also includes a numerical solution of the economic-mathematical model. The biggest difficulty is the submission of the dimension of the nxm problem, which is usually multivariate, which is the basis for developing scenarios for the further development of financial activity of enterprises.

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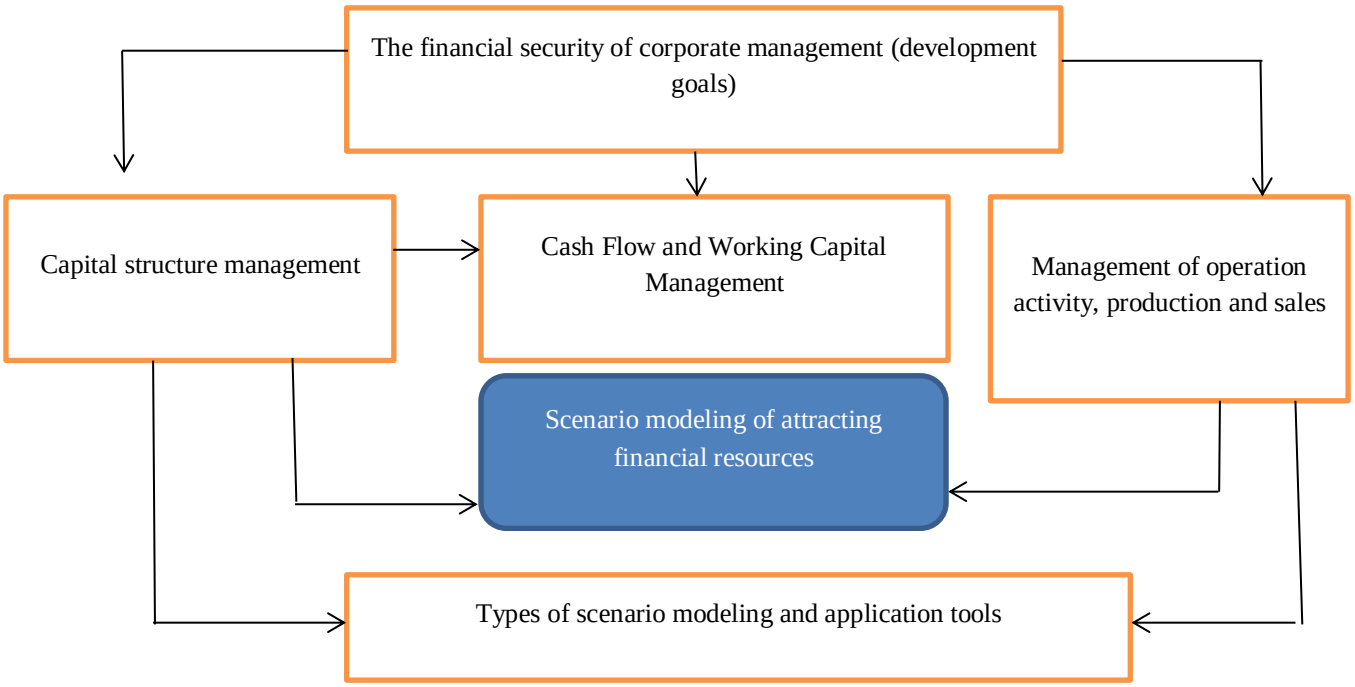

Fig. 1. Interconnection of scenario modeling elements of economic activity of enterprises

*(*created by the author)*

The fifth stage covers the analysis of the obtained numerical results and their application. At this stage, the feasibility and completeness of the modeling results and their application both in practical activity and in order to improve the model itself, as an adequate system of interconnections, the realization of which ensures the goal of development (Fig. 1).

The methodology of forming a financial strategy of an enterprise includes the substantiation and development of such principles of operation of the implementation, which would allow interested parties to effectively solve identified problems. The main principles of modeling the financial strategy of agrarian corporations are to ensure the adopted strategy for their sustainable development and base on the theoretical model of financial strategy, monitor of the organizational structure of the object and changes in it, choose alternative financial strategy alternative from several predicted scenarios.

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P. Schwartz arranged a list of tasks to be solved in the development of scenarios (stages of scenario analysis) (Schwartz P., 1991)

1) Determine the main issue of the study or the required decision;

2) Identify key forces in the local environment;

3) Identify the main driving forces;

4) The highlighted factors ranked by the degree of influence and the associated uncertainty;

5) Selection of scripts development logic;

6) Specify the scenarios;

7) Assess the consequences of their implementation.

Important in shaping the company's financial strategy is the principle of "the ratio of the term of receipt and use of cash", which is very relevant for the agrarian sector, which is characterized by uneven cash flow due to seasonality of production, is taken into account. Thus, a stable state of any economic system is possible only with the timely financing of necessary expenses to ensure effective functioning and further development. The implementation of this premise, which involves the balance of cash flows, is one of the main requirements for financial planning in any agrarian corporation. Accordingly, ensuring the balance of cash flows both in volume and in terms of generation will allow maintaining the financial stability of the entity through the formation of an optimal structure of capital and assets, an adequate level of financing of investment needs at the expense of own and borrowed funds.

Results and discussion

The financial strategy of agrarian corporations determines ways of attracting, accumulating and directing the expenses of financial resources. It is necessary to organize the preparation of the procedure for forming the strategy, up to the interviews with the company's management personnel, etc.

According to G. Hemel (Hamel G, 2000), increasing the sustainability of the economic system requires careful analysis and bold decisions. it involves the development of strategies and the most profound thinking of the problem. That is, in financial planning, there is a problem that has two main aspects that are related to the need:

calculation of indicators of a real financial plan, respectively, it is necessary to apply formal methods and models;

prediction of future states of a changing environment is possible only with the use of informal methods of analysis.

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An important part of the modeling of a financial strategy is the definition and implementation of the sequence of this process. The stages of modeling the financial strategy of the company are as follows:

1. Description of the company as an open dynamic system is carried out with taking into account the influence on it of the factors of external and internal environment. Based on the analysis of the state of the agrarian corporation, one needs to get a picture of the means and opportunities to assess their positive and negative aspects to establish the capacity of the existing financial structure and the direction of its development. It is important to determine the boundaries of the enterprise in various spheres of market economy, analysis of socio-economic (including financial) potential of the enterprise, analysis of the market of products in the area of management, determination of the position (niche) of the enterprise.

2. Definition of strategic goals. It is important to consider different types of strategic goals. Briefly, they can be represented as preserving the existing positions of the company in the former markets in the new economic conditions, increasing the volume of sales of products by changing the proportions between them and changing the geography of markets, the growth of sales of products through the development of new species while preserving the geography of markets, reducing the volume of sales of products for account of the curtailment of the release of some of them.

3. Development of various variants of the financial strategy in accordance with the objectives of the enterprise and taking into account the analysis of its potential, which should result in the desired change in the financial situation of the enterprise.

4. Formation of criteria for choosing options to create regulators to reduce the number of developed alternatives; most often they are in the minimum version of two selection criteria: providing the purpose of modeling and the presence of the lowest transaction costs for the implementation of the option (Vovk V., 2007).

5. Choose the best version of the model script. It is important to methodically substantially create a base for choosing a strategy option. Strategies must be evaluated according to the following criteria: degree of achievement of the goal of the enterprise; economic efficiency (result); reliability of implementation; social and environmental acceptability; technological feasibility.

6. Detailing of the selected variant of the model of financial strategy is carried out by bringing the general model to the level of filling its executors of the development of specific programs and projects. It is important to prioritize tasks within the framework of general strategic development goals.

7. Justifying the financial strategy of enterprises as a software product. At the final stage of the formation of a financial strategy, it takes the form of a mandatory implementation of the organizational and administrative document.

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A characteristic feature of the scenarios is the identification, analysis and, as a consequence, risks management, which can significantly affect the balance of cash flows and lead to a decrease in the efficiency of financial activities of enterprises, their solvency, liquidity, etc.

M. Lindgren and H. Bandhold note that the scenario planning process should be continuous, this will reduce the risk of missed opportunities and costs incurred as the analysis of the most distant future allows you to see a large number of development opportunities and, consequently, increase the efficiency of the company's operations (Lindgren M ., Bandhold H., 2003).

That is, the developed scenario is the initial, preliminary information, on the basis of which it is possible to carry out further work on forecasting of the main indices of the production activity of agrarian enterprises or the development of an information project variant. It enables the presentation of a complex problem, provides a transition to a formal image of the system in the form of charts, tables for conducting expert surveys and other methods of system analysis.

Their achievements are realized on the basis of the economic-mathematical model, which is a reflection of the scenario approach to substantiating the choice of the function of the goal, which has the form (the baseline script and derivatives from it):

The first script (the baseline script). The internal economic aspect; indicator: revenue:

$$F_1(x) = \sum_{j=1}^{n} c_j x_j \ \max, \qquad (1)$$

The second script (the transition period of the region's economy to new conditions). Assessment of the enterprise from the point of view of the consumer; indicator: (consumer satisfaction with a certain type of goods or services):

$$F_2(x) = \sum_{j=1}^{n} b_j x_j \rightarrow max \quad (2)$$

The third script. The financial aspect and suggested indicators were developed by the author: volumes of attracted financial resources taking into account the received profit:

$$F_3(x) = \sum_{j=1}^{n} (c_j x_j - p_j x_j) \rightarrow max, (3)$$

The fourth (perspective development of the enterprise). Taking into account the innovative aspect and suggested indicators were developed by the author: прибутковість інновацій:

$$F_4(x) = \sum_{j=1}^{n} m_j x_j \rightarrow \max \quad (4)$$

The developed economic - mathematical model has restrictions:

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Restrictions on resources:

$$\sum_{j=1}^{n} a_{ij}\, x_j \le A_i \qquad (5)$$

Restrictions on the basis of technical and economic indicators:

$$\sum_{j=1}^{n} y_{rj}\, x_j \ge Y_r \qquad (6)$$

Restrictions on financial resources and volumes of attracted resources:

$$\sum_{j=1}^{n} k_{tj}\, x_j \le K_t, \qquad (7)$$

Restriction on the volume of demand:

$$d_j \le x_j \le D_j \qquad (8)$$

Restriction on Innovation Costs:

$$\sum_{j=1}^{n} v_{lj} x_j \le V_{l\,,} \qquad (9)$$

Restriction on costs to follow product quality:

$$\sum_{j=1}^{n} S_{hj}\, x_j \le S_{h,} \qquad (10)$$

where x_j- optimum desired volume of output of the j-th type, pcs.;

c_j- income from the production of a unit of the j-th type production, UAH.;

b_j- satisfaction of the consumer by j-th type of goods or services;

p_j- production costs of the unit of j-th type production, UAH.;

m_j- share of income per unit of production obtained as a result of the introduction of innovations in the production of j-th type of products, UAH.;

a_{ij}- the norm of the cost of the resource i-th type per unit of j-th type, UAH.;

A_i- the maximum allowable limit on the cost of a resource of a certain type for the production of the whole spectrum of products, UAH.;

y_r- the value of r-th indicator;

Y_r- the minimum value of a certain technical and economic indicator;

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k_j- the amount of working funds (amount of variable costs), necessary for the production of a unit of a particular product, UAH.;

K_t- the maximum amount of working funds available at the disposal of the enterprise, UAH.;

$d_j D_j$- lower and upper limits of production, pcs.;

v_l- innovation costs per unit of production on a certain technological basis or on the goods in general, UAH.;

V_l- the maximum amount of funds allocated for the innovation costs of the l-th type, pcs .;

s_h- expenses for compliance with quality of j-th type of products by h-th technological operation, UAH;

S_h- maximum amount of expenses for compliance with quality, UAH;.

As we see, the economic-mathematical model is characterized by variants (alternatives) of economic actions, the realization of which is supposed in the limitations and concepts of scenario mathematical modeling.

At the same time, variants of the development of the action stipulate the minimum costs of means of production to achieve a certain (set) goal; at these costs of funds or financial resources provide an optimal goal realization.

Such an approach leads to a rational combination of purpose and means (need and opportunity) based on the methodology of scenario modeling. The basic principles of rational actions or behavior based on scenario modeling are principles of minimization or maximization of development, assessment of the state of the functioning of objects and processes. The feature is that in this scenario modeling is carried out not within the same model and transformation of the main indicators a_{ij} b_i c_j, and by transforming the model itself into a type of restriction on sources of funds for capital investments:

$$\sum_{t \epsilon T} a_t z_t + \hat{x} - \bar{\bar{x}} = 0; \quad (11)$$

- profit that can be obtained in each year of the planning period;

$$\frac{T-t}{t} Z_0 + \frac{t}{T} Z_t - Z_t = 0; \quad (12)$$

- the total amount of profit that can be obtained in the planned period:

$$\sum_{j \epsilon I} C_j^T x_j - x^{st} - Z_t = 0; \quad (13)$$

- restrictions on obtaining long-term loans, attracted resources

$$\hat{x} \leq \mathrm{M}; \quad (14)$$

- volumes of gross output, which provides the optimal plan:

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$$\sum_{j\epsilon I} C_j^B x_j - x^{\mathrm{B}} = 0; \quad (15)$$

- volumes of commodity products, which provides the optimal plan:

$$\sum_{j\epsilon I} C_j^T x_j - x^T = 0; \quad (16)$$

The second feature of scenario modeling is that the economic-mathematical model has such restrictions, which contain requirements, the conditions of which change depending on the economic consequences of production activities and the impact of environmental factors on the state of the object of economic activity (statistical or dynamic).

For the analysis of the strategic matrix of correlation dependencies for each of the studied segments (agrarian formations) were calculated: the amount of financial resources Y, received for each of them on the basis of account:

x_1 – liquidity ratio;

x_2 – coefficient of financial stability of agrarian formations.

In this case, linear and polynomial trends were used, and correlation dependencies were constructed using the Statistica6 application package (Figure 2) to determine the covariance between the volumes of financial resources and the liquidity ratios and the financial stability ratios (x_j).

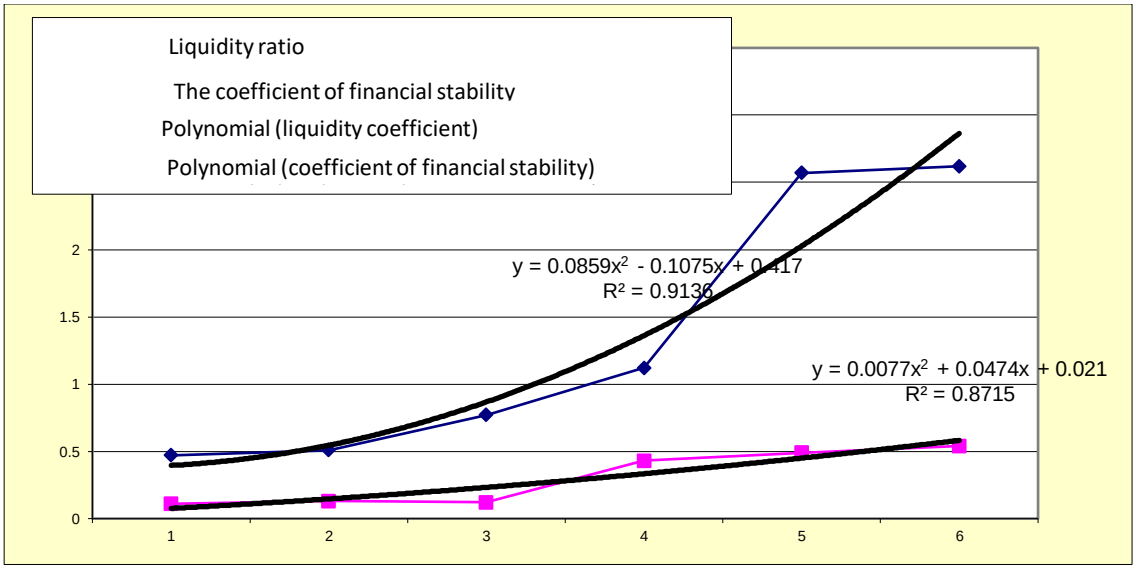

Fig 2. Optimistic forecast of development on the basis of scenario modeling for PJSC "Avangard"

For each of the nine segments (investigated corporate enterprises), two dependency equations are developed. Thus, for PJSC "Avangard" the linear correlation dependence for x1 has the form: y_1 = 04937x_1 – 0,3847, correlation coefficient R^2 = 0,8562, and the determination factor is equal to 0,9263. For x_2 the equation

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has the form $y_2 = 0,1011x_2 – 0,0507$, correlation coefficient $R^2 = 0,861$. The equation of multiple correlation has the form for conditions of linear trend: $y = 0,0859x_2 – 0,1075x_1 + 0,417$, $R^2 = 0,9136$.

For conditions of a polynomial trend, the set of the equation of dependence has the form: $y = 0,0077x_2 + 0,0474x_1 + 0,021$, the correlation coefficient is equal to $R^2 = 0,8715$, the determination coefficient is equal to 0,7595.

The values of correlation coefficients and determination indicate a close relationship between these factors and sufficiently explain the levels of fluctuations of the dependent variable.

Under these conditions, the results of the solution of models of analysis and forecast of indicators of the corporate enterprises work , enterprise management under uncertainty and risk, production potential management models become limited (right-hand sides of the equations) of the coordinating model (optimization of the production program) (fig. 3,4).

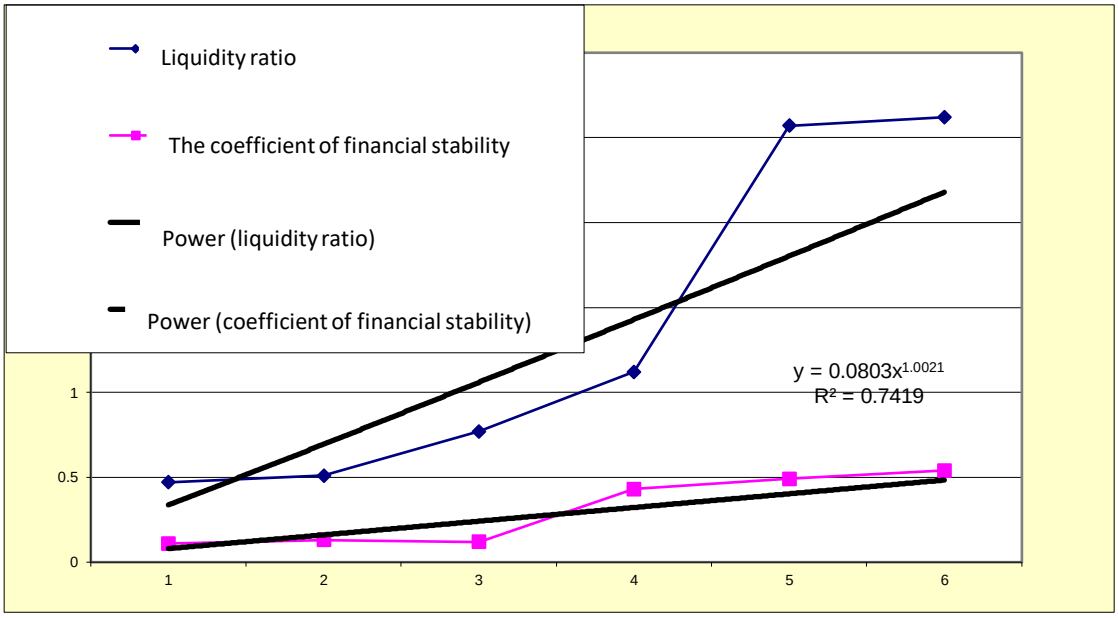

Fig. 3 Moderate development forecast based on scenario modeling for PJSC "Avangard"

As we see, the application of the scenario approach, first of all, allows us to explore the "complex" future. That is, in the planning process there is the possibility of studying existing and future uncertainties, studying and evaluating future opportunities that are potentially present, as well as finding absolutely new; as well as an opportunity to develop a flexible strategy for development, that is, using key success factors and real options of thinking, to create a strategy that will balance the circumstances and the required flexibility of decisions on existing and potential uncertainty; third, to monitor possible deviations from the planned strategy: the use of the early warning system will detect, identify the deviations that have arisen and, as a consequence, make timely corrections to the strategic plans.

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The use of financial planning based on scenario modeling for agrarian corporations will allow:

take into account possible changes in the uneven generation of cash flows in the long run;

identify the levels of uncertainty associated with various aspects of the functioning of the agrarian sector enterprises of the Ukrainian economy and also take into account the possibility of their interaction in the strategic financial plans;

use different combinations of economical and mathematical models and heuristic methods for the best possible account of the experience of functioning and development of agrarian corporations in Ukraine.

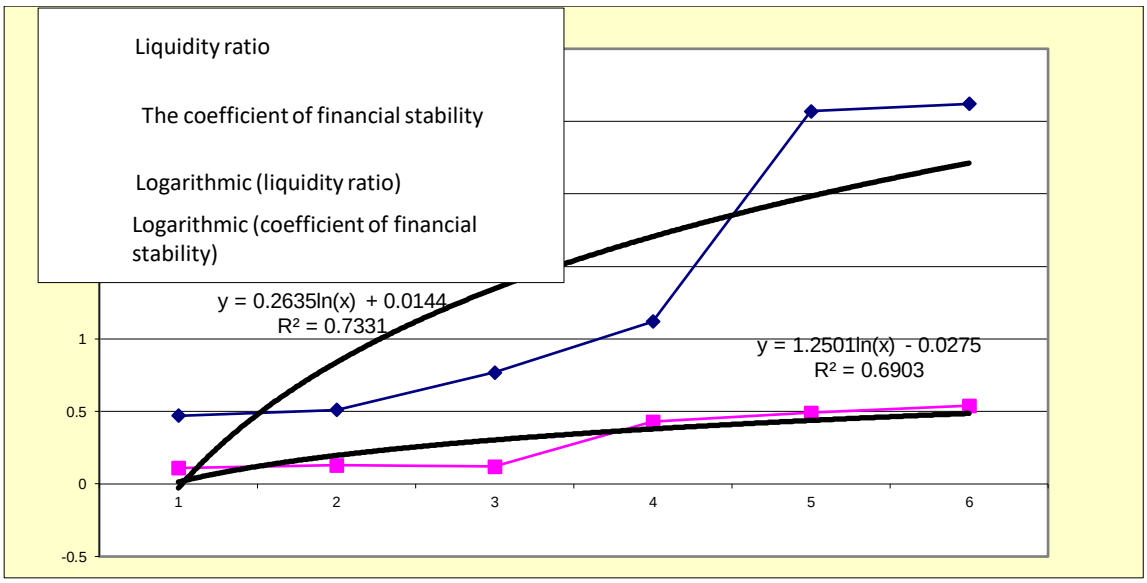

Fig.4 Pessimistic forecast for development on the basis of scenario modeling for PJSC "Avangard"

Conclusion

The results of the forecasting of economic processes lay the foundation for the correct formulation of a particular task in specific financial situations. Unfortunately, most of the traditional methods of forecasting do not correctly consider the theory, patterns and variability of the external conditions of the operation of the prediction object.

Therefore, the purpose of planning and forecasting as a management function is to timely consider and evaluate all internal and external factors that provide favorable conditions for the normal functioning and development of corporate enterprises. This activity is based on the identification and forecasting of consumer demand, the analysis and evaluation of available financial resources and the prospects of economic conditions development.

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One of the leading factors in the successful activity of agrarian units is the implementation of effective scenario planning, which would provide a qualitative and most complete simulation of the options for enterprise development.

The use of scenario modeling will allow the agrarian corporation to address the following financial planning tasks:

estimation of future cash flows by estimating the volumes of available sources of financial resources and directions of their use;

providing production, investment and financial activities with the necessary financial resources;

determination of the directions of efficient use of available capital;

Identification and mobilization of reserves for improving the efficiency of financial activities.

A focused strategy is a prerequisite for ensuring strong market positions of the enterprise and achieving their high financial performance in the long run. Therefore, effective organization of scenario activity as an element of strategic planning is considered as one of the main factors that will improve the financial support of enterprises.

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FINANCIAL SUPPORT FOR THE DEVELOPMENT OF INNOVATION ACTIVITIES

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Abstract: *The ability to innovate determines the competitive level of enterprises in modern economic conditions. It essentially depends on the level of innovation activity, which is impossible without adequate financial support. The question of financial security is relevant if we consider the shortage of our own financial resources and the complexity of attracting investments.*

The purpose of the work is to study the innovation activity of Ukrainian enterprises by sources of their financing and the development of practical recommendations for choosing the optimal model of influence on innovation efficiency of innovation support.

Results of the research - a rating assessment of the development of innovation activity in Ukraine was carried out and a correlation-regression analysis was conducted to assess the impact of innovation support on innovation efficiency.

The practical significance of the results obtained is the application of correlation-regression analysis, which makes it possible to assess the impact of innovation support on innovation efficiency and to implement the forecast of enterprise innovation development.

Keywords: *innovation, financial support, rating assessment, innovation efficiency.*

Introduction

Modern world trends show that structural transformations in entrepreneurial activity, especially in the field of innovative entrepreneurship, are the driving force behind economic development. These transformations increase the competitiveness of the country in the scientific and technological space The primary challenges faced by enterprises are the expansion of the use of advanced technologies. This will facilitate the transition to an intensive economic development, mainly on an innovative basis. Modern business conditions in Ukraine require conditions that can guarantee economic security for enterprises and provide innovative development of the domestic economy.

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Innovation activities play a significant role in the socio-economic development of the country and enterprises. However, implementation requires adequate financial support.

First of all, it is necessary to provide an integrated system of financial support for effective innovation. This includes the level of the individual enterprise and the state as a whole. This system should be based on the optimal combination of own and borrowed financial resources and control over their effective use. This will provide the necessary conditions for accumulation and maneuvering of financial resources and the possibility of their concentration on key areas of innovation policy.

Theoretical and methodological aspects of the financial support of innovation activity for many years are considered in the works of foreign and domestic authors, including M. Diba [2], I. Fedulov [4], T. Golovchenko [5], S. Ilyashenko [6], O. Kolodizek [8], N. Krasnokutskaya [10], M. Krupka [11] and others. At the same time, despite significant scientific progress, the problem of funding innovation and some other issues are not sufficiently highlighted and require additional research.

Results and discussion

The success of innovation activity is largely determined by the forms of its organization and methods of financial support.

Developed countries have diverse opportunities to support and develop innovation as new scientific developments and technologies become the fundamental components of national security of states. The variety of innovative activities financing and the range of indirect support measures for innovation are extended. It should be noted that in the country insufficient attention is paid to the protection of intellectual property rights.

Attention is drawn to the approach adopted in many countries: the state should insure the risks of new innovative companies, but should not claim the income from their business. The state receives its income at the expense of taxes from innovative firms. The tax burden on innovative enterprises increases according to their income in Ukraine. This is negative because it complicates innovation activity.

Innovation is a key factor in socio-economic development in developed countries. According to recent research found that 50 to 95% of GDP obtained through innovation in these countries. Only 25% of the able-bodied population are engaged in innovative business. In Ukraine, the growth of GDP based on the introduction of innovation activity is at a level less than 1% [13, p. 21].

The financing of innovation activities determines the success or failure of innovative projects and programs. The ability of an enterprise to accumulate enough funds to implement innovative designs influences its commercial success. However, not every entrepreneurial structure has enough own funds for this, which leads to the search for other sources of income. Investments from different sources have a different price. The

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organizational form of financing and the duration of the investment period affect the value. Choosing effective forms of funding for innovative programs and projects ensuring high economic returns [1,3,7].

The statistical analysis of Ukraine's domestic business activity for 2011-2017 points to the revival of innovation activity. However, the innovative activity of Ukrainian enterprises is rather low compared to the leading countries of the world. In Ukraine, the share of enterprises engaged in innovations is 17.1% of the total. The share of enterprises that introduced innovations - 14% of the total. For example, the share of innovative enterprises is 70-80% in Germany, France, the USA and Japan. This is characterized by insufficient level of perception of domestic technological innovations by the business. Consequently, ineffective use of innovative potential occurs. Another indicator confirming this conclusion is the share of the realized innovative products in the volume of industry, which did not exceed 3.8% during 2011-2015, however, which increased to 6.1% in 2017.

The experience of foreign countries shows that national products lose their competitiveness if the share of innovation products in GDP is less than 20%. The average European average is 25-35%. It reaches 40% in China [14, p. 163].

Despite this, the development of innovation activity in Ukraine in recent years has been observed (Table 1). In 2016, the share of enterprises engaged in innovation increased by 2.1% compared with 2013. The total amount of expenses has grown by almost 2.5 times (+13 667 million UAH) compared to 2013. However, there was a sharp decline in the share of enterprises engaged in innovation in 2017.

Own funds of enterprises remain the main source of financing of innovative expenses - UAH 7704.1 million (84.5% of total expenditures on innovations). Only 8 enterprises received funds from the state budget and 17 enterprises - from local budgets. Total amount of funds amounted to 322,9 million UAH (3,5%). 5 enterprises received funds from domestic investors, 3 enterprises - from foreign investors. The total volume amounted to 380,9 million UAH (4,2%). 21 enterprises used loans amounting to 594.5 million UAH (6.5%). Notably, the majority of businesses own funds accounted for venture capital investments. This figure was about 95% in 2017.

Table 1

Innovative activity of Ukrainian enterprises and sources

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of its financing for 2013-2017

Year	Share of enterprises engaged in innovations, %	Total cost, mln. UAH	At the expense of funds			
			own	the state budget	foreign investors	other sources
2013	16,8	9562,6	6973,4	24,7	1253,2	1311,3
2014	16,1	7695,9	6540,3	344,1	138,7	672,8
2015	17,4	13813,7	13427,0	55,1	58,6	273,0
2016	18,9	23229,5	22036,0	179,0	23,4	-
2017	16,2	9100,0	7704,1	322,9	380,9	594,5

Source: calculated according to the State Statistics Committee of Ukraine [12]

On the one hand, the use of own funds to finance innovation is characterized by stability, simplicity and speed of their involvement. They also enable flexible and prompt investment decisions. High mobility of cash flows is provided and the risk of insolvency and bankruptcy is avoided, through minimizing project costs by the amount of interest on loans. However, constant insufficiency of own funds and a high level of risk does not always guarantee the domestic enterprises a high rate of development by self-financing innovative activities.

The analyzed statistical data show that a wide range of sources of funding for innovation activities are absent in Ukraine and its regions. Innovative enterprise is an investor who finances an innovative project at the expense of own, borrowed funds or receipts from the state budget in the form of subsidies. Budget funds are used to reduce the cost of loans borrowed in national and foreign currencies, including loans from foreign financial institutions, for realization of innovative and investment projects in the real sector of the economy. They are also directed to provide state support for the implementation of investment projects on a co-financing basis [11]. The budget deficit at the expense of budget funds constrains financing of innovation development. In addition, the economic crisis limits the possibility of financing innovation at the expense of its own funds. The financial resources of venture funds and regional development funds are not sufficiently used in financing innovative development [9].

We believe that the methodology of rating assessment for the integral indicator should be used to study the territorial differentiation of the development of innovation activities of Ukrainian enterprises.

A number of macroeconomic indicators were allocated to calculate the integral indicator of innovation development. In particular, the number of industrial enterprises engaged in innovation activities; the share of enterprises that introduced innovations; the share of enterprises that implemented innovative products, as a

percentage of the total volume of industrial products sold; amount of financing to GDP,%; the number of new technological processes introduced by one enterprise that introduced innovations.

We propose to use a formula for the valuation of all values within (0; 1)

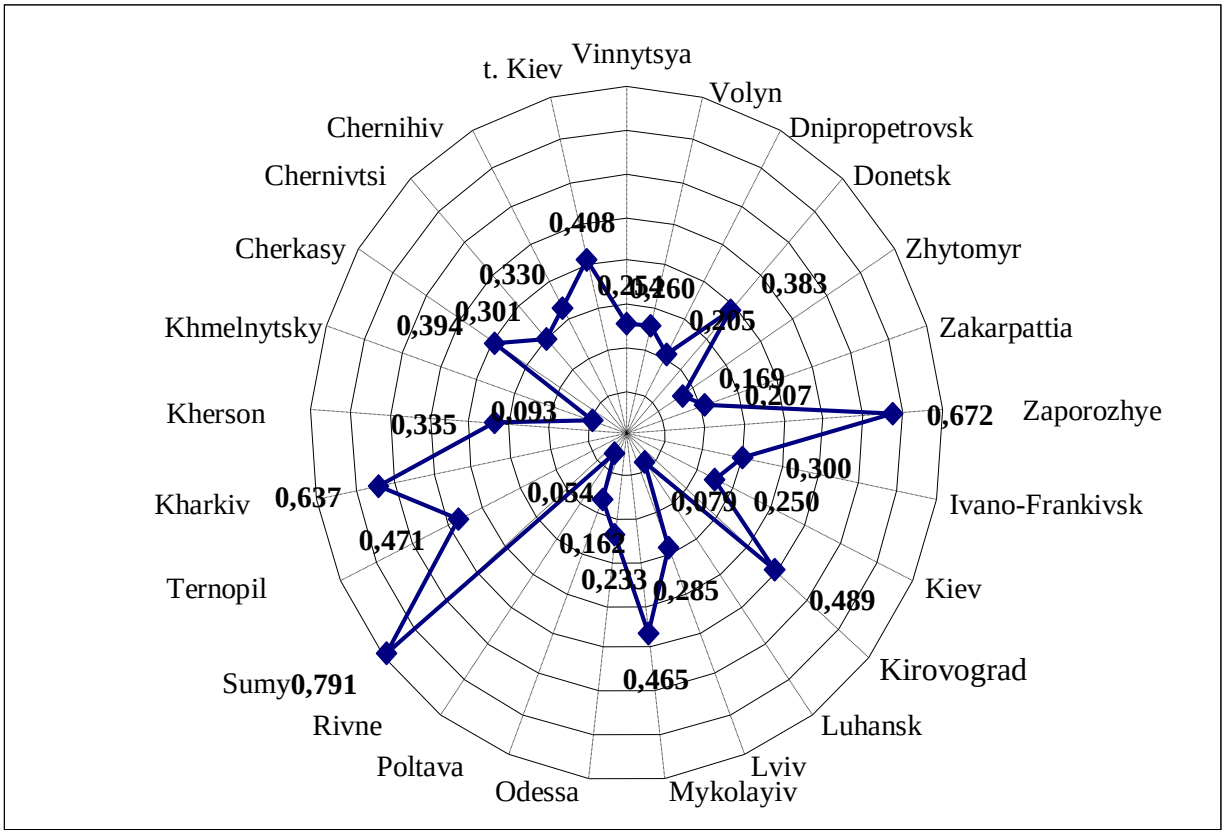
$$Z = \begin{cases} \frac{X_i}{X_{max}}, if\ X_i - \ integrator, i \in N, X_{max} \neq 0; \\ \frac{X_i}{X_{max}}, if\ X_i - \ disintegrator, i \in N, X_i \neq 0. \end{cases}$$

where z - normalized statistical values of indicators x_i, X_{min} та X_{max} - respectively least and most of their value.

Find the mean geometric value of the corresponding normalized indicators for determining the integral index using the formula:

$$Z_i^k = \sqrt[s]{\Pi z_i}\ i = 1, 2, 3, 4, 5, 6, \quad k = 1, 2, ..., 24.$$

Fig. 1



Rating assessment of innovation development in Ukraine in 2017 (*Source: Built by the author)*

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The rating assessment of the development of innovation activity shows that enterprises of Sumy, Zaporozhye and Kharkiv region have a high integral index. They are the absolute leaders in the development of innovation in the region. Khmelnytsky, Luhansk and Rivne regions showed poor state of innovation support (Fig. 1). Classification of regions of Ukraine by the level of development of innovation activity of enterprises, allows us to get the division of areas by the level of potential innovation activities of enterprises (Table 2).

We will conduct a correlation-regression analysis of the dependence of the impact of innovation on innovation efficiency for a more detailed assessment of the impact of innovation support on the effectiveness of innovation

Table 2

Classification of Ukrainian regions by the level of potential of innovative business activity in 2017

Characteristic	High potential	Low potential	Average potential
Regions	Zaporozhye, Sumy, Kharkiv	Kirovograd, Ternopil, Mykolayiv, t. Kyiv, Cherkasy, Donetsk, Kherson, Chernihiv, Chernivtsi and Ivano-Frankivsk	Lviv, Volyn, Vinnytsya, Kyiv, Odessa, Zakarpattia, Dnipropetrovsk, Zhytomyr, Poltava, Khmelnytsky, Luhansk, Rivne

Source: Built by the author

The value of the approximation error (R2) can be used to determine the validity of the impact. If the value (R2) is closer to one, then the more precisely chosen model reflects the tendency of development.

Table 3

The choice of the optimal model of the impact of innovation support on the effectiveness of innovation

Model	The average error of approximation
Logarithmic 1.9574Ln (x) + 5.167	0,55
Powerful $6,1883x^{0,8512}$	0,50
Linear y = 7,5065x + 0,182	0,65

Source: Built by the author

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The determination coefficient and the average error of approximation draw attention to the choice of the optimal model (Table 3).

The determination coefficient determines the degree of influence of the change of one factor to another. The average error of approximation indicates a deviation from the actual value from the predicted. These indicators provide an understanding of the relationship of factors. They also show the effects on each other and the model's compliance with the actual values. So, we have a direct relationship between the level of innovation and the effectiveness of their use. The linear model is the most optimal for describing this dependence. Since, the approximation error value is higher, the selected model is accurate. In addition, it is characterized by a high determination index.

Accepted recommendations are mostly not implemented. Financial, credit, tax, customs and other ups which ensure the development of innovation activities do not work. Although there are a number of concepts and programs for the development of science and innovation. There is also a periodic discussion of issues of innovation and scientific and technical activities at the parliamentary level. This is the main reason for the inhibition of the process of transferring the results of research from research institutions to enterprises of the real sector of the economy. In Ukraine, there are practically no mechanisms to support the transfer of research results that are common in developed countries

Conclusion

The analysis of the current innovation and development status of the Ukrainian economy proved the existence of an imbalance between the objective laws of social development and the conditions for the introduction of innovations. This conclusion is confirmed by a number of factors directly related to the process of innovation: insufficient level of economic conditions, not optimal structures of innovations and their financing; Unmatched separate components of financial support for innovation development of the economy;lack of regulatory framework for the implementation of financial support.

The acceleration of innovation and the proper financial support of innovation processes require the improvement of domestic tax legislation in part: introduction of tax privileges for profit tax for economic entities that co-finance and implement innovation and investment projects. It is also necessary to introduce a mechanism for the refund of the tax amount of benefits.

Financial support for the development of innovation activity should become a priority task of innovation policy. It is based on a system of strategic priorities of innovation development with a reduction in their number. On the other hand, it is necessary to preserve those in which Ukraine has significant scientific achievements and

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prospects.. It is necessary to develop and implement a comprehensive system of financial support for innovation activities. In particular, the system of mechanisms for cheapening loans and encouraging banks to lend to innovative projects. Such measures will stimulate the increase of investments in scientific institutions, technological parks and other scientific-oriented industries from other non-state sources.

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STATE POLICY OF USE AND STIMULATION OF LABOR RESOURCES TRADE

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Abstract. *The article is devoted to the problem of the efficiency of the labor using in trade. The necessity of introduction of modern mechanisms and tools of personnel management in the work of trade enterprises is proved in this article. Recognized, that the ability of the continuous development of the sphere of trade, the apparent disproportion and the structural deformation of the employment market negatively related to the quality and effectiveness of the business and financial and economic results of management. This situation implies the need for intensification of the efficiency of the realization of labor and intellectual potential at all levels of economic relations. The main objective of the study is the factors that will ensure a convergence of social-labor interests of employees, employers and society. As a result, the formation and rational use of human capital and the high efficiency of labor will be ensured. Today, in spite of the increase in the level of employment and payments in Ukraine, there is still insufficient financial stimulation, an adequate need for trade workers, full support of the social support, protection and assistance that would meet international standards, and create insufficiently competitive job positions.*

Keywords*: trade, labor resources, structure of labor resources, human capital, wages*
JEL Classifications*: J08, J18, J51*

Introduction

The main objective of the policy of effective use of labor potential both in the general and in the public sector is to form an appropriate environment which will help to bring the social and labor interests closer to the employersb and society. As a result, the formation and rational use of human capital and the high efficiency of labor will be ensured. Today, in spite of the increase in employment rates and payments in Ukraine, we believe

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that there is still insufficient financial stimulation, the inadequate need of trade workers, social support, protection and assistance that would meet international standards, create insignificant competitive workers places.

Theoretical background

The current methodological review discusses the social aspects of fair and alternative trade experienced by southern agricultural producers and workers. The results highlight the gender, medical and labor aspects of fair and alternative trading systems and suggest that diverse groups of producers and workers experience relevant inequalities. Such investigations confirm the relevance of studying the problem of increasing the efficiency of labor resources use [1]. It was established that the state regulation of the use of labor capital is influenced by trade unions, legislation, historical traditions, etc. [2]. At corporate level corporate social responsibility plays an important role [3]. A number of factors as structural reforms and investments in human capital (including accessibility of education, labor market flexibility and gender equality) are influenced by the development of labor relations in trade (including retail-trade networks).

Therefore, one of the key factors of production is labor, the level of influence of which depends on the development of the communicative competence of labor resources [4]. It requires the development of certain measures of state policy to support the institutional support of labor motivation in trade. It is the social component of these relations that depends on the effectiveness of their state coordination since qualified and responsible economic performers are far from the ideology of opportunistic behavior, and this inevitably contributes to reducing transaction costs, and, on the other hand, produces the emergence of value added chains that stimulate a sharp increase in trade flows [9].

Research objective and methodology

The main objective of the study is the factors that will ensure a convergence of social-labor interests of employees, employers and society. As a result, the formation and rational use of human capital and the high efficiency of labor will be ensured.

Results and discussion

The study of the effectiveness of the use of labor resources in trade is appropriate to start with the study of the occupancy of the population in this type of economic activity. It should be underlined that in Ukraine the number of employed people aged 15-70 in 2018, in comparison with 2017, decreased by 166.3 thousand people, or by 1.0%, and amounted to 16.3 million people, including able-bodied age - 15.6 mln.

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The employment rate of the population aged 15-70 decreased from 56.7% to 56.3% during the period, and from 64.7% to 64.2% in the working age population. (Table 1) [8].

In the structure of the employed population of Ukraine, in 2018, the largest share was occupied by persons who worked in the simplest professions (18.9%), professionals (17.9%), and trade and services (16.8%). Compared to 2017, no significant structural changes occurred (Table 2).

Among the employed women, almost every 4 work in the field of trade, and among men only one in ten. In the sphere of trade the dominance of women is observed in comparison with men (67.2% versus 32.8%). The employment in urban settlements is 18% and in rural areas -14%. Among all workers in the sphere of trade and services more than 74% work in cities. All of the considered indicators have a slight upward trend in 2018 compared to 2017.

Table 1: *Employment rate by sex, place of residence and age groups,% of the total population of the corresponding age group*

	Total	Including age groups, years							Labor-capable age
		15–24	25–29	30–34	35–39	40–49	50–59	60–70	
2017									
The whole population	56,7	28,2	71,8	74,3	79,1	78,6	61,7	14,5	64,7
women	51,7	24,8	63,1	67,1	75,1	77,8	56,4	12,2	60,9
men	62,2	31,3	80,1	81,3	83,1	79,4	68,2	17,9	68,7
urban settlements	57,4	25,6	74,4	76,4	80,5	80,0	62,1	13,1	66,0
countryside	55,1	32,7	66,3	68,6	75,7	75,7	60,9	17,5	62,0
2018									
the whole population	56,3	27,0	69,8	74,7	78,4	78,2	62,4	14,3	64,2
women	51,6	24,4	60,8	67,2	74,3	77,7	57,8	12,3	60,2
men	61,6	29,6	78,4	81,9	82,5	78,8	68,1	17,3	68,4
urban settlements	57,0	24,1	71,5	77,0	80,0	79,6	63,2	12,9	65,5
countryside	54,9	32,1	66,3	68,5	74,5	75,5	60,9	17,5	61,6

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Table 2: *Employed population by occupational groups, sex and place of residence*

	Whole population	Women	Men	Urban settlements	countryside
2017					
total, thousand people	16443,2	7872,4	8570,8	11309	5134,2
including workers in the sphere of trade and services, thousand people	2691,2	1817,7	873,5	1992,2	699
%	16,4	23,1	10,2	17,6	13,6
2018					
Total, thousand people	16276,9	7827,4	8449,5	11178,5	5098,4
including workers in the sphere of trade and services, thousand people	2734,7	1837,1	897,6	2017,7	719
%	16,8	23,5	10,6	18,0	14,1

One of the indicators of the socioeconomic development of the state is the informal employment of the population. Informally, those with a low level of education and those who are engaged in physical or unskilled labor are mostly employed. In particular, in 2018, the proportion of informally employed among the workers of the simplest professions was significantly higher than among the officially employed population (49.0% vs. 9.2%), and in trade it was 19%. Trade, along with rural, forest and fisheries, construction is the main activity of informally employed population.

In general, it is possible to maintain a high level of population deprivation in the Ukrane trading. However, the staff turnover in this area is rather high. Among the total number of registered unemployed (390,8 thousand) at the end of 2018 One eighth worked at enterprises that carried out wholesale or retail trade or repair of motor

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vehicles and motorcycles. Of the total number of vacancies announced by employers (in 2018 - 36.0 ths.), Every sixth person was in enterprises of the same sphere. At the same time, there is an increase in the needs of employers in workers comparing with 2017, in trade and in Ukraine as a whole (Table 3).

Table 3: *Demand, supply and employment of the labor force, thsd. persons*

Type of economic activity	The number of registered unemployed at the end of the year		he need for workers to replace vacancies by the end of the year		Registered unemployed during the year	
	2017	2018	2017	2018	2017	2018
Total	490,8	390,8	25,9	36,0	444,7	409,0
Wholesale and retail trade; repair of motor vehicles and motorcycles	61,2	44,7	4,1	5,9	71,4	61,7

Registered number of retail workers in the country amounted to 7% of the total number of employees employed in Ukraine. Such rather high indicators and their growing tendency are explained by the growth of the number of large retail objects like super and gepermarkets. It should be noted that, apart from the different grades (where the products grow) for the functioning of such economic entities, a large number of persons is involved among which a high proportion is taken by managers and staff, the auxiliary and service personnel.

This tendency is also reflected in the distribution of personnel of trade enterprises by the level of education (Table 4). The positive changes were that the share of workers with complete higher education increased by 7% over the decade, while the number of employees without higher education in 2018 was 39.3% against 44.5% in 2005.

Table 4: *Distribution of personnel of trade enterprises by educational level,%*

Educational level	2005	2006	2010	2017	2018
- incomplete and high school education	26,0	26,0	24,1	23,6	23,7
- full higher education	29,5	29,4	32,1	35,6	37,0
- without higher education	44,5	44,6	43,9	40,8	39,3

However, during the decade there were no significant changes in the age structure of trade unionists (Table 5). Every second trader is young people (aged 15-34). This positively correlates with the youthful economic activity, which is characterized by high motivation for the initiative.

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Table 5: *Distribution of personnel of trade enterprises by age,%*

Educational level	2005	2006	2010	2017	2018
- Young	50,4	50,3	51,6	53,1	49,2
- Pre-retirement age	7,0	7,5	7,8	8,0	9,0
- Retirement age	6,7	10,0	9,6	9,9	9,5

The distribution of trade enterprises according to the organizational forms of business entities in Ukraine (Table 6) indicates the predominance of limited liability companies (49.4%), and the number of state property trade enterprises in 2018 amounted to 169 units (1.4%). However, the distribution of staff has other structural characteristics (Table 7).

Table 6: *Number of enterprises engaged in retail trade in Ukraine according to the organizational forms of economic entities in January 1, 2018*

Organizational form	Number of enterprises, units	% to all businesses
Limited Liability Company	5963	49,4
Private enterprise	2667	22,1
Cooperative Society	1197	9,9
Municipal Enterprise	363	3
Consumer Cooperative Enterprise	362	3
Joint stock company	362	3
Others	1153	9,6
Total	12067	100,0

Table 7: *Number of enterprises engaged in retail trade in Ukraine by the organizational forms of economic entities as of January 1, 2018*

Organizational form	Number of employees, persons	% of all employees
Limited Liability Company	1917	70,1
Private enterprise	254	9,3
Cooperative Society	200	7,3

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Municipal Enterprise	66	2,4
Consumer Cooperative Enterprise	66	2,4
Joint stock company	104	3,8
Others	129	4,7
Total	2735	100

It is believed that the social-labor sphere in the trade enterprises of the state, communal, co-operative, and some other forms of independence is more conservative. Therefore, in the private enterprises of private trading, the organization of labor is the highest innovative hierarch, recognizing the aims of a more intensive use of labor resources and ensuring the formation and effective use of the intellectual labor potential.

In trade, sex differentiation is clearly shown in terms of occupation and payment of the contract. In retail trade, among the employees of the trading floor, at the counter or at the checkout desk, women who have a salary lower than the average person are displaced. However, in the middle of the administrative staff of the trade enterprises, a high proportion of men. As a result, the average salary of representatives of men in the trade sector is almost 20% higher than the plight of women.

A positive fact of using labor resources in trading can be considered as the rational structure of the fund's labor leverage (Table 8). Weak human resources motivation and dissatisfaction in labour sphere may cause dangerous consequences not only at entrepreneurial level but also can widen negative effects totally in economy in forms of loss of economic activity, perception of justice, excessive emigration aspirations [9,10]. It shows that saved is more or less is positive. So, in 2018 the volume of the fund's payments for the work has stabilized UAH 83 billion including Fund of the main industrial plots of the city is 64 billion UAH (77.6% of the salary fund payments for the work). There was an increase in its share of more than 3% at the expense of additional wages. We are convinced that, in most cases, the growth of sales volumes and trading in trading is the result of legislative changes, and not the management of the retail trade.

Table 8: *Structure of the Fund's payment bills in the trade*

	2014	2017	2018
Basic Salary Fund	74	73,9	77,6
Supplementary Wage Fund	24,2	24,1	21,2
Other Incentive and Compensation Payments	1,9	2	1,2

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However, there is a significant disbalance in the trading in the trading environment of a certain type of enterprise. So, January 1, 2017, the sum of the non-exhausted salaries of the economically and non-active enterprises' permanent employee amounted to UAH 11.1 million (51.6% of the total amount of non-elaborate salaries). Thus, the status of the charter and other types of economic activity, as in Ukraine, and there is an implementation of a long-term procedure for the restoration of the capacity of debtor enterprises or for the extinction of their bankruptcy.

An important aspect of the effective use of labor resources is the training and upgrading the personnel's qualification. On average, during the 2014-2018 programs only about 1% of the number of registered tradesmen employed in the trading sector was covered by the program's improvement program. This suggests that for trade enterprises they try to use the potential of employees, and not to raise funds for the creation of adequate labor potential through the improvement of the professional level, knowledge of the personality of the person. This, of course, is a non-negative phenomenon but it is often due to a lack of financial knowledge such as the lack of awareness of the necessity of the formation and efficient use of the intellectual potential. This is evidenced by the presence in Ukraine of a significant number of opportunities for improving the professional level in the field of sales. It is various training, targeted training, exhibition activities, etc.

Conclusions

In general, we believe that in Ukraine there is still no systemic and structural and consensual approach to ensuring the efficiency of the use of labor resources. Although, the situation has changed positively over the last two years, however, this is due not so much to the initiative of employers as it is the consequence of state regulation in the national economy.

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MECHANISMS OF INVESTMENT MARKETING SUPPORT OF THE STATE ECONOMIC SECURITY SYSTEM

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Abstract: *Nowadays, in the conditions of permanent economic instability it is very important to find effective instruments of sustainability of economic security. There is awareness that economic security is based on investment attractiveness of corporate and other assets. It can explain scientific interest to the research of increasing investment attractiveness of assets with the help of marketing methods and how it will influence the level of economic security in the country. The present manuscript focuses on the research of the marketing investment marketing support in the system of economic security of the state. Initially, the data that confirm the influence of marketing mechanisms of investment activity were provided. Additionally, we introduced the ways of effective introduction of investment activity based on marketing and the system of economic security. We conclude with a discussion on where the future of marketing in investments and economic security lies.*

Keywords: *The economic security, the investment marketing, the country's economy, globalization, market stability*

JEL Classification codes: *H10, M31, O16*

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Introduction

The current stage of marketing development is due to radical changes in the global market environment. It becomes obvious transformation of the marketing object itself, its inconsistency and variability. In the context of the modernization of the economy, the parameters of increase in social reproduction are determined by multifactor productivity, which entails a change and complication of the structure of investment processes. Investments, taking the form of innovation, carry in themselves another essential content; they are not formalized at the present time, but the future needs of the reproduction process. Investment marketing is becoming one of the main signs of the presence of dynamic changes in the economy. In a broad sense, this discipline should be interpreted as a permanent management process in the field of strategic and current planning of investment processes aimed at meeting the demand for capital and maximizing profit for investors. In other words, it is a synthesis of the investor's capabilities and consumer needs in the interests of realizing the goals of both parties. The marketing potential of investment is represented in the form of the creation of new spheres of production and services, the reconstruction and renewal of old industries on the basis of successive innovations of various kinds. Marketing research provides an opportunity to qualitatively and quantitatively evaluate alternative development options, make forecasts for future periods, as a result, choose a satisfactory alternative to a management decision on investment activities.

The concept of investment marketing considers investment as the basis of economic activity in a single organization. Investment projects are considered here as a means to achieve the goal. And the goals of investment marketing can be: profit maximization, investment volume, economic security and increase in market share. The main goal of investment marketing in creating a comprehensive plan is to create a communication environment between the organization and the investor.

Literature review

Theoretical and practical aspects of divestment marketing were described in the works of such scientists as Besanko, D., Dranove, D., Shanley, M., & Schaefer, S. (2009), Bouchaud, Jean-Philippe; Potters, Aguilar (1997), Deming, W. E. (1982), Goshel J. P., Noyria N. (1993), Porter, M.E. (2008), Inkpen, A. C., Ramaswamy, K. (2006). Different aspects of economic security on macro and microlevels were reflected in the publishing's of Nykytenko, P.H. and Bulavko, V.H. (2009), Lekar', S. I. (2012), Vasyl'tsiv, T.H. (2008), Luciani G. (1988), Olvey L., Dolden J., Kelly R. (1984). There were no attempts (or very few) to combine aspects of investment marketing and its influence on the economic security of the state (and its particular regions) in terms of how really attractive should be object of investment not only from the business (or

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economic) point of view but more from the emotional one. . The study aims to deal with the problems of the effective functioning of economic security in a market economy.

Methodology

The theoretical and methodological basis of the study was the works of domestic and foreign authors on the issues of motivating and managing regional investments, determining the effectiveness of investments, shaping the investment climate, investment marketing, making investment decisions.

In the course of the study, the methods of typology and classification, functional, marketing, investment and system analysis, program and target planning and management, expert analysis, dynamic programming, financial planning, and graphical interpretation were used.

The methodological basis of the research is the methods of materialistic dialectics. The studies were conducted on materials of state statistics bodies, which guarantee the necessary reliability of scientific findings and the possibility of their application. The study is based on the works of domestic and foreign scientists dealing with the problems of the effective functioning of economic security in a market economy.

In the process of processing and analyzing information, the following methods of economic research were used: monographic, balance, calculation-but-constructive, mathematical statistics.

Results and discussion

1. Theoretical and methodological basis of economic security of the state

"Economic security" is a relatively new category of the economy, which entered into scientific circulation only in the first half of the 20th century, and its influence at the national level began to be considered only in the 1970s. Despite this, even at the beginning of this century, "economic security" could not become an independent discipline. The main objective of this section is to systematize the main approaches to the concept of "economic security", which have been formed within the short period of the existence of this science.

The economic security of the state is a complex and multifactor system that represents a material basis for the formation of other components of national security. Ensuring economic security is one of the main problems of the state. The security problems in the country (in Ukraine, in particular), as a rule, are due to the inability of the state to take preventive measures or not to implement them on time. Therefore, the state must ensure such a level of security that will ensure the internal and external stability necessary for normal economic

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functioning, the active participation of the country in the international division of labor and competitiveness. At the same time, it will provide the basis for ensuring an adequate level of security.

There are different systems and models of national security in the world: the American one used as an example by most states is oriented to a combination of external and internal security; the Japanese model makes an emphasis on the internal social security; the Chinese system is the most concentrated expression of the security systems of the states that are building a socialist society; systems inherent in the states that have recently gained independence and are reorienting their development in depth. Modern US, UK, Germany form their economic security strategies on surplus, primarily financial resources, which allow allocating economic zones with an increased level of economic risk without compromising economic interests and economic security, providing the conditions for strategic, long-term self-sufficiency and competitiveness. It is impossible to imagine current national economic security without mentioning globalization. At the moment, practically all countries of the world, including Ukraine, are involved in this process. In the context of the globalization of the economy, the issue of ensuring the economic security of the country is particularly acute.

Globalization, like its basis, internationalization, occurs on two levels. The first level is the level of spontaneous-market flow of global processes. The second level is the level of interstate forms that compensates for the loss or limited ability of the state to regulate the spontaneous-market effects of globalization.

The main challenge of globalization in the 21st century is that two poles of the world economy are forming on the planet. At one pole, the countries- global leaders are concentrated, and on the other – the countries that depend entirely on them. The development of the economy of the leading countries determines the socio-economic situation of the countries that are subordinate to them. For countries like Ukraine which aim at combating such a globalization challenge and effectively ensuring their own economic security, it is necessary to create their own competitive products and effectively resist the economic expansion of the leading countries. That is, attracting foreign investments and capital into its own economy, Ukraine should not become dependent on foreign creditors and investors. It is necessary to involve our own investors, to encourage the domestic producers to invest in their own economy, and not to export capital abroad.

2. Modern aspects of investment marketing in contexts of economic security

The main direction of economic research in the country, both at the macro level and at the macro level, is the analysis of ways to increase investment attractiveness and how marketing tools can be useful in this area. Preference is given primarily to the study of the investment attractiveness of the regions, in order to compile a positive image of them for potential investors, which will activate business activity and enhance economic potential.

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Recently, a wide range of research interest programs (promotion plan), offering new management technologies and methods of development of the region, including marketing was made. The very concept of territorial marketing appeared in the second half of the 20th century.

The regional promotion program is similar to the commercial product promotion program, but the product in this case is the region itself as a complex socio-economic education, and the consumer is the numerous target groups that can be extremely heterogeneous (population, tourists, investors, entrepreneurs, government bodies, local governments) non-profit organizations, etc.).

Branding programs in the region include the creation of long-term preference for a product based on the active and emotional impact on the consumer of a trademark, including through advertising, distinguishes the product (in this case, the region) from competitors and creating its positive image (brand) and the formation of the image of the region. Marketing and branding of territories cannot be standard. In fact, the whole process of forming regional marketing is divided into two blocks: the positioning of the region and the program for its promotion.

The positioning of the region includes:

• problem definition, task setting; • stakeholder analysis; • determination of criteria for project success; • market segmentation, target audience determination; • selection / refinement of marketing strategy.

Promotion of the region includes:

• selection of marketing communication tools; • identification of success indicators, planning for monitoring and evaluating a marketing project; • identification of project participants, distribution of functions; • project formation.

The main factors affecting the attractiveness of a region (Table 1), a particular territory for investors and the population are the following.

Tab. 1 The main factors affecting the attractiveness

№	Factor	Description
1	Study of the level of social development of the region	When choosing a region, both the population and investors usually take into account: the level of urbanization of a territory; migration situation, opportunities for labor and social mobility of the population; demographic situation; the functioning of the housing market; regional problems of education, health, transport infrastructure and some others.
2	Determination of the image of the	a set of emotional and rational ideas arising from the comparison of all the signs of a territory, people's own experience and rumors

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	territory	affecting the creation of a certain image.
3	Reputation analysis	a dynamic characteristic of the life and activity of a territory is formed over a long period of time from a collection of reliable information about it.

Thus, industries and regions can be grouped according to the degree of attractiveness for an investor as follows:

1) a group of super attractive industries (regions)

2) a group of regions with a fairly high investment attractiveness;

3) the group of medium attractive regions;

4) a group of unattractive regions with extremely low investment attractiveness.

Regions need to study and evaluate, on the one hand, intra-regional interests and needs, and on the other, an assessment of their own capabilities to meet them. The method of development and implementation of targeted integrated regional marketing programs allows you to solve these problems.

The program of actions of regional marketing in developing a strategy for the socio-economic development of the region and its individual territorial entities includes:

• marketing audit of the region, during which it is necessary to analyze the activities proposed by various institutions, associations and individuals; to study foreign experience in solving social and economic problems on a territorial level, to position the region, that is, to identify its strengths and competitive advantages, target consumer segments, etc .;

• formulation of a general concept for the development of marketing in the region, taking into account existing priorities;

• development of a regional marketing strategy to identify the needs and possibilities of its use for the development of socio-economic processes;

• preparation of marketing programs and projects, allowing to determine its subjects, dates and sequence of events in accordance with available resources.

Also, one of the main problems in improving the efficiency of marketing of territories, strengthening their competitive advantages as well as increasing the economic potential of regions is to reduce the level of shadow economy, which is very large in countries like Ukraine today. Taking into account the experience of the countries of Western Europe (Italy, Germany), countries of South America, in which market liberal reforms were carried out to improve the investment climate (Chile, Uruguay, Peru, Panama), and Asian countries (Singapore, China, Thailand), the concept of which is represented by a sequence of actions (Table 2), the

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introduction of which will reduce the level of shadowing of the regional economy and increase the investment potential.

Tab. 2 - Actions to reduce the shadow economy in the region

Stage	Action	Action characteristic
Monitoring stage	Identification and localization of shadow assets	Collection of information
	Determination of the possibility of its legalization	The definition of how these industries can be generally legalized, or is it a sphere of open criminal activity and under national and international law.
	Determining the uniqueness of the shadow segment	The definition of the shadowization of these industries is inherent in other countries and determine the uniqueness of the situation for Ukraine.
	Current and future value of shadow assets	Development of criteria for obtaining information;
	Analysis of the relationship of the shadow sector with society and legal business	Community Relations Relationship with legal business
	Identification of rules that govern shadow assets	Study of the features of the control system and decision-making system in the shadow sphere
	The cost of maintaining the shadow sector	Costs of the informal sector Costs of the legal sector Expenditures of public institutions
	Cost of legalization	
Political and legislative stage	Responsibility for the process of providing compensation to unprotected people	- direct material assistance - help in retraining - assistance in the form of benefits
	Involving all state institutions to speed up the process	Coordination with the national and local authorities on the wheel and the sequence of actions to de-unify the economy.
	Eliminating administrative and legal barriers	Analysis of the need for permits at all levels Estimation of the total cost of these permits.

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	Elimination of legal deficiencies between the legal and shadow sectors	Ensuring the equal rights of only legalized assets and existing ones and the prevention of infringement of one of the parties Elimination of informal property rights
	The introduction of procedures to reduce the ownership of legal assets	Expanding the range of possible evidence of property rights
	Reducing risks to private sector investments	Rationalization of mechanisms to verify ownership and payment of public services
Marketing stage	Selection and training of qualified personnel	Identify team leaders for preparing information policy
	Communication strategy to attract media	Conducting media work with communities, where there will be an explanation of the need to eliminate economic processes
	Reforming electronic property relations databases	Simplification of the procedure for registration of information about legal and legal assets
Infrastructure stage	Implementation of business service mechanisms	Obligatory payments; Information Services insurance services; National identification system Banking services;

The study of the problems and patterns of development of the investment potential of the region is quite relevant. The main goal of the regional policy is to achieve a high level of development of investment potential, at which the region can achieve high competitiveness indicators, with the help of balanced and interrelated goals and objectives of investment in the implementation of specific projects in the field of innovation. At the same time, the main condition for the development of the innovation component is the combination of the innovation and investment functions under the unified management of the regional government.

Thus, increasing the investment attractiveness of the region and the marketing of territories is a necessary condition for its sustainable economic growth, increased competitiveness, improved quality of life of the population and the development of all spheres of social and economic life. At the same time, the achievement of the set goals is possible only by attracting investments in the real sector of the economy. The growth rate and the volume of investment in fixed assets are the main indicators of the attractiveness of the region for potential investors.

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Conclusion

Thus, it can be noted that the concept of investment marketing considers investments as the basis of economic activity of the state as a whole and of a single territory. Investment projects are in this case the means to achieve the goal. The use of investment marketing will stabilize and regulate the investment mechanism, will give impetus to increase activity, efficiency, improve the outcomes of enterprises in the investment market, and will contribute to better quality organizational communication between market actors. This is due to the fact that investment marketing, based on strategies and principles, provides for a deep analysis of the enterprise's production activities, opportunities for its expansion or modernization, threats and their avoidance, competition from potential competitors, searching for promising investment projects, studying the situation at the macro level, analyzing influential dynamic processes.

Given the above information, it can be argued that the use of investment marketing will stabilize and regulate the investment mechanism, will give impetus to increase activity, efficiency, improve the outcomes of enterprises in the investment market, and will contribute to better interorganizational links between market and state.

A flexible, effective management system, based on marketing principles, gives you the opportunity to gain competitive advantages, make rational use of resources, create investment attractiveness, the optimal structure of actions. Knowledge of investment marketing focuses on a high level of use of investment communications, which require an appropriate critical analysis of information. Without marketing reinforcement, it is very difficult to provide investors with relevant, relevant information on implementation, performance, expediency of investment proposals and projects. Therefore, investment marketing is the prospect of further scientific research in this area on the product-market strategies of enterprises and states, taking into account the specifics of the investment market.

An assessment of competition, analysis of the driving forces in the relationship between investor and seller, the role of marketing infrastructure, the creation and dissemination of effective messages and images.

Achieving this involves increasing the investment attractiveness of the state (region, city, etc.) by performing the following activities:

- development of a market-oriented strategic planning process;
- market view of their products and customers;
- identifying the impact of quality in programs and services on competitiveness;
- definition of knowledge and skills for effective advertising and promotion of their competitive advantages;
- diversification of its economic base and development of mechanisms for adapting to changing conditions;

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- the need to promote the development and support of business environment;
- focus on the private sector in the implementation of their tasks;
- development of its own unique process of implementing changes depending on the characteristics of the local culture, policies and leadership processes;
- development of organizational and country and procedural mechanisms to maintain its sustainable development and maintain the momentum gained.

Implementing these aspects will enable state officials to attract more national and foreign investors on national and local levels that will lead to increase economic security on all stage of it.

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MARKET INSTITUTE: RESEARCH METHODOLOGY IN CONTEXT OF BASIC COGNITIVE APPROACHES

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Abstract: The article substantiates and proposes a new solution to the scientifically applied problem of identification of the universal market methodology (on the example of Ukrainian market of vegetable products). The author's position assumes the combinatorial content of the capitalist vector of development of the market institute, which, covering the period of the last 400 years, combines the influence of two trends: on the one hand, the immutability of the fundamental principles of market organization and the laws of its functioning under conditions of economic liberalism; on the other hand, a constant search for opportunities to increase the functionality of the market through its reorganization and transformation. Accordingly, the correction of the paradigm of the capitalist market was historically carried out under the influence of changes in such priorities: regulations, social standards, criteria of economic and social efficiency of market mechanisms, the content of operational management in achieving market efficiencies, etc. These trends conceptually reflect the role of traditional factors of influence in market theory, as well as universal mechanisms for improving the market. At the same time, the theoretical basis of the author's research was the position on the determining role of the market type through a description of the logical, envisioned, projected and capable of correction of economic relations within the limits of the given institute. Taking into account the results of theoretical and applied research, the typology of market models, which reflects the real processes occurring in the conditions of a transitory and emerging market, is substantiated. The developed positions provide an opportunity to solve the problem of choosing and forming an optimal variant of the market model based on existing external and internal limitations, as well as specification of conditions for its operation.

The theoretical basis of the concept of the post-industrial model of the market were the initial positions of the classical, neoclassical and neoinstitutional theories, interpreted in the work as a synthesized model of the market institute, which corresponds to the needs of the

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post-industrial society type. The justification of this is made on the basis of the own interpretation of the conceptual-categorical apparatus of the market theory, which enables the original description of causal relationships between the results of the activities of market entities and conditions that are formed at a certain period of time, as well as a set of socio-economic indicators that ultimately characterize the degree of effectiveness and efficiency of the market institute. The relevant methodological apparatus contains a set of logically interpreted criteria and indicators for assessing the state, problems and perspectives of a representative market.

Keywords: Market Institute, Methodology, Cognitive Approaches

Introduction

It is hard to overestimate the role of economic methodology concerning the civilizational foundations of society. In turn, first of all, the market methodology – that is, the logic of knowledge of society through the determinant of market relations – is, as we consider, the most objective paradigmatic basis of a modern socially acceptable model of development. At the same time, despite the long history of the formation of the general theory of the market, which was backed up by the long experience of this institute, to consider this theory to be completely formed seems at least problematic.

The state of a market economy of developed countries, and so-called "third world countries" indicates a number of dysfunctions and unresolved problems. Moreover, the latter do not have a theoretical solution.

First of all, we would like to emphasize the research problems of methodological level, which were studied by domestic and foreign scientists as fundamental and necessary to solve. Let's take a look at the situation, focusing the attention on those areas of research, that can be separated as part of the previously mentioned general theory of the market.

Literature review

The thesis about the complexity of the market is quite common. According to Sheraton Chottiner (2016), a few "truths" of the market are known.

Vargo (2011) calls the market one of the most fundamental abstractions, which, according to Venkatesh et al. (2006), as a term is everywhere and at the same time nowhere. According to Andersson (2008), attempts at a deeper understanding of the markets characterize contemporary economic science. According to Arthur (2015), a difficult economy is an economy in motion, constantly constructing itself again, where the factor of unpredictability of circumstances, uncertainty will again require a rethinking of economic theory. According to Weick (1979), the market should be considered as a self-generating model and order, is constantly restored, and this requires constant updating of market knowledge.

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In modern literature, the concept of market models is often considered by the nature of functioning, character of profit, types of economic activity, level of the object of management; type of the process. At the same time, individual approaches to the identification of the market model can be singled out: target, internal, external, national, sectoral, etc. In the context of the same methodological typology of the concept of market theory, it is possible to note a number of approaches that were formed historically: classic (Smith); keynesian (Keynes), neoclassical, neokeynesian, institutional and others. In this case, it is a different methodology for studying one phenomenon. As for the typing of market models, one should highlight: monopolies, oligopolies, monopolistic competition and perfect competition. Obviously, this is not a complete list of options. At the same time, most of the above approaches are methodologically alternative, and this is the reason for the lack of a unified market theory.

The conclusion, which follows from the above is: there is a plurality of views of different groups of scientists; such totality is quite diverse in its content, often alternate; the point of view of each of the parties does not provide an exhaustive answer to problematic issues, that is, it is only a "part of the truth"; the limitations of each approach are present.

We would like to emphasize the effect of a different vision of the role of the market in countries of different economic states. Analysis of modern studies in economically developed countries shows a large number of claims to the market. But in the countries of the IIR of the world there is a widespread unconditional recognition of the rationality and self-sufficiency of the market, and claims tend to speak about the functionality and consequences of the functioning of individual markets. For example, in Ukraine there are examples of very effectively functioning markets and vice versa, which already requires clarification how efficient and inefficient markets can coexist in a single economic system for a long period.

The authors of this article represent Ukraine, where market relations are actively forming, and this process is quite difficult. The corresponding is the experience of the authors. Given this, the formulation of problems in the studies of Western colleagues is often surprising.

First of all, it should be noted criticism of the neoclassical theory, is quite common. So, in the research Vargo (2016) it is stated in the too Simplified conceptualization of neoclassicalism, which describes the markets as static and mechanical. According to Arndt (1981), Mele (2014), Aspers (2011), Buzzell (1999) neoclassic defined markets as an existing pattern that does not require an explanation, that is, as a dogma that does not consider how markets are formed or change. A critique of the neoclassical market model by Lie (1997) is based on ignoring the real work of the market; Mele and others (2014) - on reassessment of the role of the product and price mechanism; Alderson and Cox (1948) - to ignore the time factor when describing market models; Granovetter (2005) and Hirshman (1984) - on the inability to take into account the influence of the broader social

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structure and ignoring the extreme complexity of human nature; Lusch and Vargo (2014) - on the inability to appreciate value co-creation in markets.

The history of the development of economic science demonstrates the counterarguments to such criticism. It is well known that neoclassicism of marginalism just provided for the study of the psychologization factor, on which many works were based - Jevons, Menger, Böhm-Bawerk, Wieser and many others. On the other hand, markets from the XIX century. and began to be viewed in dynamics, that is, as dynamic models, on which the theory of Tyunen, Walras, Pareto, and many others was built. Marshall theory was built precisely on the study of the conditions of the market in dynamics.

In turn, on what the thesis about reassessment of a role of the goods and the prices is resulted above is resulted? What can make up the concept of "revaluation" in economic theory? The term “value co-creation on the market” (Lusch and Vargo, 2014), in our opinion, is correctly described by the theory of the ministry of the Austrian school of marginalism.

The thesis of Leyton (2011) that the interpretation of economic laws in economically developed countries differs from that of primitive systems is worthy of attention. We believe that the question itself may be questioned. So, if you evaluate the views of an ordinary agent, then the complexity of the market and the inaccessibility of the vast majority of society understanding the market in the same degree characteristic of any state of the economy. Moreover, such an understanding may be higher in the IIR countries of the world due to greater competition and the need for economic survival.

On the other hand, the attention to the system approach presented in the works, for example, of Sherman, Vargo, is quite noticeable today. Thus, according to Sherman Chottiner, only the internal one, that is, a systematic approach, unlike the external one, can provide an understanding of current or past markets. According to Meadle (1991), Shapiro (2006), Giesler (2008), a systematic view of markets is an alternative to neoclassicism, based on the idea of resource and distribution. Barile (2016) justified the need to consider the properties of markets as ecological systems, and the point of view of Vargo, Arthur (2015), Giesler, Fischer (2017), Capra (2014) provides for the feasibility of bringing experience in other disciplines to substantiate the system paradigm on the market.

We believe that a systematic approach can provide a more complete understanding of the market, but this approach has nothing new. Neoclassicism, in fact, considers the market as a system in accordance with traditional basic cybernetic theory, for example, according to Vargo’s provision on understanding the market as integrity, etc. It’s reasonable to consider the market as a system, which follows from the simplest analytical market model, but do not follow the automatic solution of the problems of market improvement.

It is also not clear how one can identify the market and the ecological natural system. After all, these systems have different functions (goal) and the logic of their functioning. Thus, ecology considers the conditions of coexistence of various species that are trying to expand the living and resource space, while the market is

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primarily a tool for coordinating relations between economic agents (Homo economics). Economic and ecological systems may be identified to some extent, but not the market.

Another speculative moment is connected, in our opinion, with the use of institutional ideas. Institutionalism is often viewed as an alternative to neoclassicism, including the interpretation of markets.

The institutional approach, for example - Vargo and Lusch (2016), provides for the consideration of markets through the definition of the role of institutions, institutional mechanisms as endogenous market coordination mechanisms, or institutional decisions.

Araujo (2015) describes the markets for the study of "institutes - history - the interconnections of social structures." By dividing the point of view about the importance of institutional factors, we proceed from the assertion that the main analytical model of the market is the invariance, where such factors make up many additional factors of influence on the state of a particular market. Hence, the institutional theory does not in itself provide solutions to the problems of market modeling. The potential of this theory is to take into account additional factors and not more.

Other approaches emphasizing the identity of the theory of systems to the essence of the market - the theory of complexity (Holbrook, 2003), the approach of viable systems (Barile et al. 2012), the dynamics of the market environment (Glester and Fisher 2017). Kymar (2015), Normann (2001) identified the role of information growth and the acceleration of economic fluctuations in markets. Alternatives such as the consideration of the market as a communication grid (Samli, Bahn, 1992), knowledge structures (Rosa et al. 1999), sign systems (Venkatesh, Penaloza, 2006), practices (Kjellberg, 2007) as configurations (Storbacka, 2011) deserve attention. The potential of such methodologies requires separate evidence.

A separate issue is the discussion about the measurability of processes in the market. Systems thinking assumes, according to Capra, Luisi (2014), that the basic units of market analysis cannot be measured in the generally accepted sense. Vargo's thesis on the prospects of market theory contains an emphasis on the reflection of processes, rather than their measurements; hence the focus should be on market qualities, not quantities. In this regard, it is clear why reflection is opposed to measurement, because the modeling of markets needs both reflection and measurement of processes.

Market research as an economic task can be defined as follows: there is a certain system of exchange with its own parameters (consumer, production, marketing, logistics and others, etc.). Such a system has a universal structure and performs some degree of a universal set of functions, has certain socio-economic consequences for society. Such performance of functions is accompanied by additional costs of society in the form of regulations. At the same time there is a public expectation for the performance of such functions and consequences. It is necessary to explain: 1) the reasons for the difference between expected and real parameters; 2) mechanisms for maximization of real parameters to the expected. Thus, the key categories in such a task are functionality (degree

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of performance of functions) and efficiency (cost of performance of functions) of the market. Any studies that provide an opportunity to solve these problems are valuable.

The author's methodology assumes the observance of the fractal approach of Mandelbrot (1983), Giddens (1984), according to which very complex phenomena can be understood from the point of view of relatively simple rules. In the context of this, we consider the point of view of Arthur (2015) that, in an economy, the complexity of markets is not considered as something given and existing. At the same time, the market under any conditions and any condition is a universal system (structure), where the variables are only: 1) its functionality; 2) the consequences of functioning; 3) mechanisms of functionality and consequences.

The conclusion that follows from the above is as follows: there are many views of various groups of scientists; This set is very diverse in content, often alternative; the point of view of each of the parties does not give an exhaustive answer to the problem question, that is, only a “part of the truth”; there is a limitation of each of the approaches. In this regard, the main question is the formulation of a new market methodology.

Research methodology

We consider that the main consideration to traditional approaches to the coverage of market theory is the use of a limited methodological approach with a number of negative aspects, namely:

1. Violation of the principle of objectivity of market analysis and market relations due to the lack of a single methodologically agreed criterion and the corresponding methodology. Instead, we propose a methodology of rational criticism, which, we believe, operates more correctly with synthesized principles of a number of the well-known to date market theories, for which the authors developed and argued the system of criteria and indicators of integral content.

2. Manifestation of the restrictive role of traditional methodologies. It is in this example that the role of the psychological factor in the process of cognition is clearly manifested, which can explain the essence of this effect. We divide the thesis of the dependence of the recognition of the truth of the content of any theory from a subjective point of view, henceforth, all varieties of theories of knowledge are closely related to the psychology of observation (or the so-called "active" theory of cognition, noted by I. Lakatos, K. Popper, T. Kuhn, which emphasizes the role of the innate basic expectations of the researcher as opposed to the "passive"). This article attempts to formulate a methodology that could avoid this.

3. Limited cognitive process due to the temporal discrepancy of empirical database, obtained in the research process. The problem that is common to economic science, in particular, is the use of data from the past period. In our opinion, this is due to the absence of general model of dynamics, correctly interpreted to the general

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theory of the market. As the answer to this question, our research proposes a cybernetic model, that claims to describe the market as a system and in future periods in certain scenarios that can be recognized as legitimate.

Results

In general, the methodology of author's research involves the use of a universal model of cognition, as already mentioned above, as rational criticism, as opposed to the classical one. Such a model is characterized by focusing attention to:

1) the formulation of a new theory according to the criteria of new cognitive qualities, the additional empirical content, reinterpretation of the content-conceptual apparatus of such a theory in order to eliminate contradictions;

2) comparison of a new theory in a series of consistent theories, where for the technical specification of the essence of the process of scientific knowledge should allocate the basic theory and interpretation theories and evaluate the imitation of the content of the newly created theory;

3) the ability of a new theory to predict previously unknown facts and new explanatory theories by constructing a chain of evidence-based statements.

At the same time, when forming the author's theory as a component of the cognitive process on the basis of this methodology were accepted as priori statements, stated in the work of Lakatos (1995), on the following: 1) any theory, whether already known or a new one, needs to be analyzed on the basis of content and retrospective in relation to others in a similar subject matter; 2) any theory is formed on the ratio of theories of different levels, which are different in terms of the content; 3) the value (role, evidence) of a new theory must be determined in a number of theories on the same subject of the study on the criterion of the presence of new, cognitive and applied value; 4) any (economic) theory, including a new or specified one, is distinguished by the limited proof (when such is recognized by the supporters of the theory and refuted by opponents); conflict of empirical confirmation (presence of simultaneous facts, confirming and refuting the theory at the same time); the potential (confirmed for now or not) of all theories in this area of research. We consider the necessity to emphasize, that we share the view of I. Lakatos about the universality of these postulates, which can be interpreted in any theory as a subject of a socially important problem (which will be shown later on the example of the author's theory of "universal model of the market").

Such a formulation of the task of research at the level of the methodology required a generalization of information about possible variations of relevant systems of views and possible alternatives (Fig. 1).

It should be noted that the author's methodology was based on the results of the analysis of well-known and widely used methodological approaches in the global information field. Such ones, evidently, have evolved

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during the past 3,000 years since the creation of ancient Greek philosophical schools, where, at the same time, a field of debate between different approaches and the criteria for such discussions appeared. The analytical basis for such a differentiation were the works of Lakatos (1995), Kuhn (2001), Carnap (1999), Polani (1993), Popper (1983), Engels (1918), Ulyanov-Lenin (1967) and others. The author's vision of the spectrum of such approaches is shown in Fig. 1, where the methodologies of the first tier should be considered as the main ones, from where the more flexible and compromise positions of later and more detailed methodologies of the second tier were formed.

Summarizing the above (see figure 1), it can be argued that the main subject of discussion between known world methodologies is the question of the possibility of achieving truth and absolute (or other) knowledge, the reflection of the regularities of the process of cognition and the formation of theories as such in a certain sequence and content in comparison with other theories. It determines in one way or another the whole spectrnm of other discussion issues (2017), that logically follow from mentioned above.

We wanted to note separately, that we adhered to the interpretation of the term "methodology" according to Lakatos, where such one is interpreted as the logic of cognition (1995). This seems fundamental, because in the domestic literature on scienceology, for example, another content is presented, which has certain contradictions with the above mentioned.

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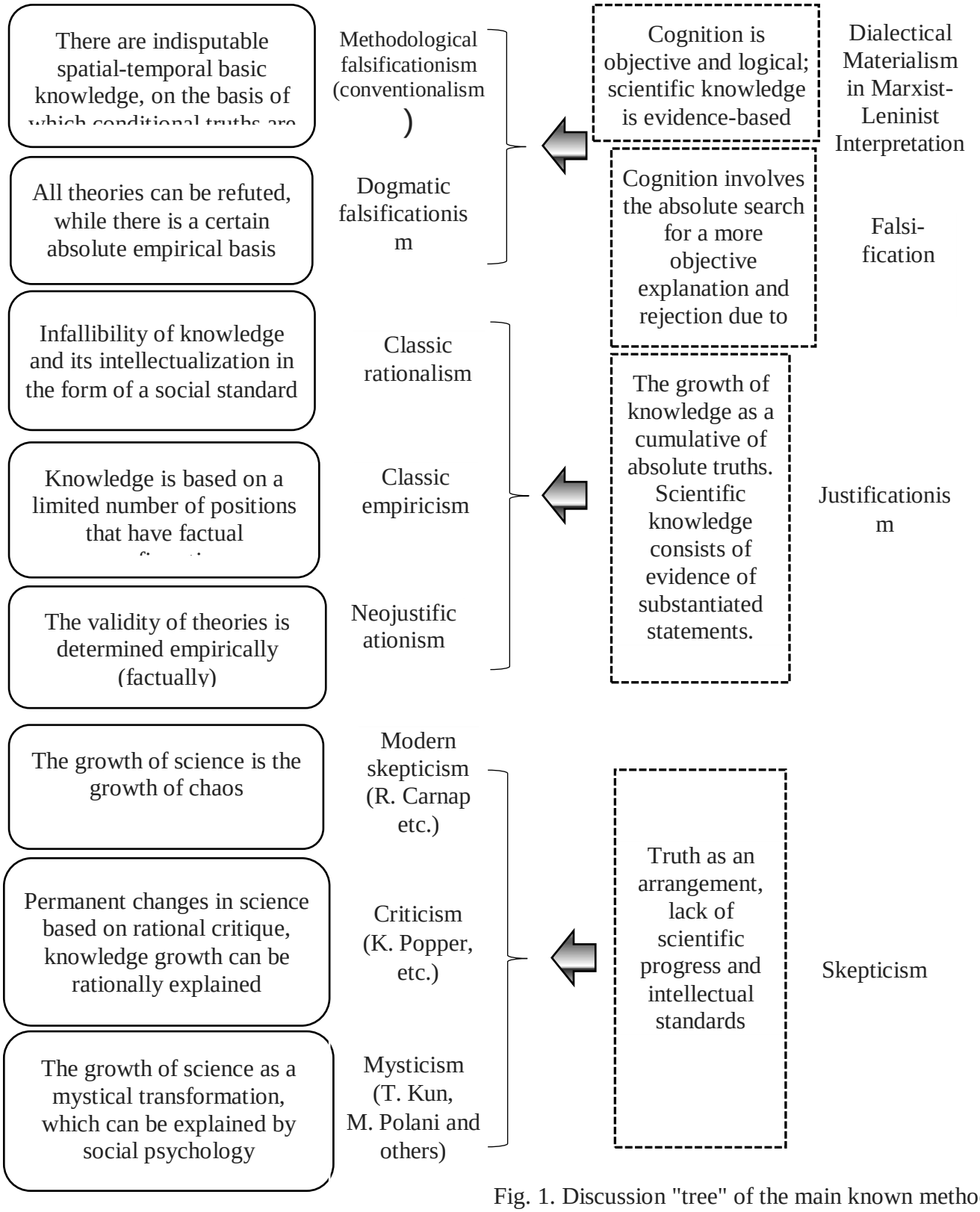

Fig. 1. Discussion "tree" of the main known methodologies

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Source: author's interpretation of the works of Lakatos, Kuhn, Karnapa, Polani, Popper, Ulyanov-Lenin, etc.; terminology by Lakatos

Consequently, as it was already noted, the author's methodology was defined as rational criticism, which, in turn, represents a hybrid variant of individual fundamental positions of classical rationalism (on the logical intellectualization of knowledge in the form of a certain social standard – or so-called criteria of the first order (author's term), skepticism (about the convention of truths and knowledge), classical empiricism, neodjustificationism, conventionalism, dogmatic falsificationism, dialectical materialism (about the rationality of the process of cognition, the constant variability of knowledge on the basis of rational critique, the possibility of increasing knowledge as cumulation of truths, the possibility to prove the knowledge on the basis of a certain empirical base, etc. – or criteria of the second order). The content-logical reflection of the author's methodology is presented in Fig. 2.

We would like to emphasize, that the author's theory was based on the synthesis or content composition – a certain set of basic and conditional knowledge, and such a consensus required the formation of a certain number of basic and, correspondingly, complementary theories which concerned the market and related institutions, as well as the stage transformation of society.

Thus, on this basis, the own algorithm for the formation and implementation of author's methodology of research (on the example of the formation and development of the market of vegetable products in Ukraine) was formulated. When describing the methodological algorithm of research, as already mentioned, the presence and admissibility, the simultaneous absolute and conditional significance of knowledge in the theory of the market, as well as the gradual and meaningful hierarchy of cognition of the essence of the market institute on the basis of certain accumulated knowledge, that was constantly updated were recorded.

In turn, the author's position on the nature of the market was clarified at the theoretical level of research, which resulted in the formation of the author's theory – the universal model of the market and its variations in the conditions of a post-industrial society – as the highest form of scientific knowledge, generalization and systematization of knowledge. Interpretation of the author's theory may also be presented as a appropriate series of theories (based on the content and retrospective-chronological analysis of such a group of theories), the isolation and functional interpretation of paradigmatic and explanatory theories in a number of theories, as well as the construction of a chain of evidence-based statements of the theory of "universal market model».

In this case, the value of the theory of "universal model of the market" (2017), we believe, is due to such moments:

1) regarding new cognitive qualities and additional empirical content – to form a more adequate understanding of the causative mechanisms of market functioning and its effectiveness in accordance with types and models of the market;

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2) regarding the conceptual apparatus, the intellectual complex and the reinterpretation of concepts – the higher adequacy of the description of situations is due to the use of a number of new categories, generalized in the concept of "market", "universal market model", etc.;

3) regarding the identification of the forecast function – a more adequate description of the factor and cause-effect mechanism of the functioning and development of the market in terms of the formation of its real models, which provides a possibility with a high probability to describe scenarios of future situations of its functioning and development, provided the expected changes in market functioning factors.

The description of the author's theory from the point of view of conceptual theories of the market provides a certain chain of postulates within the framework of the system approach, institutional theory, classical, keynesian, neoclassical theories of the essence of the market; at the same time, obviously, a certain logical sequence of constructing of such a chain of statements is justified. For example, considering the market as a complex system is fundamental and a kind of defining. That is, only on this basis it is expedient and justified to use elements of other models (concepts) of the market. Accordingly, we believe that such an algorithm defines a certain "pyramid" for the analysis and synthesis of the general model of the market as a combination of the classical, institutional, keynesian, neoclassical model of market functioning.

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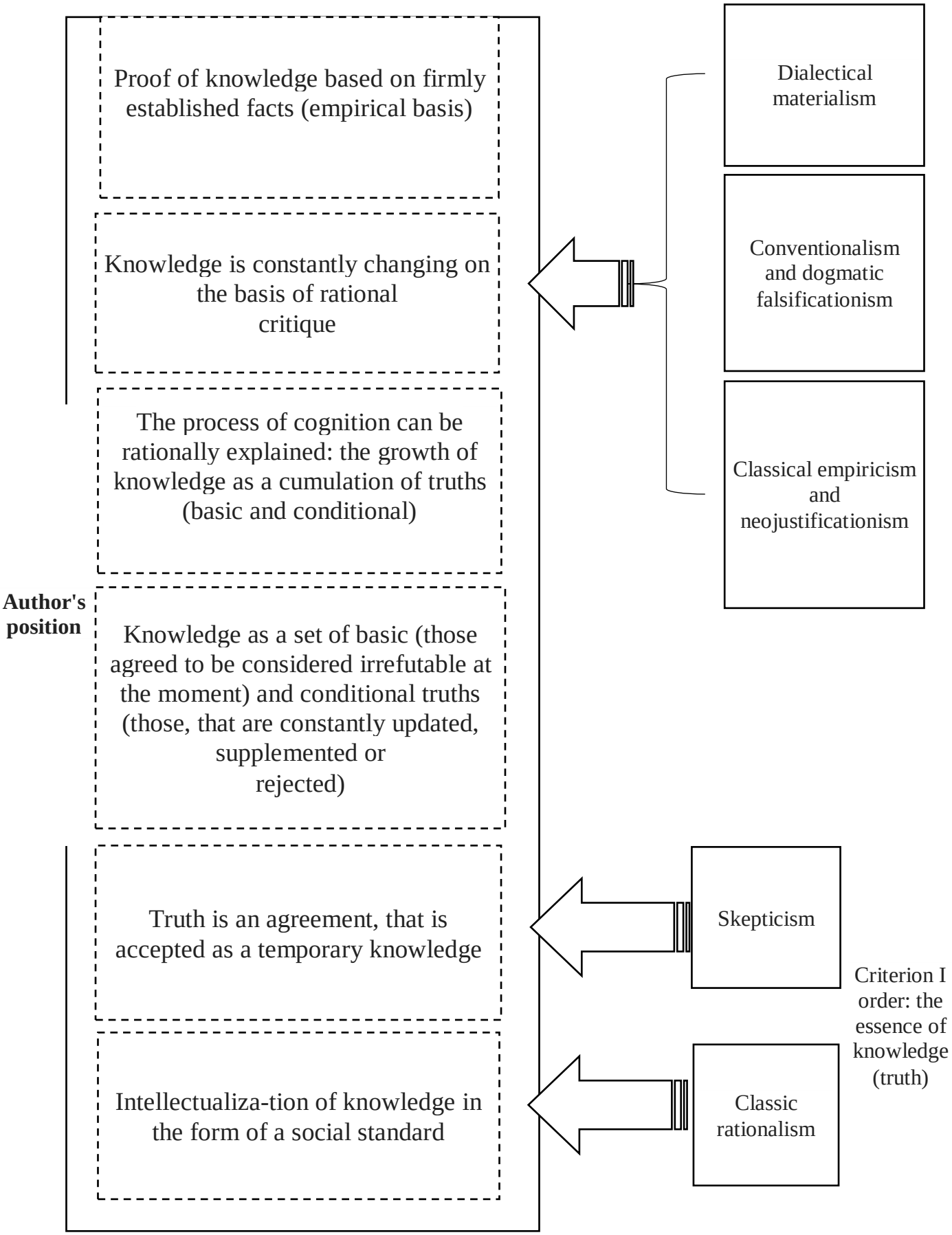

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Fig. 2. Algorithm of author's methodology formation and its meaningful interpretation *Source: author's research on the basis of presented in Fig. 1 methodologies*

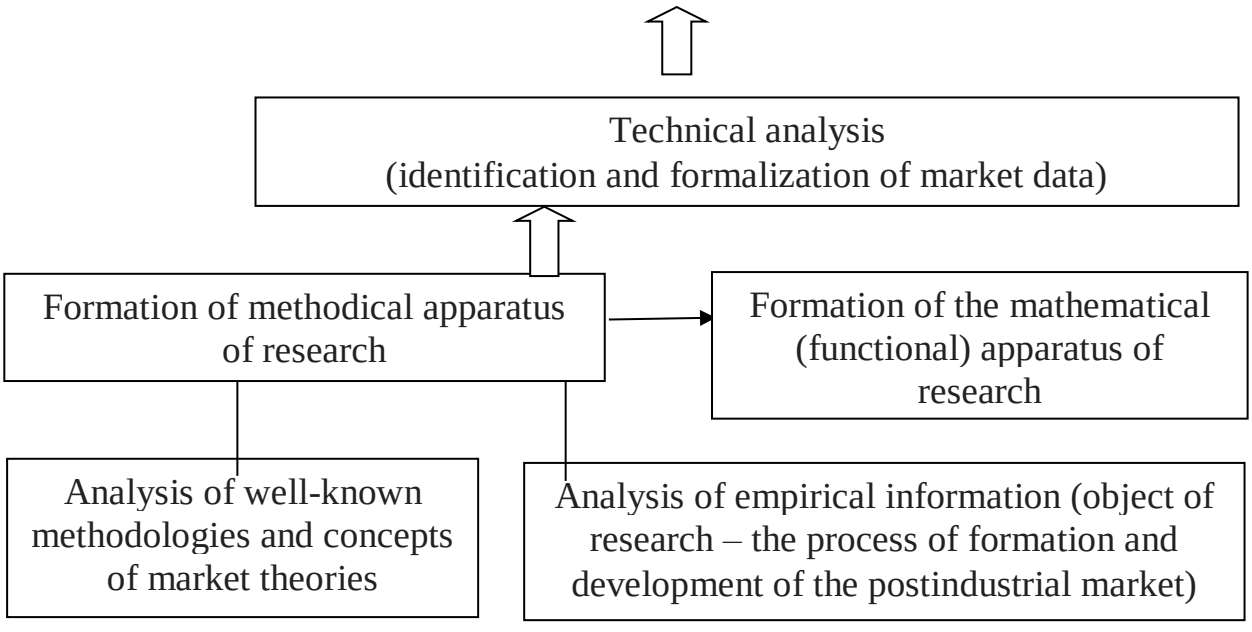
In turn, a chain of postulates within the framework of the "universal market model" should be defined and based on a number of such basic market theories. In the author's research, among others, were identified the following market theories: classical, keynesian, institutional, and others. In this case, unlike the chain of paradigmatic theories, the algorithm of author's evidence-based statements had a more detailed form and reflected as a sequence of ideas and hypotheses, that were generated at one time and the general algorithm of the entire analysis process.

Taking into account the above mentioned, the algorithm of the cognitive process in the studies was a step-by-step process, that can be considered universal as for any systematic scientific research and, at the same time, one,that has its own specifics, which, again, is due to differences in the author's methodology (Fig. 3).

IV STAGE Identification,gnesseology and etymology of the author's theory of the universal model of the market and, on its basis, the postindustrial market of vegetable products

III STAGE Definition and analysis of the concepts of market theory, as well as their testing on the example of the market of vegetable products in Ukraine

II STAGE Description of causal relationships of the subject of research (theoretical, methodological and practical aspects of the formation of the postindustrial market of vegetable products), definition of the conceptual apparatus



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I STAGE Study of the outgoing information. Fundamental analysis

Fig. 3. Algorithm of author's research of market theory

Source: author's own development

One should pay attention directly to the logic of the process of forming the author's theory of "universal model of the market" (the post-industrial market of vegetable products). This process rests on certain conceptual approaches to the origin of the market to the interpretation of the market institution; herewith, we would like to draw attention to the fact, that the presentation of the material reflects the logic of the author's methodology.

In fig. 4. the algorithm of author's research on the theoretical level is given. It is necessary to pay attention directly to the logic of the process of determining (forming) the author's theory – "universal model of the market". Yes, this process rests on certain basic conceptual approaches of market theory (lower part of Fig. 4), where, in turn, outgoing theories (or metatheories) were identified, as well as the influence of complementary theories of the market (it is also possible to use the synonym – clarifying, according to I. Lakatos (1995) – "shell"). The supplement in this case should be regarded as a new content, which according to the known until now theories, were absent, while the clarification is the correction of some traditional positions of already known theories in the light of new circumstances or interpretation.

Let's identify the essence of the problem, trying to determine the content of the general theory of "universal model of the market". Such an example was chosen in view of the decisive, as we consider, role of the category "universal model of the market" (2017) in economic research. According to the logic of the content of such a theory, the latter should be sufficiently clear to describe the causal relationships that form the market and determine its state of the nature of the problems, as well as the prospects for their solution. In other words, the positive significance of such a theory is logically conditioned by the possibility of a clear description of what the understanding of the universal market depends on, and what is a new look at the essence of the modern market; all these in aggregate form the scientific, intellectual basis of the whole process of cognition,concerning to this particular problem.

So, according to the scheme in Fig. 4, the essence of the market, first of all, should be interpreted from the standpoint of meta-theories, to which were assigned two:

1) an economical person, who, in a condition of market exchange, always tries to improve his position in the competitive field of alternatives;

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2) a collective coherence of the actions of the economic man-egoist, who is forced to restrict selfishness for cooperation with other economic agents, where everything happens in one way or another according to the scenario of the theory of games.

Thus, it is precisely from the standpoint of these initial theories that, in the long run, we can explain everything related to the functioning of the market a priori, while all other individual market variations are merely a reflection of the combination of the role of determinants of meta-theory. It is clear that such meta-theories have no authorship and intellectual formalization, but rather are well-known paradigms.

In turn, the interpretation of metatheories was seen as a set of three basic theories, that already have more ore less clear interpretation in the time of appearance and authorship:

1) economic liberalism of classical political economy of A. Smith (1962), J.-B. Sey (2007), D. Ricardo (2007) and others;

2) the totality of the theoretical approach to the natural imperfection of the market and the need for its regulation (this is associated primarily with keynesianism and related to this current theories);

3) post-industrial society in the vision of D. Bell (1973), D. Toffler (1990), R. Aron (2012), J. Galbraith (1958) etc.

Nevertheless, both meta-theory and basic theories are not able to provide a complete description of the model of the modern market. The content of such a description should be the content of such theories as the already mentioned theories of imperfect and monopolistic competition, the keynesian theory (including neo-and post-keynesianism), the theory of disasters (or the general cybernetic model, that can describe the dynamics of the market as a system), the theory of games, institutionalism, conflicts, defined in Fig. 4.

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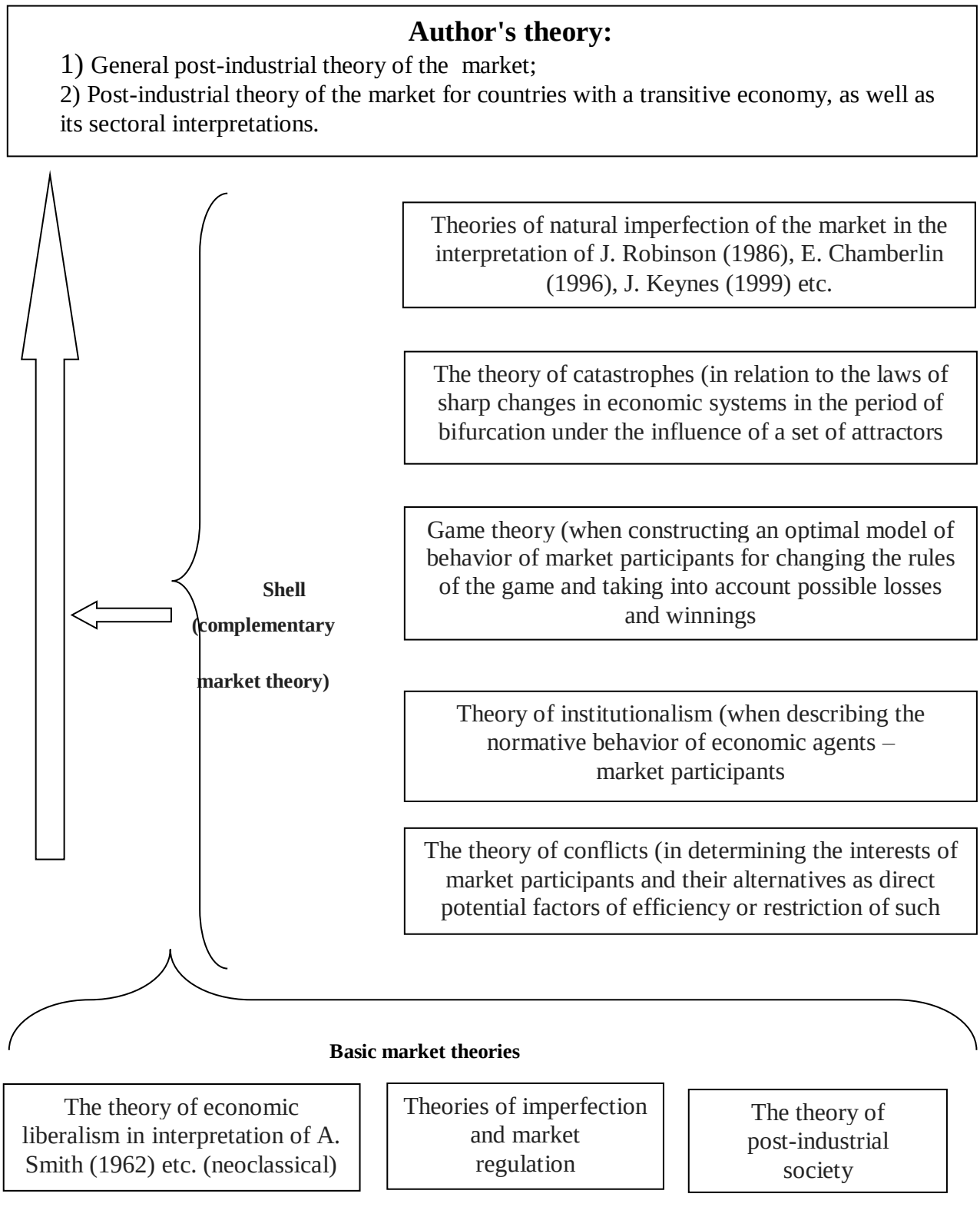

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Meta-theories (original ideas):
1. Conceptual thesis: the market is a natural mechanism for coordinating the interaction of Homosapiens as economic agents on the model of behavior of Homoeconomics;
2. Search for a balance between economic freedom and restrictions (regulation) of economic activity of individuals and their groups.

Fig. 4. Methodology of author's research on the theoretical level

Source: author's research on the interpretation of well-known market theories

Obviously, as complementary, the so-called "shell" theories, the other theories and theoretical approaches can carry rational content. Moreover, the process of refining the theory of the market (as, obviously and others) will never stop taking into account the new circumstances of civilizational changes.

We would like to emphasize, that our position in a such number of theories involves the correction and complement of these theories, but not the rejection or rebuttal of any of them, and this is a direct distinction of author's methodology. That is, we proceeded from the fact, that each of the aforementioned theories has a rational basis, which – on the basis of rational criticism – should be isolated from the contents of these theories and synthesized in the form of a new theory of the market, where the author's theory is an option complementing/clarifying.

From the above mentioned, we can make an assumption, that the construction of any modern economic theory – and the process of cognition in a broad interpretation – has a certain regularity. The latter is that the process involves the construction of a certain number of previous theories, where they begin with outgoing (meta-theories), basic and complementary/refinement. The very same scientific process needs simultaneously the attribution of the new theory to the rank of meta-theories, basic or complementing/clarifying.

Fig. 5 presents an algorithm of author's research at the methodological level, where it was outlined how certain scientific methods were used at theoretical, empirical and theoretical-empirical levels of research, taking into account the main positions of the "universal model of the market".

In this case, both general scientific and specific research methods were used. In order to ensure a systematic approach to research objects, in addition to general methods of cognition of induction and deduction, when performing research, specific methods and techniques were used, such as economic-statistical, historical, monographic, calculation-constructive, balance, normative, economic and mathematical, experimental, sociological survey, abstract-logical, and others.

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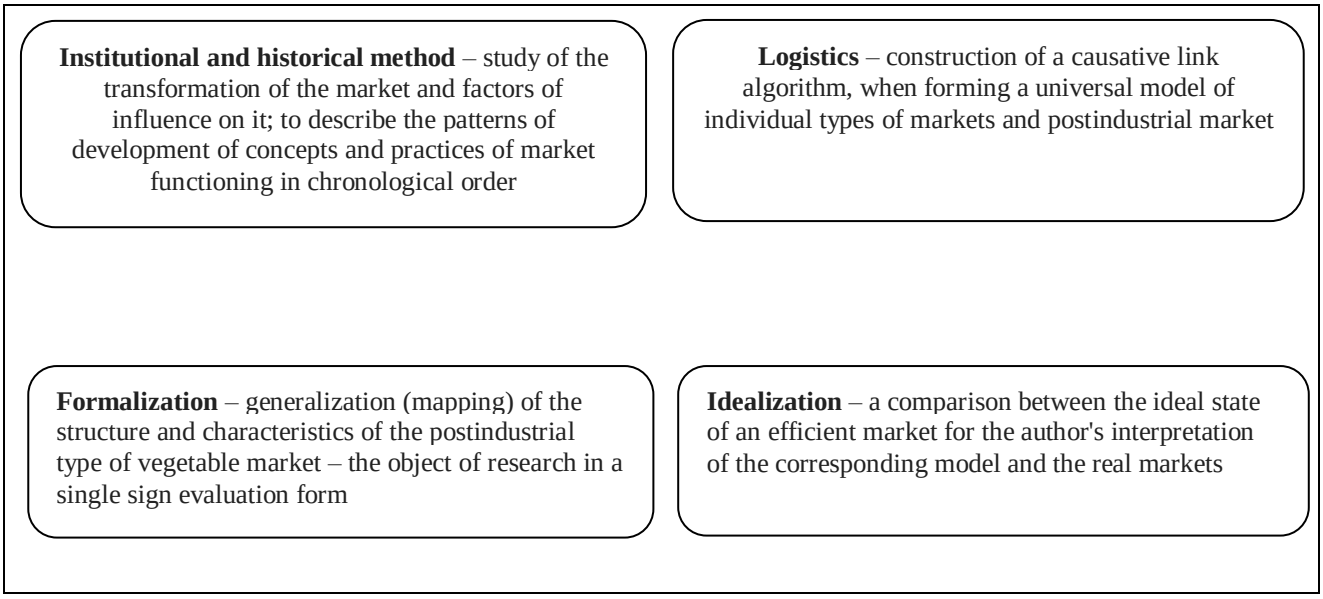
The role of special methods emphasizes the feature of the author's research, and therefore should focus on those ones where, as seen from Fig. 5, the importance of the use of institutional-historical, logical methods, as well as methods of formalization, idealization, and modeling was emphasized. In this case, the subject of analysis were market processes, and the task of the theory of market structures – the study of how the market transformation processes cause changes in market parameters in terms of its functionality.

Thus, the modeling was applied, first of all, to construct a model of a universal market and – hence – a market of post-industrial type; the peculiarity of author's research was the original interpretation of determinants and their analytical composition of the essence of cause-effect influence. This also implied the principle of dialectics - the tracking of the mutual transition of quantitative and qualitative characteristics of the market. The idealization method was used to construct a more perfect state (parameters) of the market, based on the author's vision of the criteria and indicators of such evaluation. In general, this was reflected in the formalization of the market(s) avaluation system, as a separate research method; in turn, described the use of a logical method for determining cause-effect relationships. that determine the functioning of the market as a universal institution and its varieties in different economic systems and states.

Conclusions

The history of the modern intellectual complex of the market institute testifies to the complex, nonlinear path of formation of both its content and the logic of knowledge. No single theory determines the content of the institute and market model. Rather, it is a set of theories in their definite hierarchy, where there is a place for metateurs, basic and complementary theories.



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Modeling – the formation of a universal market model as a system, that reflects the characteristics of the process of formation and development of the postindustrial market - an object of research, the use of which was regarded as a source of information about the regularity and the possibility of forecasting the development of the market and its components

III. LEVEL OF METHODS OF THEORETICAL STUDY

Induction – formation of the idea of the regularities and features of the development of the market in the conditions of global-transformational changes in view of the characteristics of individual structural elements and processes

Deduction – identification of individual processes and characteristics of the activities of market participants on the basis of knowledge about the general tendencies of the formation and development of the market in Ukraine

Scientific abstraction – improvement and clarification of the conceptual categorical apparatus of the category "market"

Analysis and synthesis – study of the object and subject of research

Institutional – the study of the place and role of the market institute in the life of society

Grouping – the study of the factorial landscape of a universal market model

II. LEVEL OF METHODS OF COMPLEX (THEORETICAL-EMPIRICAL) STUDY

Observation, comparison, measurement, etc. – the definition and evaluation of the processes and phenomena, associated with the formation and development of the market – the object of research

Experimental methods: surveys, expert evaluations and others. – to determine the priority factors and directions of influence on the development of the domestic market

System approach – the market is considered as a holistic system, which combines a certain set of interconnected and interacting elements into a single whole, acts simultaneously as a subsystem of a higher level system. An aggregate of interacting elements and a method of the combination determines the structural construction of the market system

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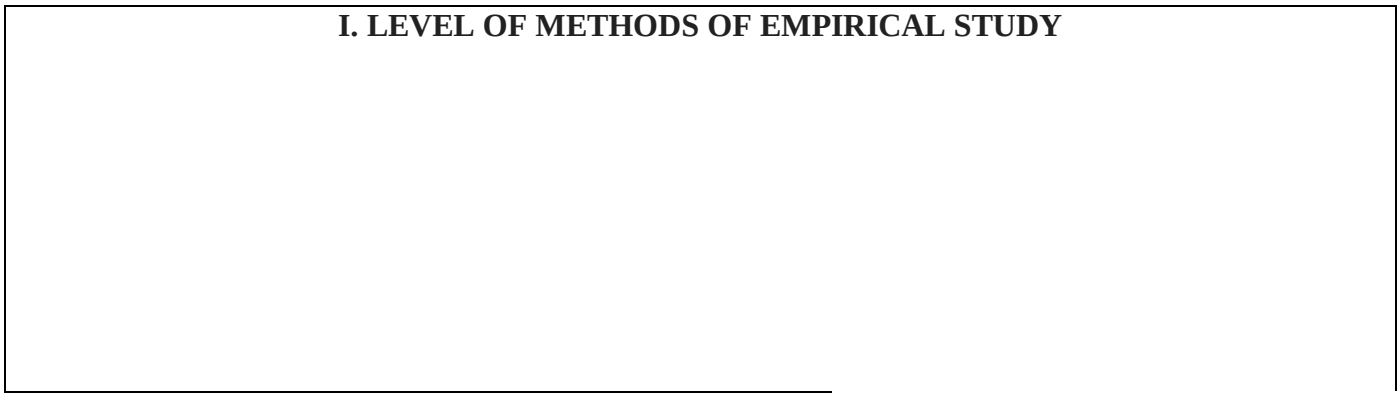

Fig. 5. Methodological level of market research

Source: author's research

One of these theories can not be ignored or replaced. The substantive interpretation of the hierarchy of theories is, in essence, the content of market methodologies.

The author's idea of market methodology is based on the theses on the rationality of the process of knowledge, the constant variability of knowledge on the basis of rational critique, the possibility of knowledge growth as a cumulation of truths, the possibility of proof of knowledge on the basis of a certain empirical basis, etc. According to the constant modernization of the market methodology is objective a process that involves constant updating and theoretical knowledge.

At the same time, the critical upgrade of knowledge about the market does not change the constancy of universality - under all conditions - of the market as a structure and many mechanisms. Markets differ only in terms of functionality and efficiency of their functioning for the society. At the same time, the criteria for market valuation can only have a social dimension, whereas no separate technical characteristics of the markets can provide a correct public assessment.

The hypothesis of further research suggests the presence of two fundamental problems of market knowledge. The consideration of these problems for countries where the market structure is only being created is vital.

The first is that once the market begins to be studied comprehensively, that is, taking into account the most possible set of functional factors (economic and noneconomic), this, by giving a whole more complete and obviously objective representation, together with it immediately reduces the practical value of the approach. It's increasingly unclear how to influence the market, even with more ideas about the factors of its analytical model.

Second: instead of simplifying the market analytical model, the description of the most important functional impacts brings closer to the applicability of the relevant recommendations. However, simplification is accompanied by an increase in the risk of a share of influence of unaccounted factors.

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Perhaps for the economically developed countries, the first approach seems justified, but in countries of the world's III, the need to form an efficient market is vital, with no theory other than the neoclassical one suggesting a working model of the market.

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ILLICIT FINANCIAL FLOWS IN EXPORT OPERATIONS WITH AGRICULTURAL PRODUCTS

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Abstract. *The purpose of this paper is deal with possible ways of illegal profit shifting abroad, in particular through export trade of agricultural products. In order to test the hypothesis on asymmetry between indicators of exports/imports between Ukraine and its trading partners, there was carried out a comparative analysis by means of the mirror statistics method. The comparison of indicators of products exports/imports by the method of mirror statistics confirmed the hypothesis regarding the asymmetry of these indicators in international trade. There have been analyzed the world experience in combating tax evasion and profit shifting abroad as well as the steps taken by Ukraine in this area, in particular the introduction of transfer pricing as a barrier to the hidden capital outflow from the country. The authors' main contributions are discovered asymmetry of mirror data such as price, trade value and weight of Ukrainian grain. As a result, the mirror prices of imports of the partner country are significantly higher than the export prices of Ukrainian grain (IAp – 1,20-1,67), whereas for the USA, France, Germany revealed a lack of significant difference between mirror prices for some largest trading partners (IAp – 1,02-1,15). This is a confirmation of shifting profits from Ukraine in order to place them in more reliable jurisdictions and evidence base for the introduction of more stringent measures such as transfer pricing.*

Keywords: *prices, transfer pricing, export, import, illicit financial flows, capital.*

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Introduction

Despite the declaration of the need to reform the public life, reforms in Ukraine are moving at a slow pace. One of the major obstacles to restoring the economy and overcoming the systemic economic crisis in Ukraine is the illegal shifting of capital abroad in various ways by various participants, including both legal entities and individuals. Consequently, the state budget is not filled, the external economic debt grows, and, in general, the financial system of the country suffers.

There exist a number of reasons provoking the flight of financial resources from individual countries: first of all, it is an unbalanced internal economic policy that appears in the exchange rate volatility, inflationary processes in the country, and a heavy tax burden on economic actors. Equally important factors are the lack of confidence in the political elites, in the control and inspection bodies, the functioning of opaque schemes in the interaction of business with state authorities, the desire to hide illegally obtained profits. In our country, to all these reasons, an unstable political situation is added due to the military conflict in the East of Ukraine. Thus, a vicious circle arises: business shifts capital beyond the borders of the problem country and thus does not give a chance to restore its economy because of the same lack of cheap working capital.

International organizations advocate the transparency of financial practices and develop various mechanisms to combat the illegal transfer of profits from taxation to other countries. One of these methods is the use of transfer pricing in conducting export/import operations. In Ukraine, the control over transfer pricing was started not so long ago – in 2013, that is, only five years ago. The results of its introduction require a comprehensive analysis. The aim of this article is also to identify normative and legal progress in solving the above mentioned problem and/or to identify “bottlenecks” that inhibit its solution.

Literature review

The problem of illicit financial flows, at one time or another was also characteristic of other developing countries such as Argentina, Mexico, Uruguay, and Venezuela. The issue of capital outflow was researched by Cuddington (1986), Kar and Freitas (2011), Carbonnier and Zweynert de Cadena (2015), Chowla and Falcao (2016), Cobham and Janský (2017) and others. Particular attention should be paid to Global Financial Integrity (GFI) reports, which are occasionally published on the company’s website.

There is no clear definition of the term illicit financial flows in literature and international normative documents. `There are various definitions of illicit financial flows, but essentially they are generated by methods, practices and crimes aiming to transfer financial capital out of a country in contravention of national or international laws`

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(OECD, 2014, p. 16). `Even though money might be legitimately earned, it can become illicit once transferred abroad, for instance if it is in violation of exchange control regulations or corporate tax laws` (Carbonnier and Zweynert de Cadena, 2015).

In literary sources, there are different terms – capital flight, capital outflow, hidden outflow, outflow of financial resources, etc. Individual scholars (Serebrianskyi and Vdovychenko, 2012) emphasize the fact that the term capital flight implies the withdrawal of capital from a country that has a somewhat panic character and is caused by pessimistic assessments of residents regarding prospects for economic development, investment opportunities, the ability to protect their savings, etc. According to them, the term capital outflow does not have such a negative connotation that is why in their research they appeal specifically to the term capital flight. If we talk about Ukraine, then, by all indications, it refers to those countries where the capital flight is carried out in the sense that is laid by the researchers.

The problem of the illicit financial flows is inherent not only for Ukraine, but also for other countries. In particular, in this way such companies as Apple, Amazon, Starbucks and others tried to avoid taxation. The OECD (2018) estimates the annual loss of corporate tax revenues to the world's budgets by "offshorization" at $100-240 billion, or 4-10%.

However, for the budgets of rich countries (G-7 or G-20) the volume of capital flight does not have such a devastating impact as it has on the budgets of developing countries and trying to overcome systemic economic crises. Global Financial Integrity published its regular report, which estimated an illegal outflow of financial resources in 2014 of 4.2-6.6% of the total trade of developing countries. Out of them, 87% accounts for trade manipulation and misinformation, particularly export under-invoicing, and import over-invoicing (Salomon and Spanjers, J., 2017).

In Ukraine, there are few economic studies covering this area, due to the lack of common methodological approaches to assessing the volume of shifted capital, the complexity of obtaining relevant statistical data for analysis. The monograph by Kvasha (2000) can be considered as the basic publication, where the author already in 2000 presented several basic postulates of tax avoidance by economic agents in export/import operations with agricultural products.

Domestic and foreign researchers (Labunska *et al.* 2017), Koval *et al.*, 2018); noted that in the innovation economy, the efficiency evaluation based on multiple criteria is a more complicated option, but on the other hand, this evaluation gives more insight into the real state.

Each of the methodological approaches and the available statistical data have their drawbacks and cannot with a high degree of certainty characterize the capital outflow from the countries being already in the new conditions of development of foreign economic activities. However, taking into consideration the current economic and

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political crisis in Ukraine, it can be assumed that there are hidden financial flows, in particular through abuses in the field of export of products.

Globalization makes it increasingly easy for corporations to shift profits to low-tax countries. Moreover, the extent of profit shifting has intensified (Zucman, 2014). The main method of combating tax evasion and eliminating profit shifting abroad is the introduction of transfer pricing by the countries. This problem was paid attention by both foreign scientists and domestic ones. In particular, Rugman and Eden (2017) in their book "Multinationals and Transfer Pricing" reviewed the theory of transfer pricing and its application in the economy of separate industries in Canada, the USA, and Brazil.

Rajnoha *et al.* (2014) claim that transfer pricing appears to be an appropriate solution to this global economic problem. Cristea and Nguyen (2016), on the example of Danish transnational corporations, show that the use of transfer pricing principles helps reduce export volumes in low tax jurisdictions. Other researchers (Liu *et al.* 2017) pay more attention to the fact that policy-makers should be mindful of potential revenue loss not only to tax havens but also to other trading partners that have low statutory corporate income tax rates. The implications of the introduction of transfer pricing rules are analyzed by De Mooij and Liu (2018) and confirm the need for an integrated approach to this problem as well as participation of all countries of the world community.

International organizations such as the Organization for Economic Cooperation and Development (OECD) and the Financial Action Task Force (FATF), the World Bank, and the European Commission take actions to overcome the problem of eroding the tax base and shifting profits abroad.

By OECD/G20 initiatives there has been developed an action plan on combating erosion of the tax base and shifting profits from taxation, also referred to as BEPS (Base erosion and profit shifting). The initiative contains 15 actions implemented by the governments using internal and external tools to overcome the problem of avoiding tax payments by capital flight abroad. Today, 110 countries have joined the BEPS Minimum Standards and committed to comply with 4 out of 15 actions.

In May 2016, the Council Directive 2016/881 was adopted, according to which the exchange of information in the field of taxation is mandatory from 2018 (EU Publication, 2016a). In 2018, the Council Directive 2016/1164 was adopted, which lays down the rules against tax evasion practices that directly affect the functioning of the internal market (EU Publication, 2016b). This Directive also contains aggressive tax planning indicators and commitments, with regard to their restrictions by States Parties from 1st January 2019.

Ukraine also takes some steps in the fight against the hidden capital outflow abroad, as this phenomenon damage to the state budget of the country is enormous. The Law of Ukraine No. 408-VII of 4 July 2013 amends Article 39 of the Tax Code of Ukraine and introduces control over transfer pricing (VRU, 2013), the rules of which are constantly being improved, modified, and therefore need to be tracked and analyzed.

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Methodology

In the literature, there are several evaluation methods used by researchers to assess illicit financial flows, namely `mirror statistics`, `hot money` and the residual method. Each of these methods has its drawbacks, because it does not take into account certain aspects of this issue. In order to test the hypothesis on asymmetry between indicators of exports/imports between Ukraine and its trading partners, there was carried out a comparative analysis by means of the mirror statistics method (Hamanaka, 2011).

The asymmetry index of trade value (AI_v) was calculated as the ratio of the value of imports of the importing country B to the value of exports of the exporting country A.

$$AI_v = \frac{V_e}{V_i}, \quad (1)$$

AI_v – the asymmetry index of trade value;

V_e – the value of exports reported by country A to country B (on the terms of delivery FOB);

V_i – the value of imports reported by country B from country A (on the terms of delivery CIF).

However, it should be taken into account that when comparing, different supply conditions are used, in accordance with the International Trade Rules "Incoterms". In particular, exports are considered on the terms of delivery FOB (Free On Board, that is, free on board in the port of shipment), and the imports – on the terms of delivery CIF (Insurance and Freight, i.e. including the goods value, as well as insurance and freight of the ship that delivers products to the port of destination).

Similarly, we calculated the asymmetry index of net weight (AI_w):

$$AI_w = \frac{W_e}{W_i}, \quad (2)$$

AI_w – the asymmetry index of net weight;

W_e – the net weigt of exports reported by country A to country B;

W_i – the net weigt of imports reported by country B from country A;

In our opinion, the asymmetry index of prices (AI_p) is the most accurate indicator of differences between the mirror data. It is calculated:

$$AI_p = \frac{P_e}{P_i}, \quad (3)$$

AI_p – the asymmetry index of prices;

P_e – the price of exports reported by country A to country B (on the terms of delivery FOB);

P_i – the net weigt of imports reported by country B from country A (on the terms of delivery CIF).

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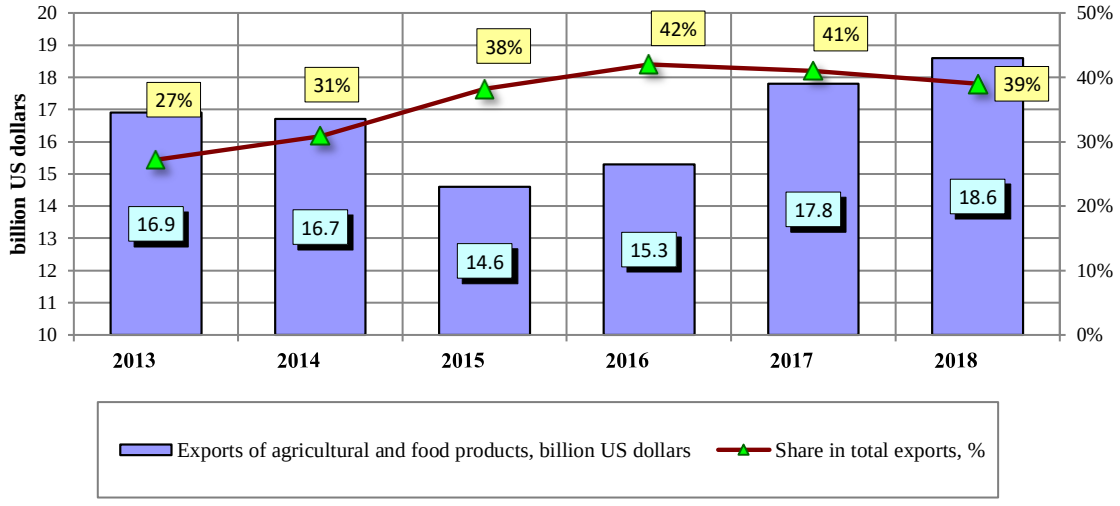
Earlier in the trading statistics of the International Monetary Fund (IMF), in analytical studies of the consulting company GFK, a correction index of 10% was used. However, according to the new IMF methodology for assessing bilateral trade statistics, the correction index of 6% is used (Marini *et al*. 2017). The new correction index is based on recent OECP observations (1995 – 2014), which showed that the average cost of transport and insurance costs are now estimated at 6% of total trade. It means that the value of exports is equal to the value of imports from the partner divided by a correction index of 1.06, and the value of imports is equal to the value of exports from the partner multiplied by a correction index of 1.06.

This index is used by the IMF for non-reporting countries. It can also be used as a criterion for understanding what difference between mirror data of value and prices can be economically justified.

Research Findings and Discussion

Are there illicit financial flows from Ukraine when exporting the main types of agricultural products?

Agricultural exports today show a positive dynamics in comparison with other sectors of the economy. In physical terms, export volumes are increasing, but due to lower prices for agricultural products in 2015-2016, there has been a slight decrease in the value indicators of exports of agricultural and food products. At the same time, the share of agricultural exports in the overall structure of national exports has increased significantly: from 27% in 2013 to 39-42% in 2016-2018 (Fig. 1).



Source: Authors, by using SSSU (2019)

Figure 1. Export of agricultural and food products from Ukraine, 2013-2018, billion US dollars.

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Already traditionally, in the structure of agricultural exports of Ukraine, the largest share is taken by crop products – 51.9% (including grain crops – 36.6%), fats and vegetable oils – 25.9% (primarily sunflower oil), as well as ready food products – 15.9%.

Due to the increasing pace of grain production and its competitiveness on the world market in 2018/2019 marketing year Ukraine ranked 4th among corn exporters and 5th among wheat exporters. The leading TOP-10 exporters of Ukrainian grain sold 68% of total wheat exports and 72% of total corn exports in 2016/2017 marketing year that is the largest share of Ukraine's grain export potential. Most of these structures are transnational corporations (Lois Dreyfus, Cargill, Bunge Ltd, Archer Daniels Midland Company (ADM) and others.

Undoubtedly, the expansion of Ukraine's presence on the world market is a positive phenomenon for the country's socio-political image. A positive effect is also seen for business that generates additional profits, even for agricultural producers who are not engaged in exports, but have stable sales of manufactured products due to the expansion of demand. But let us ask ourselves if export operations are equally efficient for the country's budget?

We have conducted an analytical comparison of the trade value for Ukrainian wheat and corn of top major partner countries (Tables I,II). As previously noted, it is these kinds of products that have seen the largest volumes of exports in the last ten years. The asymmetry index (AI_v, AI_w) was calculated according to the formulas (1, 2).

Table 1. The asymmetry indexes of trade value and net weight for mirror data of Ukrainian wheat, 2015-2017

Year	Trade value, million US dollars			Net weight, million ton		
	Exports from Ukraine	Imports to partner country	AI_v	Exports from Ukraine	Imports to partner country	AI_w
Egypt						
2015	310,7	439,7	1,42	1803,1	no data	…
2016	366,0	370,7	1,01	2407,0	1137,5	0,47
2017	438,3	519,2	1,18	2659,3	2125,7	0,80
Average	371,7	443,2	1,19	2289,8	1087,7	0,48
Thailand						
2015	260	310	1,19	1695	1446	0,85
2016	300,0	445,2	1,48	1985,0	2238	1,13
2017	121,4	no data	….	803,5	no data	…

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Average	227,1	251,7	1,11	1494,5	1228,0	0,82
Indonesia						
2015	157,7	144,1	0,91	973	664,1	0,68
2016	330,2	493	1,49	2119	2469,4	1,17
2017	327,8	410	1,25	2055	1986	0,97
Average	271,9	349,0	1,28	1715,7	1706,5	0,99

Source: Calculated by the authors based on Comtrade, U.N (2019)

Table 2. The asymmetry indexes of trade value and net weight for mirror data of Ukrainian corn, 2015-2017.

Year	Trade value, million US dollars			Net weight, million ton		
	Exports from Ukraine	Imports to partner country	AI_v	Exports from Ukraine	Imports to partner country	AI_w
China						
2015	542,6	876,8	1,62	3139,5	3850,7	1,23
2016	422,0	508	1,20	2680,2	2660,3	0,99
2017	323,3	369,5	1,14	2013,1	1821,8	0,90
Average	429,3	584,8	1,36	2610,9	2777,6	1,06
Egypt						
2015	445,9	618	1,39	2890,3	2217,5	0,77
2016	388,8	438,1	1,13	2575,0	1879	0,73
2017	394,4	592,8	1,50	2555,2	2875,9	1,13
Average	409,7	549,6	1,34	2673,5	2324,1	0,87
The Netherlands						
2015	277,9	360,9	1,30	1739	1899,4	1,09
2016	190,3	224,4	1,18	1238,3	1225,3	0,99
2017	435,6	500,9	1,15	2787,1	2550,7	0,92
Average	301,3	362,1	1,20	1921,5	1891,8	0,98
Spain						
2015	430	524,8	1,22	2821,9	2862,8	1,01
2016	322,1	425,5	1,32	2124,0	2368,6	1,12
2017	336,5	402,5	1,20	2187,4	2146,2	0,98
Average	362,9	450,9	1,24	2377,8	2459,2	1,03

Source: Calculated by the authors based on Comtrade, U.N (2019)

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It is very difficult to estimate every possible reason for such asymmetries. The asymmetry between value data may occur for a number of reasons, including:

1) time lags, that is, when the dispatch of goods from the exporting country was registered in one year, and arrived to the importing country next year;

2) application of different trading systems by counterparty countries and, therefore, differences in the classification of goods are possible (most countries use the general trading system, but some countries use a special trading system);

3) registration of exports/imports at the intermediate points of goods movement, while it is necessary to clearly establish: for imports – the country of origin of the goods, for exports – the country of destination (i.e. the final country where the goods are to be delivered). However, if, at the time of export, the final destination country is unknown, then the export accounting is carried out in the trading country.

4) possible discrepancies due to changes in the exchange rate, as counterparty countries can use both national currency and freely convertible currency for export/import transactions, for example, the US dollar.

Studies show that almost all import value indicators in the importing country exceed Ukraine's export performance and more than an economically justified level of transportation and insurance costs of 6-10%. Such discrepancies may indicate, firstly, the volume of the hidden capital outflow by lowering export performance, or secondly, an increase in imports, which is unlikely.

Study of the asymmetry index of net weight has showed already other interesting regularities. If trade values of the partner country's imports exceed the values of Ukrainian exports (Ka – 1.11-1.36), then net weight of the partner country's imports, in the majority of cases, are lower than net weight of Ukrainian exports (Ka – 0.48-1.13) (Tables I, II).

The divergence between the mirror indicators of value and net weight in the foreign trade of Ukrainian corn and wheat is reflected in prices, namely, the difference in mirror prices is even greater. The asymmetry index of prices (AI_p) was calculated according to the formula (3). For wheat, according to 3-year average, the difference in mirror prices was from 29% to 67%, for corn – from 20% to 54% (Table III).

Table 3. Comparison of mirror prices for Ukrainian wheat and corn, 3-year average (2015-2017)

	Export prices from Ukraine, US dollars per ton	Import prices to partner country, US dollars per ton	AI_p
Wheat			
Egypt	162,0	271,6	1,67
Thailand	152,0	205,0	1,35
Indonesia	158,5	204,9	1,29

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Corn			
China	164,4	210,5	1,28
Egypt	153,2	236,5	1,54
Netherlands	156,8	191,4	1,22
Ukraine – Spain	152,6	183,4	1,20

Source: Calculated by the authors based on Comtrade, U.N (2019)

Many countries in the world have similar problems of the difference in mirror prices. At the same time, calculations and comparison of wheat and corn skews for the world's largest trading partners revealed a lack of significant difference between mirror prices. In 2015-2017, among such trading partners as the USA – Mexico, the difference in mirror prices for corn was only 2%; the USA – Japan for wheat – 9%, for corn – 15%; the France – Algeria – 9% for wheat; The France – Spain – 10% for corn; the Germany – Netherland – 12% for wheat (Table IV).

Table 4. Comparison of mirror prices for wheat and corn of different countries, 3-year average (2015-2017)

	Export prices from country exporter, US dollars per ton	Import prices to partner country, US dollars per ton	AI_p
Wheat			
France-Algeria	197,3	214,4	1,09
USA-Japan	224,0	244,5	1,09
Germany-Netherland	189,2	211,1	1,12
Corn			
France-Spain	222,8	245,5	1,10
USA-Mexico	188,2	192,0	1,02
USA-Japan	182,6	209,9	1,15

Source: Calculated by the authors based on Comtrade, U.N (2019)

The analysis shows that there are distortions, disinformation in physical volumes and the export/import products value in the area of international trade of Ukrainian grain. Ukrainian grain traders, who are often affiliated with major multinational corporations, are interested in selling grain from Ukraine at low prices to related parties. The main volumes of grain from Ukraine are traditionally realized during the period of mass harvesting, because the price in this period is the lowest, and the agricultural producers' capacity for storage is not enough (Pankratova, 2017).

According to experts of the fiscal services and experts on transfer pricing, today in Ukraine more than 60% of foreign economic transactions are carried out between related parties. The State Fiscal Service of Ukraine in the

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period of 2015/2017 conducted about 50 inspections of controlled operations, 43% of them – in the field of agricultural exports, which testifies to the rather active international structuring of business processes by large domestic agricultural formations. For middle and small businesses, such steps are not feasible.

Typically, factors that encourage fraud in export/import operations are: the devaluation of the national currency, restrictions on the export of foreign currency, burdensome fiscal policy that is incapable of competing with low tax jurisdictions, the desire to place one's own savings in more reliable financial institutions, the desire to hide illegally obtained incomes. If earlier Ukraine's economy was more closed, then today's processes of globalization enable powerful business formations to achieve the above goals through the international structuring of business processes.

International structuring of business processes allows establishing liability centers where it is beneficial. It is natural that agricultural production is located in Ukraine, which is more profitable here because of the low cost of labor, favorable natural conditions and, at the same time, the low requirements of environmental legislation, etc. The profit centre is placed out of Ukraine in order to avoid paying taxes in Ukraine, placing financial savings in hard currency in more reliable financial institutions in developed countries or offshore.

There is no classical offshore in the list of TOP-importers of Ukrainian grain. However, heightened attention to offshore has led to the emergence of new schemes for profit shifting abroad, also with the use of opportunities of the digital economy. Certain volumes of Ukrainian grain are sold to Iran, Lebanon, Libya, Morocco, and the United Arab Emirates, which today are classified as offshore jurisdictions.

4.2. Transfer pricing and other steps to prevent the illicit financial flows

Countries need to steadfastly take certain steps aimed at reducing the amount of hidden capital outflows, preventing the tax evasion and profit shifting abroad. For Ukraine we see five of such steps.

1. First of all, it is necessary to introduce effective control over transfer pricing. We distinguish this assignment as a priority, because even the prosperous, economically developed countries encounter the problem of profit shifting to low tax jurisdictions. Therefore, introducing effective control over transfer pricing is a modern vector of development of a civilized community, which Ukraine should become a part of.

According to current legislation, in Ukraine there is introduced the arm's length principle, which presupposes that the volume of taxable profits in controlled transactions should not differ from taxable profits in transactions with unrelated parties. Controlled transactions are transactions with related parties – non-residents. In case the arm's length principle in the controlled transactions is not adhered to, the taxpayer is charged with additional tax payments.

2. The next step should be the implementation of 4 out of the 15 actions of the BEPS Minimum Standards, to which Ukraine joined on 1 January, 2017. These steps include:

- more efficient counteracting harmful tax practices;

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- preventing abuses in the application of tax conventions;
- improving the mechanism of tax dispute settlement;
- introducing transfer pricing reporting by countries that provides the automatic exchange of tax information on taxpayers of transnational groups.

The automatic exchange of transfer pricing reports between the countries that have signed the Multilateral Competent Authority Agreement on the Exchange of Country-by-Country Reports and the EU countries in accordance with the Council Directive (EU) 2016/881 started in 2018. Ukraine has not signed yet any intergovernmental agreements on information exchange on the transfer pricing with any of the countries, therefore, it is necessary to step up the work in this very important direction.

3. Ukraine must have financial and tax legislation that will stabilize the country's economic development, investment attractiveness and reliability of investment in its economy. Reductions in the flight of financial resources are possible when the business is not afraid of keeping savings in financial institutions of Ukraine and investing them in expanding activities within the country, when legislative changes and a stable exchange rate are projected.

It is necessary to accomplish the liberalization of currency regulation step by step: to mitigate the requirements for obligatory sale of a certain share of currency earnings and for keeping savings in hryvnas, which is one of the most volatile currencies in the world; to simplify the procedure for obtaining special licenses for foreign exchange transactions; to cancel the deadline for settlements in the currency. However, all these measures can give the desired result only if the BEPS actions are implemented and the mechanism of effective control over transfer pricing is applied.

4. Improving quality and modernizing the work of customs. It is necessary to provide the customs with automated systems to reduce the influence of the human factor, to reduce errors in the definition of codes according to the Ukrainian Classification of Goods for Foreign Economic Activity, to significantly reduce the time for passing customs procedures. The infrastructure of customs terminals, checkpoints and customs offices of discharge needs to be updated.

It is important to clearly define the powers of customs officials, since according to the OECD Guidelines, both services, fiscal and customs, have the right to use the information provided by multinational companies for control. However, for this purpose, it is necessary to carry out the training of customs officers who should better orient themselves in the methods of pricing on the arm's length principle, in sources of information to find appropriate ranges of comparative prices, and others.

5. Information publicity for establishing the appropriate image of companies. A rather powerful element of influence should be a negative public response to companies that shift profits beyond Ukraine, and vice versa, public coverage of the positive image of companies, which honestly pay taxes and work for the benefit of the

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state. If there is a choice between companies that adhere to different principles of work, consumer loyalty will be on the side of those companies that are law-abiding taxpayers and are not related to any dubious schemes.

Conclusions

Summing up, the major volumes of illegal outflows of financial resources from the countries account for manipulation and misinformation in trade. Our calculations, based on the statistics of Ukrainian grain trade, testify to the presence of asymmetry of mirror data such as price, trade value and net weight of products. Moreover, these indicators have a multi-directional vector: if the values for grain exports are underestimated, then quantitative indicators (net weight), on the contrary, are higher than the mirror data of the partner country. As a result, the mirror prices of imports of the partner country are significantly higher than the export prices of Ukrainian grain (IA_p – 1,20-1,67), whereas for the USA, France, Germany revealed a lack of significant difference between mirror prices for some largest trading partners (IA_p – 1,02-1,15). This is a confirmation of shifting profits from Ukraine in order to place them in more reliable jurisdictions. Most Ukrainian grain exporters are transnational corporations that are capable of international business structuring and placing a profit centre where it is more profitable.

The problem of shifting capital from the countries can only be solved if the efforts of all countries of the world community are united, since most of the issues that need to be addressed lie outside the boundaries of a single country. That is why states agree on common rules for the purpose of preventing shifting profits from taxation abroad. Countries, including Ukraine, needs to take a number of steps to support this extremely important initiative. The first and foremost task is to set up an effective transfer pricing control in accordance with the OECD Guidelines and to steadfastly follow the BEPS Action Plan, in particular to speed up the implementation of Country-by-Country Reports.

At the same time, stabilization of economic development and investment attractiveness of Ukraine as well as deregulation of the foreign exchange market should be ensured. Only acting in both of these directions (on the one hand, increasing the control over transfer pricing, on the other, ensuring the investment attractiveness of Ukraine) it is possible to achieve reducing the outflow of financial resources abroad.

Our further research will focus on analyzing the implications of the introduction of transfer pricing rules in Ukraine and countries that have succeeded in solving the problem of outflow of financial resources abroad.

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OPPORTUNITIES TO INTEGRATE DIGITAL INTELLIGENCE INTO AN AUTOMATED LOGISTICS MANAGEMENT SYSTEM ALONG THE VALUE CHAIN

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Abstract: *Factors that determine the effect of using automated management systems (AMS) in logistics are no longer just industrial, but also social and environmental, related to different structures in different parts of the world. In the current stage of industrial development, they are already forming the concept of modern production development using artificial intelligence and in logistics. Technological impacts dictate the tendency to continuously reduce manual, heavy and unattractive labor at the expense of higher productivity. The social aspect demands the discovery of new or preserving old jobs, and the environmental aspect imposes a lasting trend towards compliance with environmental standards and sustainable development parameters. The purpose of this report is to explore these differently impacting factors and on this basis to build an AMS of logistics across the value chain with the ability to incorporate digital intelligence.*

Keywords: AMS of Logistics, Digitization of Logistics, E-Logistics Systems, Artificial Intelligence

Introduction

The purpose of this report is to explore impacting factors and on this basis to build an AMS of logistics across the value chain with the ability to incorporate digital intelligence.

1.Global development and the role of logistic

Future global development will be characterized by long-term strategies and methods of designing and manufacturing new cyber-tech equipment and new service requirements. New robotic devices will be imposed, as the new information management devices can be included in this category. As a subject of this activity are all basic and auxiliary technological, production and information processes and activities, which should be

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logistically provided as well. This category may include the IT management tools included in: man-machine interfaces that establish communication and speech recognition; self-learning intelligent control systems based on artificial intelligence; devices with artificial intelligence and freely moving robots, etc.[4,8,20].

These global trends also create new requirements not only for the development of industrial enterprises and their production, but also for the approaches, forms and ways of improving their processes and activities. An important factor in this respect is the expansion of the spatial capabilities of logistics technologies. It is also related to better use of resources in this direction as well as better logistics services. Information provision of the logistics process includes familiarization with the practices and methods of organizing and managing information flows in logistics systems, the basics of the operation of logistic information systems and modern information and communication technologies in logistics. Logistics can also be defined as part of supply chain management by planning, implementing, controlling efficient and effective flow and storage of goods and services, serving and linking information between point of origin and point of consumption [5,11,12,14].

The need for logistical services among manufacturers and commercial companies is increasing significantly as a result of increased globalization of business and competition pressure. The main goal is to bring products and services into the market faster. Overall, the capabilities of logistics service providers vary widely, ranging from several major representatives who primarily offer transport services to established market leaders and those with a wide range and scope of logistics activities and services [1,22,25].

The trend towards higher value added services gives suppliers the opportunity to differentiate their business from their competitors as well as to strengthen customer relationships [18,26]. Thanks to the development of personalized services, the pressure on the logistics service industry is characterized by a strategic impact from the point of view of market coverage, improving the level of service and increasing the flexibility of changing customer requirements. As an example in this respect one can assume that one of the main requirements in our time is the so-called "Green logistics" [15,28]. Green supply chain studies have expanded considerably over recent decades, in connection with the growing importance of environmental components in the management of these chains. "The Green Supply Network" is a broad concept that includes different approaches by which companies work with their supplier and/or customer to improve the environmental performance of their operations. "Green" initiatives are also important for logistics. Logistics providers are gradually transforming the scope of their services by offering a shift from single business to a business model based on a wider range of services. As a result of this evolving process, they are ready to accept ecological transport options, as well as non-transport activities or a combination of both. Approaches are embedded in the development of an integrated package of initiatives to improve the environmental sustainability of services that logistics companies provide to their customers [6,19,24]. By that all this "green system" is an integral part of the supply chain AMS.

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Of particular importance for this whole process, including horizontal integration, is the study of the essence of logistics operations and the role of the information component. This is of particular importance also in view of the fact that this is the most revolutionary component leading to quality changes of the entire logistical process [3,7,10,17]. Therefore, we will look at and analyze the functions and impact of logistics information processes in their development and application in AMS.

2.Basic principles of structuring (forming) of logistical information designed for the AMS.

In order to ensure that logistic information adequately meets the requirements of logistics systems and effectively supports the management and operational control process, it must be based on the relevant principles underpinning its development, such as availability, accessibility, accuracy, timeliness, rapid response to failures and deviations, flexibility, visibility, transparency, etc. (Fig. 1).

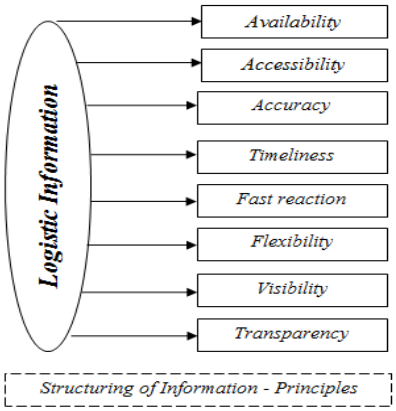

Fig.1.Principles of structuring logistical information

Information systems in logistics can be created to manage material flows at the level of an individual enterprise but can facilitate the organization of logistical processes in the territories of the regions, countries and even in a group of countries (typical of the EU), Figure 2.

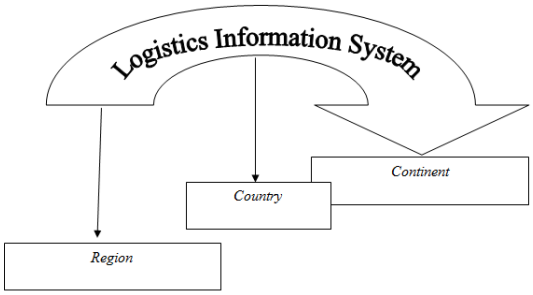

Fig 2.Levels of management of logistic information processes

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When building automation-based logistic information systems (AMS), certain requirements must also be met, including:

1. Ability to use hardware and software modules.
2. Possibility of phased creation of a logistic information system.
3. Flexibility of the system with regard to the specific requirements of a particular logistic connection.
4. Ability to accept the user-system of the human-machine dialogue.
5. Clearly fix the interconnections in the logistics system inside and outside the environment.
6. Inadmissibility of incompatible solutions at the lowest level of the logistics system.
7. Consecutive building of interfaces for the various subsystems of the automated logistics system.
8. What is the role and place of the logistics components in the logistics system's UA.
9. Recognition of the mutual influence of material and information processes within the system.
10. Achieving synergies by integrating system connections vertically and horizontally.

These requirements are shown in Figure 3.

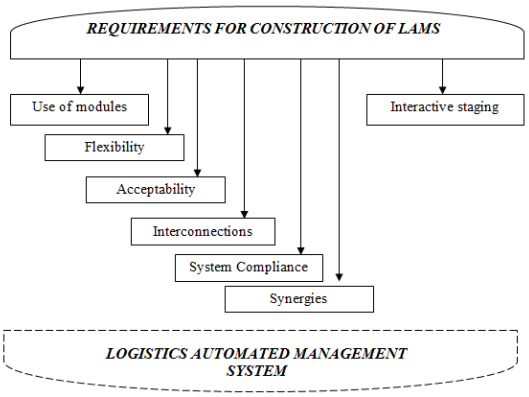

Fig.3.Requirements for building automated logistics information processes

3.Establishment of an AMS with the possibility of phased creation and development

The stage is directly related to the selection of the AMS components, including hardware and software modules. The hardware module is a unified functional unit for communication and electronic equipment, structured and produced in the form of an independent product. The software module can be considered as a single, somewhat independent, software component that performs a certain function in the general software. Complying with the principle of using software and hardware modules will allow: Ensuring compatibility of computers and software at different levels of logistics management; will increase the efficiency of the operation of logistics information systems; will reduce costs; the construction of such systems will be accelerated; will cover the whole logistics process along the value chain [9,13,16,21].

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Logistic information systems based on automated logistics processes like other automated management systems are constantly evolving. This means that when designing them, it is necessary to ensure the possibility of constantly increasing the number of automation objects, the possibility of extending the composition of functions and the number of tasks performed by the information system. It should be kept in mind that determining the stages of system creation, the selection of priority tasks has a major impact on the subsequent development of the automated logistics information system and the effectiveness of its operation [23,27,29].

Another problem is clearly identifying the intersections of logistics processes with other business processes. The points of material flow crossing and the information flow cross the boundaries of competence and responsibility of individual business units or across the boundaries of independent research organizations.

Ensuring a smooth overcoming of this intersection is one of the important tasks of building a logistics AMS. Important tasks in this area are also:

Providing system flexibility with regard to the specific requirements of logistic subsystems; **Ensuring acceptable user-level access** from the lowest level through the human-machine dialogue to the highest level of automation and **achieving synergy** by integrating logistics systems into vertical and horizontal dimensions.

4.Application of modern information technologies for automation of logistic information processes - AMS

In modern logistics, the use of information technology is an integral part of the whole process. It is difficult to imagine the construction and organization of the goods delivery process without the timely exchange of information and without prompt response to market requirements. To date, it is virtually impossible to ensure the quality of goods and services required by the client without using modern information systems and software tools to plan, analyze, and support business logistics solutions.

The role of the electronic component (E - logistics) in the AMS of logistics

E - Logistics is an abbreviation of the term "Electronic Logistics". Electronic logistics is alongside the E-Commerce and E-Procurement functions and is part of the so-called E-Business. E-business means electronic business transactions where business processes from each operating area are supported by electronic telecommunication services. E-business operators are assisted by so-called executive partners in the supply chain. E-Logistics is a strictly regarded part of E-Fulfillment, and E-Realization is part of the e-business. The tasks of E-Implementation are typically performed by specialized logistics service providers. Once the contract has been signed and the online order has reached the service provider, E-Realization controls the execution of all procedures so that the contractual obligations to the client can be met. E-Logistics makes it possible to plan, implement and control logistics activities or tasks by using Internet technologies to economically improve logistics services and to strengthen Supply Chain. This includes, for example, necessary steps to implement e-

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commerce transactions in the field of order acceptance, storage, commissioning, packing, franking and dispatching.

Prerequisites and Conditions for Including and Implementing an Electronic Component in AMS of Logistics:

• Integration of Internet-based systems into the portfolio of existing IT systems;

• Further development of classical organizational processes and procedures;

• Intercompany or interdepartmental cooperation with the clear goal of focusing all partners in the supply chain to overcome information barriers;

• The complexity of integrating electronic logistics solutions into existing architectures and applications should not be underestimated.

These prerequisites are shown in Figure 4.

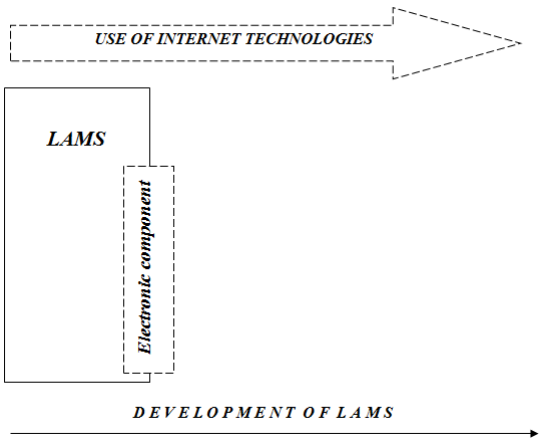

Fig.4.Preconditions and conditions for the inclusion of the electronic component in the logistic AMS

Advantage of the electronic component E-Logistics is the possibility of economic growth through the realization of the logistic tasks with the use of the Internet technologies. In addition, the service philosophy of classical logistics and e-commerce can be improved.

E-logistics is the collective expression of the logistics processes in a company that are defined electronically. It is considered a kind of base in which all components can be connected. In Figure 5 shows the links between the components of E-logistics.

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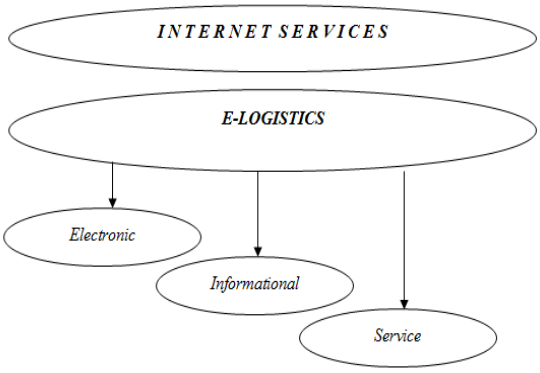

Fig.5.Links between E-logistics components

Without an electronic component in the logistics AMS, there can be no effective and unhindered handling of the movement of goods in the field of e-business. This is related to the cautious planning and development of all the logistics processes and systems necessary for the electronic processing of transactions. Electronic logistics as a component of logistics AMS is also the common denominator for future organization and planning of logistics systems and processes so that electronic dispatching of business processes can be ensured within certain limits.

As globalization in industrial processes continues to grow rapidly, the Internet of consumers is increasingly becoming a global market for services and goods. Companies are forced through e-logistics and e-business at a tremendous pace to provide new goods, information and services. Without electronic logistics, companies will not be competitive on the market. How successful a company is on the market depends on how much individual value chain elements are aligned to in order to create a better value, E-Logistics is becoming increasingly important for companies to survive in this competitive environment. Thanks to the rapid spread of communications and information technology, the internet is now becoming a day-to-day business in companies. Many of the orders are handled over the Internet. More and more company employees have access to the Internet at work and work directly in and with electronic logistics. Electronic logistics is becoming increasingly important both for itself and for e-business.

Logistics Information System (L-AMS) as an element of company AMS

L-AMS is seen as an element of the company information system (AMS) due to the fact that it can only function if it is at the same E-level as the firm has. This is shown in Figure 6.

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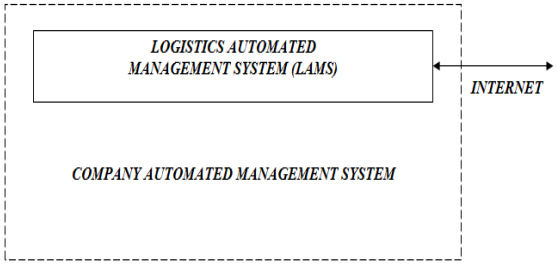

Fig.6.L-AMS levels

Therefore, the digitization of logistics as an element of company digitization is also seen as a complex solution with the digitization of all corporate activities.

Inter-structural and external structural relationships in L-AMS as an element of company AMS

The functional dependence between L-AMS and internal and external relationships can be expressed with dependence:

$$L\text{-}AMS = F(Sv, Sw)$$

where:

Sv - internal interconnections.

Sw - external interconnections.

The inter-structural relationships are examined and ranked by relevance and belonging to certain L-AMS attributes. Here are the interconnections from the logistics of the material flow realized through the Internet of Things. This is the possibility of using a digital logistics information system related to the material flow in the company. Here is also the building a logistic virtual model in the virtual reality with a mirror image - software execution.

External links are related to the types of logistics systems, including links to external suppliers, customers, and so on.

Formation of logistic information depots for the storage of information modules in the virtual reality as an element of L-AMS

First, this is an approach for building information storage sites for embedded logistic information systems (embedded systems), delivery of logistic information services over the Internet (embedded information systems - software). These are coded self-contained (by function and purpose) systems (software product) offered as a commercial product. Secondly, this is an approach for building cloud logistic information systems (nature and purpose), virtual reality or offering a virtual logistic cloud reality.

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Hybrid logistics AMS

The main difference between logistical AMS and other types of information systems is the level of integration of the information space.

The systematization of concepts in this area of research allows to distinguish three existing approaches to the definition of logistic AMS:

• L-AMS is part of the corporate information system;

• L-AMS is a higher degree of integration of software solutions and includes a corporate information system;

• L-AMS is an independent structure isolated from other information systems.

L-AMS integrates information logistics space horizontally and components located in different locations and regions of the world. Information flows in the business organization should be formed on the basis of the characteristics of the production and economic activity of the whole chain, through which the commodity from the raw materials becomes an end product and then through the sales system reaches the end user.

It is therefore obvious that L-AMS is in fact a higher order than the corporate information system (CIS), as it involves distributing products, purchasing raw materials and transporting them, which is beyond automated functions, i.e. LIS is a higher degree of CIS integration. Figure 7 illustrates the advantage of L-AMS as an integrated logistics space.

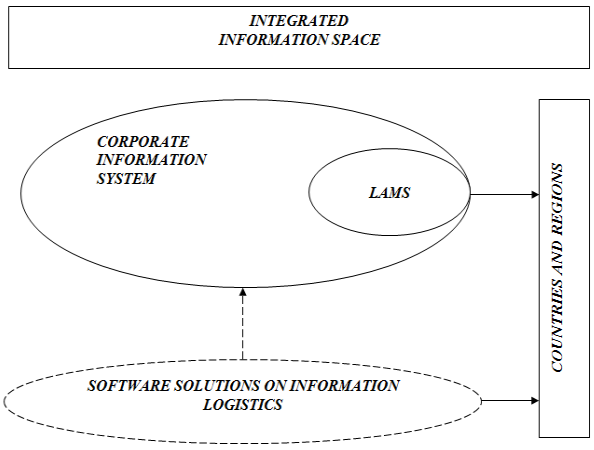

Fig.7.Integrated logistics information space

The second no less important issue for the construction of L-AMS is its functionality (functional structure).

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Before discussing the functionality of L-AMS, it is necessary to determine the types of information flows that penetrate the system. The specificity of L-AMS is determined by the fact that flow management is done both within the business organization and between the various participants in the logistics chain. In this regard, information flows are divided into two types:

• strategic (coordinating);

• operating.

Separate functions (functional subsystems) may be included in both types of data streams (e.g., inventory management).

The strategic (coordinated) flow includes the following key functions of L-AMS: Strategic Plan (Strategic Objectives); Capacity utilization plan (capacity constraints); Logistic plan (logistic needs); Production plan (production needs); Delivery plan (delivery needs).

Opportunities to include digital intelligence in L-AMS

The Digital Intelligence methodology forms a set of requirements that are necessary for the functioning of the logistics digital system. This requirement is also important from the point of view of the preliminary design of the technical levels of the logistics AMS. In this respect, the logistics information system adapts the following levels:

1. Technical level of the AMS system (E-logistics information system)

2. Technical level of the object (virtual or real logistic information object)

3. Artificial Intelligence (Managing Intelligence), which includes:

3.1. Scope of functions that Artificial Intelligence can perform (1 ... .n)

3.2. Functions that have full human substitution (F of the total number of n-functions)

Criteria for choosing the objects for the introduction of digital intelligence

The selection of objects begins with the study and analysis of the existing state of the objects. The purpose of the study is to determine the information and technical parameters of the objects in accordance with the requirements of their future development. Therefore, it should be defined their technical level at a given time and in the dynamics for the following years. This set of studies should also take into account the normative reference base used to determine these indicators.

Determining the number of criteria. Depending on the requirements of the systems, the number and composition of the criteria characterizing the status of the study object are determined. The importance of the individual criteria, which determine the necessary condition for justifying the choice of one or another object, depends on the pre-set objective in for them. Criteria must meet the conditions for making decisions about choosing objects for digital intelligence. We define the following sets of criteria:

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- system level criteria;
- Criteria for determining the rate of digitization;
- Criteria for determining the technical level of the object;

Criteria for determining the information potential;

- specific criteria specific to certain types of objects.

The importance of criteria containing the condition "sufficiency" in the selection of objects is determined by the following inequality:

$$Ee \geq En$$

$$Tr \geq Tn$$

where:

En - Estimated efficiency factor

Ee - normative efficiency factor;

Tr - determined payback period for the invested funds;

Tn - nominal time for redeeming the invested funds.

5.Functional Abilities of Artificial Intelligence

Artificial Intelligence can be used in the logistics information service for customer service.

Elements of the logistics service

Service - Time. The market demand for the accuracy of delivery and the time aspect has increased over the years.

Service - Logistic price. Logistics costs are costs that may be related to the company's logistics activities such as moving, storing and handling of goods, etc.

Service - transport and processing. Costs associated with moving goods are called transportation and handling costs.

Service - Storage. What determines the cost of storing is the amount of stored goods.

Conclusion

Information flows in the business organization should be formed on the basis of the characteristics of the production and economic activity of the whole chain through which the commodity product becomes an end product and then through the sales system reaches the end user. The management of this logistics chain of operations can be automated across the value chain, regardless of the level, nature, and geographical location of

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the logistics components. Therefore, L-AMS is a new type of automation management system with the possibility of embedding E-components and artificial intelligence. The main difference between logistics AMS and other types of information systems is the level of integration of the information space both in horizontal and in the vertical direction.

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COMPLEX INDEX EVALUATION DETERMINING INVESTMENT POTENTIAL OF HYDROGENERATING ASSETS

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Abstract: Power Engineering restructuring has led to the new industry enterprises formation, which requires the development of modern investment attractiveness methods. An objective comparative analysis of Russian power companies is vital to make the valid financial and economic decisions by strategic owners and outside investors. Stock indicators currently in use do not take into account the specific characteristics of power engineering and Russian power companies. The comparison of the energy facilities should be carried out, taking into account the technical state of the generating capacity. The scientific article proposes the inclusion of the specific energy indicators in the consolidated group of the energy companies' investment attractiveness factors. This component reflects the businesses ability of the sustainable cash flow generation, representing the participants' investment potential of the Russian competitive electricity and power market.

Keywords: rating agencies, the energy market, financial and economic indicators, the credit rating boundaries, regional and industry indicators, specific energy indicators, trend analysis, investment attractiveness rating.

Introduction

Main trends in research of energy enterprises potential investment

Power engineering restructuring had led to formation of new energy enterprises which requires objective evaluation of their operating activity efficiency and investment potential. Many specialists [1, 2, 3, 4, 5, 6, 7, 8, 16] mark that foreign rating grades are difficult to use for Russian power companies without taking into account the specific features of enterprises functioning in conditions of the Russian competitive market.

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At present the relevant trend is the formation of objective rating grades of Russian enterprises [5, 6, 7, 8]. The work experience of Russian rating agencies is calculated in some cases by several years, in a better case one or two decades. Moody's, S&P, Fitch – are among the most influential foreign agencies which represent the so-called "world three" and their analytical researches are universally recognized all over the world. Along with it long-term economic history testifies serious mistakes and slips of rating analytical leaders. Credit ratings assigned to some companies (AIG, Enron, Lehman Bros., Parmalat) were high and didn't reflect the real market situation. Their securities kept their high rating of solvency in spite of serious problems with financial stability, business activity and profitability. Some specialists [2] also agree in opinion that 2008 the whole world financial crises was provoked by high investment ratings assigned to enterprises having serious financial difficulties.

As to Russian rating agencies they are often accused in jaundice and decision making subjectivity within the framework of analytical research. National rating, even high, is not able to affect world capital market accessibility, which is particularly important for Russian enterprises, because a company stable development directly depends on the possibility of attracting inexpensive credit resources.

Methodological Aspects

For the rating of a companies' investment attractiveness the following functional constituents package is proposed to use.

1. Resource-based component calculated on the basis of weighted average fuel availability at structural power company departments.
2. Reserve component - total reserve of energy company capacity.
3. Technological component - average evaluation of physical and moral deterioration of energy equipment.
4. Customer's component - average energy and power demand in a region.
5. Infrastructural component - evaluation of a network infrastructure development.
6. Innovational component - R&D development level in an energy company.
7. Personnel component, calculated on the basis of employees number and labour productivity data.
8. Institutional component, understood as a development degree of leading institutes of market economics in a region.
9. Financial component, described as a total sum of taxation and other money contributions to the budget from power companies.

Functioning and development peculiarities of Russian hydrogenating assets are described in this article. The largest Russian and foreign hydropower stations are analyzed.

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World largest hydro power stations

Sl. No	Name of a plant	Country	River	Construction year	Total capacity, thousand MW	Maximum power production, billion kWh
1	Sanxia («Three Canyons»)	China	Yangtze	2003	18.3 (October 2008)	80.8
2	Itaipu	Brasil/ Paraguay	Parana	1984	14	94.7
3	Guri (Simon Bolivar)	Venezuela	Caroni	1978	10.2	46
4	Tucurui	Brasil	Tocantins	1984	8.4	21
5	Sajano-Shushenskay	Russia	Enisey	1978	6.4	26.8
6	Krasnojarskay	Russia	Enisey	1967	6	20.4
7	Grand-Coulee	USA	Columbia	1942	6*	
8	Robert-Bourassa	Canada	La-Grande	1979	5.6	…
9	Churchill-Falls	Canada	Churchill	1971	5.4	35
10	Longtan	China	Hongshui	2009	4.9	18.7
11	Bratskaya	Russia	Angara	1961	4.5	22.6

According to some estimates 6.8 thousand MW

Sourse: https://infourok.ru/prezentaciya-po-fizike-gidravlicheskie-elektrostancii-proekt-energetika-mira-3364892.html

The largest hydropower producers are: China– 585 TWh, Canada – 370 TWh, Brazil – 363 TWh, USA – 250,6 TWh, Russia – 176 TWh, Norway – 140 TWh, India – 116 TWh, Venezuela – 87 TWh, Japan – 69 TWh, Sweden – 66 TWh, Island is an absolute leader in hydropower production per head – 20 % of the whole world power generation.

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A Public Joint Stock Company "Federal Hydrogenerating Company ''RusHydro" (PAO "RusHydro") is a Russian power generating company, the owner of the greater part of the country's hydropower stations, one of the largest Russian generating companies as to installed capacity and second largest hydrogenating company after Eletrobrás. It is registered in Krasnojarsk, the headquarters are in Moscow.

In October 2011 the company got in its property the generating assets in the Far East, the largest of which is RAO Unified Energy System of the East. In March 2013 PAO "RusHydro" signed a contract with a German company Voith Hydro about the creation of a joint venture Volga Hydro, oriented to hydroturbine equipment production in Balakovo, Saratov region.

At present the key projects of PAO "RusHydro" are: construction of power stations in the Far East – heat and electric power stations in the city Sovjetskaya Gavan' (Habour), Khabarovsk region, the first stage of Sakhalin thermal power station-2, Nizhne-Bureiskaya hydropower station in Amur region, Ust-Srednekanskaya hydropower station in Magadan region. Other projects of PAO "RusHydro" are – Zaramagskaya hydropower station in North Osetia, Zagorskaya pumped hydroelectric station in Moscow region. The company implements a number of projects in the field of renewable energy (the construction of small hydropower stations, wind and solar stations). PAO "RusHydro" also implements the program of complex modernization of existing assets.

As of January 1, 2018 the stated capacity of "RusHydro" exceeded 39 GW.
The total thermal capacity is 18,497.1 GCal/h. Nineteen branches in 17 regions of Russia, including 47 hydropower stations and pumped hydroelectric stations, 3 Geo power Stations, and the enterprises of "PAO Power Systems of the East" are included in the Company.

All in all the "RusHydro" Group controls more than 90 objects of renewable energy. The largest in Russia-Sajano-Shushenskay hydropower station after P.S. Neporozhny (6,400 MW), 9 plants of Volgo-Kama region cascade, having installed capacity (more than 10,150 MW), Zeya hydropower station (1,330 MW) - the first one of big hydropower plants in the Far East, Bureja hydropower station (2,010 MW).

The cumulative power output was 140.25 billion kWh in 2017.

Sajano-Shushtnskaya hydropower station (10 hydraulic units with the capacity of 640 MW each) is a powerful source of loads' covering in the Power Grid of Russia and Siberia with an average power production of 24 billion kWh. In 2014 the recovery work were finished on the elimination of accident consequences of August 17, 2009.

"RusHydro" holding also comprises the scientific research, design and survey works engineering organizations and retail power sale companies.

Besides the operation of active hydropower stations and renewable energy sources PAO "RusHydro" continues to execute hydropower construction projects investment in different parts of the Russian Federation.

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The largest of them are the construction projects of Nizhne-Bureisk hydropower station (320 MW) in Amur region, 342 MW hydropower station No.1 of Zaramag cascade in North Osetia, Ust-Srednekanskaya hydropower station (570 MW) in Magadan region.

"RusHydro" supplies power to the Far East region almost in full. The company's assets in the region include power stations having total capacity of more than 13 GW ensuring more than 90% of power production in the Far East. "RusHydro" also supplies power transmission (group assets in the region include more than 100 thousand kilometers of electrical network) and its sale to the end-user.

Analysis of investment potential of PAO "RusHydro"

Let's make a complex economical analysis of PAO "RusHydro" to form a set of indicators, characterizing the investment potential of hydrogenerating assets (tables 1-5).

Table 1.

Liquidity and Solvency indicators of PAO "RusHydro"

Sl. No.	**Indicator**	**Value**								**Quadratic coefficient of variation**
		2017	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	
1	Net working capital	180,566,000	173,120,000	136,980,000	167,748,000	226,175,000	212,548,000	182, 248, 000	175, 176, 000	28,829,654
2	Coefficient of current liquidity	3.80	7.40	5.49	6.11	3.67	3.04	4.34	11.92	10.21
3	Coefficient of quick liquidity	3.74	7.24	5.36	6.00	3.64	3.02	4.31	11.87	10.24
4	Coefficient of	0.79	1.51	0.59	0.27	0.22	0.23	0.56	0.52	2.15

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	absolute liquidity									
5	Coefficient of equity capital manoeur-ability	0.28	0.25	0.21	0.27	0.37	0.44	0.35	0.36	0.13
6	Coefficient of current assets manoeur-ability	0.21	0.20	0.11	0.05	0.06	0.08	0.13	0.04	0.29
7	Coefficient of internal circulating assets manoeur ability	0.58	0.67	1.05	0.14	0.16	0.15	0.27	0.06	2.19
8	Coefficient of circulating assets covering with internal capital	0.36	0.30	0.10	0.32	0.38	0.49	0.47	0.76	0.62
9	Coverage ratio of inventories with	20.55	14.31	4.21	18.47	41.59	75.66	73.47	163.37	376.04

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	internal and circulating assets									
10	Circulating assets portion in company's funds	0.25	0.22	0.19	0.23	0.38	0.42	0.36	0.35	0.17
11	Inventories portion in circulating assets	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.03
12	Accounts receivable portion in circulating assets	0.72	0.75	0.77	0.72	0.75	0.72	0.86	0.83	0.03
13	Coefficient of common solvency	2.31	2.28	1.70	2.33	1.66	2.03	1.77	4.98	3.46

It is evident that comparative analysis of different enterprises shall be conducted using relative but not absolute figures. It means that the magnitude of net circulating assets is interesting to analyze in dynamics, but it is necessary to consider it relatively to receipts data, net cost, profit and so on. The value of quadratic coefficient of variation characterizes the indicators coherency. A set of factors characterized by quadratic coefficient less than 0.33 is advisable to include in the rating of hydrogenerating assets.

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Table 2.

Financial stability indicators of PAO "RusHydro"

Indicator	**Value**								**Quadratic coefficient of variation**
	2017	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	
Concentration coefficient of borrowed funds	0.12	0.16	0.17	0.22	0.26	0.15	0.13	-0.04	0.37
Financial dependence coefficient	1.19	1.18	1.20	1.19	1.31	1.27	1.23	1.09	0.02
Coefficient of long-term investments structure	0.38	0.56	0.71	0.52	0.34	0.18	0.30	0.16	0.66
Financial dependence coefficient of capitalized funds	0.10	0.13	0.14	0.13	0.15	0.09	0.12	0.06	0.05
Financial independence coefficient of capitalized funds	0.90	0.87	0.86	0.87	0.85	0.91	0.88	0.94	0.01
Structure coefficient of borrowed funds	0.59	0.81	0.80	0.76	0.56	0.35	0.56	0.66	0.26
Financial leverage level (balance)	0.09	0.12	0.14	0.13	0.16	0.08	0.12	0.06	0.07

Financial leverage level (market)	0.30	-	0.49	0.52	0.52	0.61	0.25	0.23	0.33
Coefficient of coverage of constant nonfinancial costs	1.86	2.13	1.76	1.94	2.12	1.27	2.14	2.78	0.64
Provision coefficient of interest payable	7.35	7.73	7.11	7.09	8.50	9.33	16.37	34.76	52.42
Coefficient of coverage of constant financial costs	5.98	7.21	4.81	6,65	8,05	5.58	13.92	38.65	79.88
Concentration coefficient of equity capital	0.84	0.85	0.83	0.84	0.76	0.79	0.81	0.92	0.02
Autonomy coefficient	0.84	0.85	0.83	0.84	0.76	0.79	0.81	0.92	0.02
Manoeuvrability coefficient	0.11	0.08	0.02	0.09	0.19	0.26	0.21	0.29	0.40
Financial lever	0.19	0.18	0.20	0.19	0.31	0.27	0.23	0.09	0.14
Coefficient of loan capital structure	0.59	0.81	0.80	0.76	0.56	0.35	0.56	0.66	0.26
Functioning capital, thousand roubles	180,566, 000	173, 120, 000	136, 980, 000	167, 748, 000	226, 175, 000	212, 548, 000	182,248, 000	175, 176, 000	28,829,654

Financial stability indicators characterize the capital structure of power company, which in its turn reflects source formation structure of property complex, and consequently, characterize loan policy of enterprise management

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Table 3.

Profitability indicators of PAO “RusHydro”

№	Indicator	Value								Quadratic coefficient of variation
		2017	2016	2015	2014	2013	2012	2011	2010	
1	Generation coefficient of profits	0.050	0.060	0.044	0.047	0.058	0.030	0.062	0.088	0.04
2	Assets profitability	0.028	0.038	0.024	0.029	0.036	0.014	0.042	0.067	0.05
3	Investment capital profitability	0.030	0.039	0.025	0.030	0.040	0.016	0.046	0.069	0.05
4	Equity capital profitability	0.044	0.054	0.040	0.043	0.057	0.025	0.057	0.075	0.03
5	Gross profitability of sold product	0.421	0.510	0.403	0.397	0.459	0.406	0.524	0.490	0.04
6	Transaction profitability of sold product	0.342	0.476	0.370	0.372	0.435	0.242	0.446	0.545	0.15
7	Net profitability of sold product	0.250	0.364	0.280	0.283	0.325	0.156	0.331	0.427	0.15
8	Cost effectiveness	0.727	1.041	0.917	0.657	0.848	0.683	1.102	0.961	0.23
9	Equity common capital profitability	0.044	0.054	0.040	0.043	0.057	0.025	0.057	0.075	0.03

All profitability figures have low volatility in a relevant range, consequently, special attention must be paid to these coefficients in the frames of development of the combined investment rating.

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Table 4.

Business activity indicators of PAO “RusHydro”

№	Indicator	Value								Quadratic coefficient of variation
		2017	2016	2015	2014	2013	2012	2011	2010	
2	Returns on assets	0.34	0.28	0.27	0.29	0.31	0.28	0.30	0.31	0.012
3	Resource productivity	0.15	0.13	0.12	0.13	0.13	0.12	0.14	0.16	0.01
4	Funds turnover in store (in circle)	19.68	13.25	15.55	19.05	20.58	27.24	28.88	51.26	41.66
5	Funds turnover in accounts receivable (in circle)	0.82	0.77	0.83	0.75	0.47	0.42	0.46	0.56	0.33
6	Funds turnover in store, days	18.54	27.54	23.48	19.16	17.74	13,40	12.64	7.12	16.54
7	Funds turnover in accounts receivable, days	447.26	474.73	440.63	486.42	783.32	877.07	800.34	654.44	366.5
8	Funds turnover of credit liabilities, days	46.00	62.70	56.04	47.81	480.29	376.96	426.27	66.66	1357.26

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9	Duration of operating cycle, days	465.81	502.26	464.11	505.59	801.05	890.47	812.98	661.56	340.68

We suggest the following composition of specific economic indicators, reflecting power production specific character and characterizing relative efficiency of generating capacities of stations (table 5). This is the so-called primary set of indicators for subsequent inclusion of separate indicators in the consolidated investment rating.

Table 5.

Specific power production indicators of PAO "RusHydro"

(counting on 1 kW of installed capacity)

Indicators characterizing activity efficiency of a power company										
№	**Specific indicators**	**2017**	**2016**	**2015**	**2014**	**2013**	**2012**	**2011**	**2010**	**Quadratic coefficient of variation**
		counting on 1 kW of installed capacity								
	Indicators characterizing the efficiency of a power company assets management									
1	Non-revolving assets, thousand roubles/ kW	18.93	18.17	18.59	16.79	12.96	11.21	10.86	9.23	109.21
2	*Fictitious assets,* thousand roubles/ kW	*0.06*	*0.06*	*0.05*	*0.05*	*0.05*	*0.04*	*0.02*	*0.01*	***0.002***
3	Fixed assets, thousand roubles/ kW	10.76	10.49	10.07	9.69	8.98	8.51	8.03	7.44	10.08
4	Financial investments,	8.00	7.49	8.21	6.78	3.67	2.40	2.59	1.77	53.34

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	thousand roubles/ kW									
5	*Resources,* thousand roubles/ kW	*0.11*	*0.11*	*0.11*	*0.09*	*0.07*	*0.05*	*0.04*	*0.02*	***0.008***
6	Accounts receivable, thousand roubles/ kW	4.55	3.84	3.32	3.71	5.99	5.80	5.20	4.09	7.017
7	Cash assets, thousand roubles/ kW	1.31	1.05	0.47	0.23	0.48	0.61	0.79	0.21	1.04
8	Revolving assets, thousand roubles/ kW	6.28	5.13	4.29	5.14	7.97	8.12	6.07	4.90	14.05
9	Non-revolving + revolving assets, thousand roubles/ kW	25.21	23.30	22.89	21.94	20.93	19.33	16.93	14.14	92.53
	Indicators, characterizing unit efficiency of financial sources management in a power company									
10	Capital and reserve, thousand roubles/ kW	21.17	19.73	19.04	18.42	16.01	15.20	13.73	12.94	62.42
11	Fixed liabilities, thousand roubles/ kW	2.39	2.88	3.07	2.67	2.75	1.46	1.80	0.78	4.48
12	Current liabilities, thousand roubles/ kW	1.65	0.69	0.78	0.84	2.17	2.67	1.40	0.41	4.39

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13	Authorized capital, thousand roubles/ kW	10.93	9.90	9.90	9.90	8.14	8.14	7.44	7.40	12.61
14	Retained income, thousand roubles/ kW	7.05	6.68	6.03	5.45	4.83	4.03	3.75	3.07	14.43
15	Borrowed funds, long term and short, thousand roubles/ kW	4.04	3.57	3.85	3.52	4.92	4.13	3.20	1.20	8.21
16	Account payable, thousand roubles/ kW	0.27	0.25	0.25	0.22	1.99	1.48	1.32	0.21	3.69
	Indicators characterizing the efficiency of a power company activity									
17	Gain, thousand roubles/ kW	3.71	2.95	2.75	2.78	2.79	2.42	2.37	2.28	1.44
18	Sale cost price, thousand roubles/ kW	2.15	1.45	1.64	1.68	1.51	1.44	1.13	1.16	0.73
19	Gross profit, thousand roubles/ kW	1.56	1.50	1.11	1.10	1.28	0.98	1.24	1.12	0.29
20	Profit on sales, thousand roubles/ kW	1.56	1.50	1.50	1.10	1.28	0.98	1.24	1.12	0.33
21	Profits from taking part in other	0.07	0.24	0.02	0.01	0.01	0.01	0.02	0.00	0.05

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	organizations, thousand roubles/ kW									
22	Interest obtainable, thousand roubles/ kW	0.22	0.23	0.24	0.24	0.25	0.14	0.08	0.07	0.04
23	Interest payable, thousand roubles/ kW	0.21	0.19	0.21	0.16	0.15	0.11	0.08	0.03	0.03
24	Other profits, thousand roubles/ kW	0.20	0.61	0.38	0.45	1.79	0.46	0.61	2.28	3.98
25	Other expenses, thousand roubles/ kW	0.57	0.98	0.52	0.61	1.96	0.90	0.83	2.19	2.91
26	Profit before taxation, thousand roubles/ kW	1.27	1.40	1.02	1.03	1.21	0.59	1.06	1.24	0.43
27	Profit tax, thousand roubles/ kW	0.25	0.29	0.17	0.18	0.25	0.16	0.25	0.28	0.02
28	Net profit, thousand roubles/ kW	0.93	1.07	0.77	0.79	0.91	0.38	0.79	0.97	0.31
29	Cumulative financial result of a time period, thousand roubles/ kW	0.93	1.07	0.77	0.79	0.91	0.38	0.79	0.97	0.31

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30	Capitalization, thousand roubles/ kW	7.98	10.08	6.29	5.14	4.51	5.80	7.71	16.24	100.43
31	Net wealth, thousand roubles/ kW	20.16	19.22	0.00	18.54	16.06	15.16	13.62	0.00	472.88
	Indicators characterizing the efficiency of current, investment and financial activity of a power company									
32	Money flow balance from current operations, thousand roubles/ kW	1.39	1.51	1.15	1.09	1.21	0.98	1.06	1.06	**0.23**
33	Money flow balance from investment operations, thousand roubles/ kW	1.98	0.23	0.94	1.42	1.43	3.04	1.32	2.74	5.99
34	Money flow balance from financial operations, thousand roubles/ kW	0.84	-0.70	0.02	0.08	0.09	1.89	0.83	0.94	4.34

Thus we propose the following set of indicators characterizing the investment potential of hydrogenating assets (table 6). This set of indicators is advisable to include in the integral rating of PAO “RusHydro” investment appeal. The proposed set of indicators cover the whole range of a power company operation and development: paying capacity, financial stability, profitability, business activity, and also takes into account the specific features of power engineering. Indicators calculation [7, 13, 14, 15] was accompanied with the quadratic coefficient of

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variation (table 6). The basis for separate indexes inclusion in the unified base of investment potential evaluation was *the minimal value of variation coefficient* (less than 0.33) on all the economical indexes.

Table 6.

A set of indicators characterizing the investment potential of power companies

№	**Indicator**	**Quadratic coefficient of variation**
Paying capacity coefficient		
1	Manoeuvrability coefficient of equity capital	0.13
2	Manoeuvrability coefficient of revolving assets	0.29
3	Circulating assets share in a company assets	0.17
4	Distributed stock share in revolving assets	0.03
5	Accounts receivable share in revolving assets	0.03
Financial stability coefficients		
5	Financial dependence coefficient	0.02
6	Financial dependence coefficient of capitalized sources	0.05
7	Financial independence coefficient of capitalized sources	0.01
8	Coefficient of outside funds structure	0.26
9	Level of financial leverage (balance)	0.07
10	Level of financial leverage (market)	0.33
11	Concentration of equity capital coefficient	0.02
12	Autonomy coefficient	0.02
13	Financial lever	0.14
14	Structure borrowed capital coefficient	0.26
Efficiency and profitability coefficients		

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15	Coefficient of profit generation	0.04
16	Assets profitability	0.05
17	Invested capital profitability	0.05
18	Equity capital profitability	0.03
19	Gross profitability of sold product	0.04
20	Operating profitability of sold product	0.15
21	Net profitability of sold product	0.15
22	Cost effectiveness	0.23
23	Equity common capital profitability	0.03
Business activity coefficients		
24	Resource productivity	0.012
25	Returns on assets	0.01
26	Funds turnover in accounts receivable (in circle)	0.33
Specific energy indicators (per 1kW of installed capacity)		
27	Fictitious assets	0.002
28	*Store*, thousand roubles/ kW	0.008
29	Gross profit, thousand roubles/ kW	0.29

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30	Profit on sales, thousand roubles/ kW	0.33
31	Profits from taking part in other organizations, thousand roubles/ kW	0.05
32	Interest obtainable, thousand roubles/ kW	0.04
33	Interest payable, thousand roubles/ kW	0.03
34	Profit tax, thousand roubles/ kW	0.02
35	Net profit, thousand roubles/ kW	0.31
36	Cumulative financial result of a time period, thousand roubles/ kW	0.31
37	Money flow balance from current operations, thousand roubles/ kW	0.23

It should be noted that the last block of indicators characterizes to a greater degree the potential for the development of energy companies. Estimation of specific energy indicators with account of the actual production of the stations will reflect the real possibilities of operating activities, and the difference between the potential and actual values will show the reserve capacities of energy companies.

Undoubtedly, an important indicator of the economic activity of energy companies is the cost of energy resources, however, within the framework of the study [13, 14, 15] this indicator has an extremely high quadratic coefficient of variation.

Conclusions

Thus, it is advisable to include the above indicators in the integral investment rating (Table 6), although combining all the indicators into a single integral rating is associated with certain difficulties. The relevant range used in the calculations does not allow to form a long-term forecast taking into account changing environmental factors. Therefore, at this stage, it is advisable to accumulate analytical data for the formation of ranges of values

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of the gradient scale of the power company. This is a necessary step in the formation of a set of management decisions on the investment policy of energy enterprises operating in a competitive electricity and a capacity market of Russia.

One should borne in mind that changes in the business environment in a competitive energy market occur fairly quickly, which, respectively, necessitates a systematic monitoring of the external environment. An advancing factor is also becoming increasingly important for the stable and reliable operation of the power company, and this necessitates the following actions:

- Determining competent strategic planning based on substantial strengthening of forecasting and analytical functions that are becoming an organic element of the modern investment mechanism for the sustainable development of energy companies;
- Improving the adaptation of the financial and investment management system to the company's accounting policies, which can only be achieved with the training and motivation of energy companies' personnel;
- Implementation of modern corporate information systems, without which prompt processing of financial information and making effective investment decisions becomes impossible.

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