

**Organizational-economic  
mechanism of management  
innovative development of  
economic entities**

**Collective monograph edited by  
M. Bezpatochnyi**

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Higher School of Social and Economic  
Przeworsk (Poland) 2019



**Mechanizm organizacyjno-  
ekonomiczny zarządzania  
innowacyjnym rozwojem  
podmiotów gospodarczych**

**Monografia zbiorowa  
pod redakcją naukową  
M. Bezpartochnego**

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The authors of the book have come to the conclusion that it is necessary to effectively use modern approaches the management of innovative development the economic entities in order to increase the efficiency of activity, to ensure competitiveness, to intensify innovation activity. Basic research focuses on assessing of the life cycle innovation, innovation ensuring of enterprises, diagnostics of financial ensuring for innovative development of enterprises, evaluation the regulation of investment-innovation processes. The research results have been implemented in the different models of management innovations in various sectors of the economy, developing and implementing innovative strategies for development entrepreneurship, improving production technologies and product quality, standardization and certification products. The results of the study can be used in decision-making at the level the economic entities in different areas of activity and organizational-legal forms of ownership, ministries and departments that promote of development the economic entities on an innovative basis. The results can also be used by students and young scientists in modern concepts and mechanisms for management of innovative development the economic entities in the context of efficient use the resource potential and improvement of innovation policy.

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<b>INTRODUCTION .....</b>	<b>10</b>
<b>Chapter 1</b>	
<b>THEORETICAL FOUNDATIONS MANAGEMENT INNOVATIVE DEVELOPMENT OF ECONOMIC ENTITIES .....</b>	<b>11</b>
<b>But T., Komar R., Solovikh Y.</b>	
Identification of financial determinants of economic development to regulate investment-innovation processes .....	11
<b>Hrynychshyn I., Bil M., Popadynets N., Leshchuh I., Patytska K.</b>	
Theoretic interpretation of the components of territorial communities' endogenous capacity .....	19
<b>Kozyk V., Lesyk L., Symak A., Ivanytska O.</b>	
Problems of the professionals training in economic specialties .....	31
<b>Makarenko P., Pilyavsky V.</b>	
Factors of market and public influence on the income of hired labor resource owners .....	42
<b>Pishenina T.</b>	
Innovative strategy for developing entrepreneurship as a resource of their competitiveness .....	54
<b>Sharova S.</b>	
Theoretical approaches to determining regions in the international economy .....	63
<b>Svyda I.</b>	
Management of development of depressed regions on the basis .....	72

**Chapter 2**  
**MECHANISMS MANAGEMENT THE INNOVATION PROCESS**  
**OF ECONOMIC ENTITIES ..... 82**

**Achkasova S.**

Preventing and counteraction corruption risks in introducing and implementing risk-based approach in financial monitoring system ..... 82

**Kantsedal N., Ponomarenko O.**

Accounting provision of innovations' lifecycle as management objects ..... 91

**Katkovav T., Hrytsenko M.**

Use of gravitational models for spatial systems studying ..... 103

**Kuzmin O., Krasnoshchokova K., Sobutska O., Kuzmenko O., Bezmertna V.**

Comprehensive assessment of the quality of the «pancakes», considering on the norms of the physiological needs of the average person ..... 114

**Satyr L., Novikova V., Zadorozhna R.**

Innovative ensuring of agricultural enterprises on principles of private-state partnership ..... 123

**Toporkova E.**

Strategic aspects of financial risk management of enterprises ..... 136

**Zaderey A., Pavlenko V., Babachenko M.**

System of motivation of the transport company's staff ..... 145

**Chapter 3**  
**FORMATION AND EFFECTIVE USE THE INNOVATION**  
**POTENTIAL OF ECONOMIC ENTITIES ..... 154**

**Druzhynina V., Davidiuk L., Lutsenko G.**

Possibilities of information technologies in the field of tourism ..... 154

<b>Fedulova L., Shmahlii O.</b>	
Development of the high-tech sector of Ukrainian industry: from industrialization to digitalization .....	164
<b>Lavriv I., Fediv R.</b>	
Directions of development and implementation of the Ukrainian export potential .....	175
<b>Mohylevska O.</b>	
Marketing potential of modern enterprise .....	185
<b>Siketina N.</b>	
Organizational and economic adaptation of network structures of the enterprise for the dynamic external environment .....	194
<b>Vlasenko I., Gyrych S.</b>	
Improvement of soybean oil production technology .....	203
<b>Chapter 4</b>	
<b>FINANCIAL ENSURING OF MANAGEMENT INNOVATIVE DEVELOPMENT OF ECONOMIC ENTITIES .....</b>	<b>212</b>
<b>Androsova E.</b>	
Creating corporate culture at machine-building enterprises of Ukraine as one of the aspects of implementing the strategy .....	212
<b>Gernego Iu.</b>	
Banking financing of social business competitive advantages in Ukraine .....	220
<b>Makarovykh V., Vyhivska I.</b>	
Development of the teaching methods of economic analysis of factoring business efficiency in risk conditions .....	228
<b>Stoliarchuk H., Khvostenko V., Novikova L.</b>	
Investment stability as a basis financial support of innovative development of enterprises .....	238

**Tereshchenko T.**

Forecasting the financial ensuring of development the insurance company on the basis of cost concept management by the insurer ..... 247

**Yevtushenko N., Palamarchuk O.**

Development of innovational potential of regional economy ..... 255

**Chapter 5**

**INNOVATIVE STRATEGY FOR DEVELOPMENT OF ECONOMIC ENTITIES AS A FACTOR OF THEIR COMPETITIVE ADVANTAGES ..... 264**

**Babayev V., Sukhonos M., Dymchenko O., Yesina V., Rudachenko O.**

Components of the economic entities potential by types of economic activities in the system of socio-economic development of regions ..... 264

**Bahorka M.**

Marketing strategy of ecologization as the main direction in the innovative activity of agrarian enterprises in Ukraine ..... 280

**Bezuhla L., Demchuk N.**

Development strategy of ecotourism enterprises as a factor of increasing their competitiveness ..... 289

**Bublyk M., Karpyak A., Rybytska O.**

Ratings of higher education institutions – competitive advantages in choosing innovative strategies for their development under international economic relations ..... 297

**Karpenko O., Turenko Ye., Karpenko H.**

Transfer of economic and legal research to low and non-waste technologies based on the implementation of a green economy ..... 312

**Kondratenko N., Novikova M., Gnatenko M.**

Methodical approach to determining the reserves of increasing efficiency innovative activity of industrial enterprise ..... 320

<b>Shpak O.</b>	
Innovation strategy for quality control of diesel fuel ecological class Evro-5 as a source of competitive advantages .....	334
<b>Chapter 6</b>	
<b>WORLD EXPERIENCE IN MANAGEMENT INNOVATIVE DEVELOPMENT OF ECONOMIC ENTITIES .....</b>	<b>343</b>
<b>Brych V., Tkach U.</b>	
Certification and standardization in the hospitality sphere .....	343
<b>Gunko V., Kravchenko O., Kuksa V., Boguslavskaya S.</b>	
Features of sharing economy development in modern conditions .....	354
<b>Kuranovic V.</b>	
China international logistics development of business and management .....	366
<b>Titarenko L.</b>	
State management of innovative development in foreign countries .....	374
<b>Yangol' A.</b>	
The assessment methodology of the level of integrated strategic performance of metallurgical enterprises based on worldwide experience in management of innovation development .....	383
<b>CONCLUSION .....</b>	<b>395</b>

## INTRODUCTION

Progressive institutional and structural transformations of the economy require intensive updating and provision of programs, plans and projects for the management of innovative development the economic entities, positive changes, significant improvement of the regulatory environment, creation of appropriate conditions for modernization of industries and enterprises on the basis of latest technologies. Providing innovative development the economic entities is impossible without reorganization and improvement of the theory and practice of development of management systems of these processes.

In order to ensure the development of economic entities on an innovative basis in modern conditions of activity the necessary foundation is to intensify innovation processes in all spheres of activity and to direct the efforts of all elements of the organizational structure to the implementation of the tasks. The effectiveness of innovative development the economic entities is determined by the ability of the management system to influence on all business processes of the enterprise and to coordinate its internal capabilities with the challenges of the environment in order to ensure competitiveness and strengthen market positions.

The purpose of writing this collective monograph is to substantiate theoretical-methodological foundations and development a management system of the development of economic entities in a globalizing environment, taking into account transformational changes in the international economic environment.

The object of the authors' research was the process of management the development the economic entities in conditions of resource constraints, the specifics and trends in the development of economic entities under the influence of factors of the internal and external environment, the generalization of world experience in the management of development the economic entities in order to improve efficiency of the formation and use of the resource potential and innovative activity the economic entities in various spheres of the national economy in conditions globalizing.

The subject of research were various processes of formation and effective use of innovative potential the economic entities; formation of organizational-economic mechanisms for management of innovative development the economic entities; use of credit-financial and investment instruments to stimulate innovative development the economic entities; improving of intellectual and personnel potential of innovative development the economic entities; consideration of practical aspects of innovation development management in different sectors of the economy.

## Chapter 1

# THEORETICAL FOUNDATIONS MANAGEMENT INNOVATIVE DEVELOPMENT OF ECONOMIC ENTITIES

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## IDENTIFICATION OF FINANCIAL DETERMINANTS OF ECONOMIC DEVELOPMENT TO REGULATE INVESTMENT- INNOVATION PROCESSES

In based on identification of significant financial determinants of the state’s economic development is the conceptual ideas of the Keynesian, neoclassical and institutional-evolutionary paradigms of the evolution of economic systems. The financial component of economic development is formed by a set of interrelated processes of capital accumulation and the conditions for its transformation into investment-innovative resources. Accordingly, the significant financial determinants of economic development are:

- resource determinant (sufficient financial potential of the real sector of the economy);
- transformational determinants (financial market efficiency);

➤ institutional determinant (debugged the financial mechanism for regulating investment-innovation processes).

The highlighted significant determinants are closely interrelated and interdependent. An efficiently functioning financial market, transforming national savings into innovative-investment resources, allows to increase the financial potential of the real sector of the economy. The growth of the latter, in turn, provides for increasing the tax base and budget revenues, which increase the financial capacity of the state and contribute to implementation of the financial mechanism for regulating investment-innovation processes that, stimulate the qualitative renewal and increase the financial potential of the real sector of the economy [1].

Analysis of the financial potential of the real sector of the economy shows that in countries with developed markets, at the expense of the company's own sources is financed 70–80% of the need for investment resources; in developing countries, the share of own funds in investment financing sources is significantly lower.

This is due to the deterioration of the conditions for use by enterprises of financial market resources in the post-crisis period. Risks of deterioration on the financial situation of enterprises in the context of slowing economic growth and uncertainty of the economic environment against the background of deteriorating geopolitical situation, lower profits and levels of profitability reduce investment development opportunities.

An analysis of the own financial potential of investing in the real sector testifies that it is insufficient for sustainable development on the basis of innovation. In addition, enterprises have insufficient motivation to invest in fixed capital, in conditions where the level of profitability in financial markets exceeds their level of profitability. It is not by chance that the growth of the investment needs of the real sector is accompanied by the growth of non-financial investments of enterprises.

In this situation, being actualized the need for increased attention to development of financial markets and the effectiveness of their functioning. The results of many studies, including using econometric models, have shown that the development of financial markets has a significant direct positive impact on long-term economic growth, and the mechanism of such influence is an increase in investment in innovation and an increase in the overall productivity of production factors [2]. In recent years, have become widespread the models reflecting the impact of the financial market on economic growth

through stimulating innovation and increasing investment in research and development [3].

The efficiency of function the financial market reflects its focus on achieving a certain result, embodying the functional purpose of this market, which, in our opinion, is the financial-investment ensuring for social reproduction on an innovative basis. On the efficiency of the financial market can, in particular, be judged by such indicators as the share of its resources in investments in fixed assets, as well as the ratio of gross savings and investments in fixed assets.

So, at present, the development of market relations is not possible without a financial market. The financial market is a special sector that has features characteristic of the market in general, but at the same time it has specific features. The financial market has taken a special place in the general system of market relations and in the system of market regulation of the economy. Thanks to him, capital is distributed among various sectors of the economy, such as industry, scientific-technical sphere, education, etc. The development of this sector of the economy can have a significant impact on the dynamics of world GDP.

The development of the financial sector is considered as one of the instruments for stimulating intensive economic growth, especially in the context of a shortage of natural resources or high prices on them on the world market. However, this sector of the economy is influenced by a number of factors, without settling which financial, and therefore economic development is absent or limited.

The main problems hindering the development of the national financial system, according to L. Zingales and R. Rajan (Zingales, Rajan, 2004) [2]:

1. The greed and passivity of the government. For the function the market is necessary an infrastructure and its presence is mainly beneficial for each market participant. However, no company will bear the costs of developing such an infrastructure. Therefore, the state most suitable for this purpose should not be passive. However, the opportunity of availability form an infrastructure does not guarantee that the state will perform this function.

As Zingales and Rajan write, “even in the most democratic societies, states do not always fulfill the will of the people or act in their interests: the same problems associated with coordinating actions and the desire to profit at someone else’s expense, which require organized intervention, impede the direction of this intervention to achieving the public good”.

But even if the state respects property rights, there may be another

obstacle to financial development. "Small organized groups can influence government policies in their own interests and at the expense of society".

2. The threat to large industrial enterprises and influential financiers. Such companies with a stable position during a period of stability do not need a financially developed system. "They can finance new projects from the income from an existing business ... without access to the external capital market". Even when external financing is needed, they can offer their reputation or their existing assets as collateral or guarantees.

In addition, the development of the financial system creates competition, and competition reduces the profits of large industrial market participants. For financial companies, is important "the ability to monopolize the provision of client finance so that its threat to stop lending has weight". Thus, the client loses the opportunity to contact another lender, since the client's credit history is known only to his current financier, which means "any other financier to whom a client will apply will not be in a hurry to provide a loan" due to the high degree of risk associated with this client.

The development of the financial sector also requires greater transparency in business, which impedes the use of personal connections and contacts.

3. The significant role of personal relationships in the implementation of funding. "In the absence of full disclosure of information and proper execution of contracts, any funding that is not secured by a pledge is based on personal connections". Therefore, for influential financiers, the development of the financial sector means not so much new opportunities to expand their activities, but a threat to the sources of income they receive through running a business through various informal contacts.

The financier "ensures the payment of the debt not through the judicial system, but through threats and deception, using many informal levers of power acquired by him over the years." Therefore, his relationships with managers, other lenders, suppliers, and politicians who have influence over the company are of primary importance for the ability to provide loans.

4. Lack of education or passivity of the majority of the population in matters of finance and law. Large industrial enterprises and financiers are able to influence policy, to prevent them from establishing barriers to financial development remains the prerogative of large groups of the

population. However, “the majority of the population does not have enough strength or knowledge to get out of a state of calm satisfaction”, and potential new players are “few, poor and disorganized”.

Since financial development has a significant impact on economic growth, many scientists-economists are asking questions about the prerequisites for the development of the financial sector.

L. Guiso, P. Sapienza and L. Zingales (Guiso, Sapienza, Zingales) in 2000 [4] analyzed the role of social capital in the financial development of Italy. In their work, they used fluctuations indicators in domestic country to identify the effect of trust on the use and availability of financial contracts, namely, on the distribution of household portfolios, the use of checks, the availability of loans to households and firms, the role of informal lending and the ownership structure of firms. Also used such the indicators as law enforcement quality and GDP per capita. As a result of the research, it was found that households in regions with a higher level of trust invest mainly in securities rather than cash. Firms showed a similar result: in regions with a higher level of trust, companies have more shareholders, as well as more chances to get a loan.

T. Beck and R. Levine (Beck, Levine) in 2003 [5] conducted a theoretical research to identify the importance of legal institutions in shaping the functioning of financial systems. As a result of the observation, historically determined differences were revealed in the legal traditions of the influence of national approaches to the protection of private property rights, law enforcement in concluding contracts, and the adoption of laws on the protection of investors' rights. Moreover, the resulting legal institutions form the willingness of investors to invest in companies, ensure the effectiveness of corporate governance, as well as the degree of development of the financial market as a whole.

In their research, Beck and Levine based on indices developed by R. La Porta, F. Lopez de Silanes, A. Shleifer and R. Vishny (LLSV, 1997, 1998) [6]. In turn, the LLSV has developed indicators of the legal situation for 49 countries. The authors also conducted a correlation analysis between these indices and GNI per capita to find out whether a higher income level of the population contributes to a higher level of legal protection of investors, but no correlation was found. The rights of shareholders, the rights of creditors, the power of the Supreme Court and case law were used as legal protection indices.

Shareholder rights – an index formed when adding 1 in cases where:

➤ the country allows shareholders to vote on company issues by mail;

- shareholders are not required to deposit their shares before the date of the general meeting of shareholders;
- allowed cumulative voting or proportional representation of minority shareholders on the board of directors;
- the mechanism of oppression of minority shareholders is adopted in the legislation;
- the minimum share of the authorized capital, which gives the shareholder the right to initiate an extraordinary meeting of shareholders, is less than the sample median (10%);
- shareholders have preemptive rights that can only be revoked by a shareholder vote.

Higher index values indicate more minority shareholder rights so that majority shareholders have less leeway to exploit minority shareholders.

Creditor rights – an index formed when adding 1 in cases where:

- when submitting an application for reorganization, the company must obtain the consent of creditors or minimum dividends;
- secured creditors can receive protection after approval of a reorganization petition (without automatic saving of positions within assets);
- secured creditors have an advantage in the distribution of income from the sale of assets of bankrupt companies;
- the borrower does not reserve the right to manage the property while waiting for a decision on reorganization.

Higher index values indicate more lender rights.

A dummy variable is adopted as a political channel – the power of the Supreme Court. If judges have life tenure and power in administrative cases, this variable takes the value 1, and otherwise – 0. As a channel of adaptability is adopted case law – a dummy variable that indicates whether judicial decisions are a source of law.

Empirical research M.D. Chinn and H. Ito (Chinn, Ito, 2005) [7] showed that the level of financial development is affected by openness of the economy, as well as legal and institutional development. They used panel data for 108 countries over the 20 years from 1980 to 2000 to measure a number of indicators of financial development, to find out whether financial openness can lead to the development of a financial market, taking into account legal and institutional development, and whether openness in the consumer goods market is a condition for financial openness. The authors also set a goal to find out whether a well-developed banking sector can be the cause of financial liberalization and lead to the development of the stock market, and also

complement or interchange the development of the banking sector and the stock market.

The following were taken as indicators of the development of the financial market: lending to the private sector, stock market capitalization, the total volume of shares traded on the market, and the stock market turnover ratio (a measure of market activity).

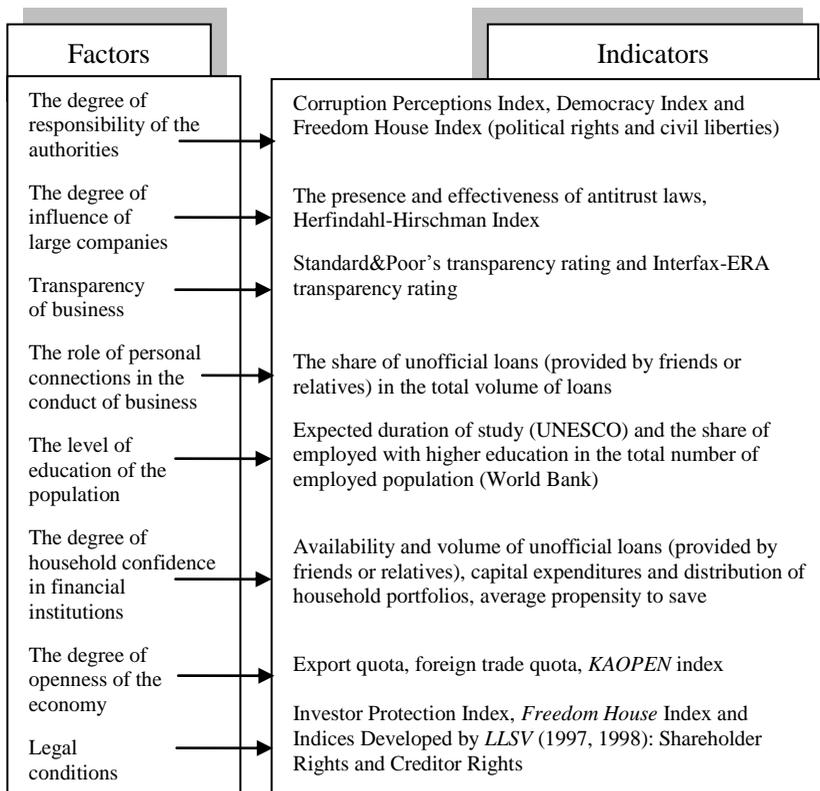
To measure the degree of openness of the capital account, the authors, using data from the IMF's Annual Report on Currency Modes and Currency Restrictions, developed the *KAOPEN* index, based on binary dummy variables that systematize a table of restrictions on cross-border financial transactions. Legal and institutional development is characterized by indicators such as the level of corruption, the level of law and order, and the quality of the bureaucratic system, the level of protection of creditors' rights, the indicator of the effectiveness of law enforcement in concluding contracts, the level of protection of shareholders' rights, and the indicator of the completeness of company reports.

As a result, the authors revealed that financial development depends on the openness of the capital account, both with and without legal development. At the same time, the development of specific financial institutions does not fulfill this role. Thus, the overall level of legal development is more important than the level of development of specific financial institutions. The hypothesis was confirmed that the openness of the consumer goods market is a prerequisite for financial openness, and hence financial development. It is revealed that the development of the banking sector is a necessary condition for the development of stock markets, while in less developed countries the interaction of the banking and stock markets works in both directions.

Thus, based on the above, it is possible to identify factors that can influence the level of development of the financial sector. Correspondence of factors and indicators evaluating these factors is presented on Figure 1.1.

The above factors are primarily subjective character, and therefore it is difficult to quantify them. However, for research, scientists develop indices, use ratings from analytical and news agencies.

So, the analysis of the key financial determinants of the state's economic development is necessary to use modern concepts and strategies, i.e. an integrated approach with the use of financial instruments of economic regulation, ensuring their adjustment to the sustainable development of the economy and the social sphere.



**Figure 1.1 Assessment of factors affecting the level of development of the financial sector**

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**THEORETIC  
INTERPRETATION OF  
THE COMPONENTS OF  
TERRITORIAL  
COMMUNITIES’  
ENDOGENOUS  
CAPACITY**

The most essential task in current conditions of reforming of local governance and authorities’ territorial organization is to develop capable territorial communities able to solve social issues that belong to their competence and to meet the needs of population. Moreover, the fact that

territorial communities are developing unevenly brings about the need for comprehensive analysis of their endogenous capacity: natural resource wealth of a territory, production, business and infrastructure complex and its development level, social infrastructure and the residents' living standards, ecological situation as well as financial and investment opportunities of territorial communities.

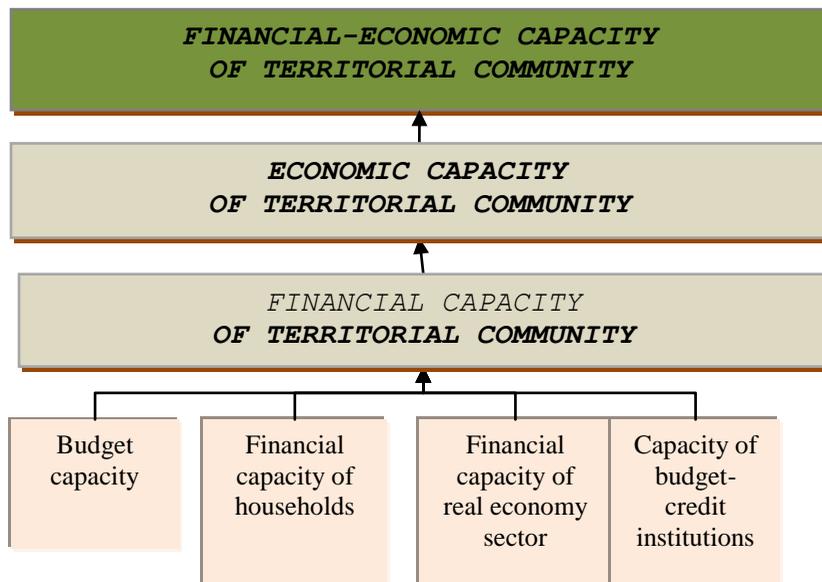
The abovementioned highlights the need for scientific research in terms of comprehensive examination of territorial communities' endogenous capacity.

The previous research dwelled on the nature of the notion "capacity" and its dissemination in printed literature. Main approaches to understanding of capacity were generalized and its features were outlined (subjective affiliation, phasal nature, dynamism, structure, growth, capitalization, evaluability). Capacity types were classified by the criteria of object, entity, functioning phase, forming and activity direction and condition of use. Structural-logical scheme of a territorial community's endogenous capacity was developed [1, p. 268]. Theoretical generalizations contributed to revealing the following components of territorial communities' endogenous capacity: financial-economic, human, investment, productive, infrastructural and natural resources capacities.

*Financial-economic capacity* of a territorial community is the set of interrelated components of financial and economic nature. On one hand, taking into account the importance of financial abilities to meet the material needs, financial capacity is the basis for the development of a community's economic opportunities, i.e. its economic capacity. On the other hand, "as the result of productive activity and management, the consequences of such activity are gaining value and secure creation of new value. Therefore, the components of economic capacity are the ground for forming of financial capacity" [2, p. 157].

Most economists argue that financial capacity of a territory functions as the component of economic capacity. However, the importance of financial opportunities for meeting the material needs allows claiming the existence of financial capacity as the basis for the development of economic opportunities of a territory, i.e. its economic capacity. "A set of functional relations between each element of economic capacity of a territorial unit is the factor of forming of financial resources or recognition of their value, which provides sustainable socio-economic development of administrative-territorial unit in the system of dynamic development" [3, p. 87]. Each component of financial-economic

capacity represents the system within which financial resources are being formed (Figure 1.2).



**Figure 1.2 The place of financial capacity as the component of financial-economic capacity of a territorial community**

Defining the way to interpret the concept is essential for the research of the nature of “financial capacity” and for defining the capacities of its forming, use and increase. Currently there isn’t any common vector for the research of financial capacity as an economic category, same as the analysis of scientific approaches to interpretation of the concept by various economists have not brought about the unity of their differentiation. Thus, N. Trusova outlines three approaches to defining of financial capacity: resources-based, complex and approach based on the capability viewpoint [4]. T. Nazarova divides definition in four groups and names resources-based and complex approaches as well as functional approach and the one based on efficiency of financial results [5].

*Budget capacity of a territorial community.* Current stage of territorial communities’ development in Ukraine is marked by the changes related to the processes of administrative and territorial structure reforming in Ukraine and new approaches to organization of

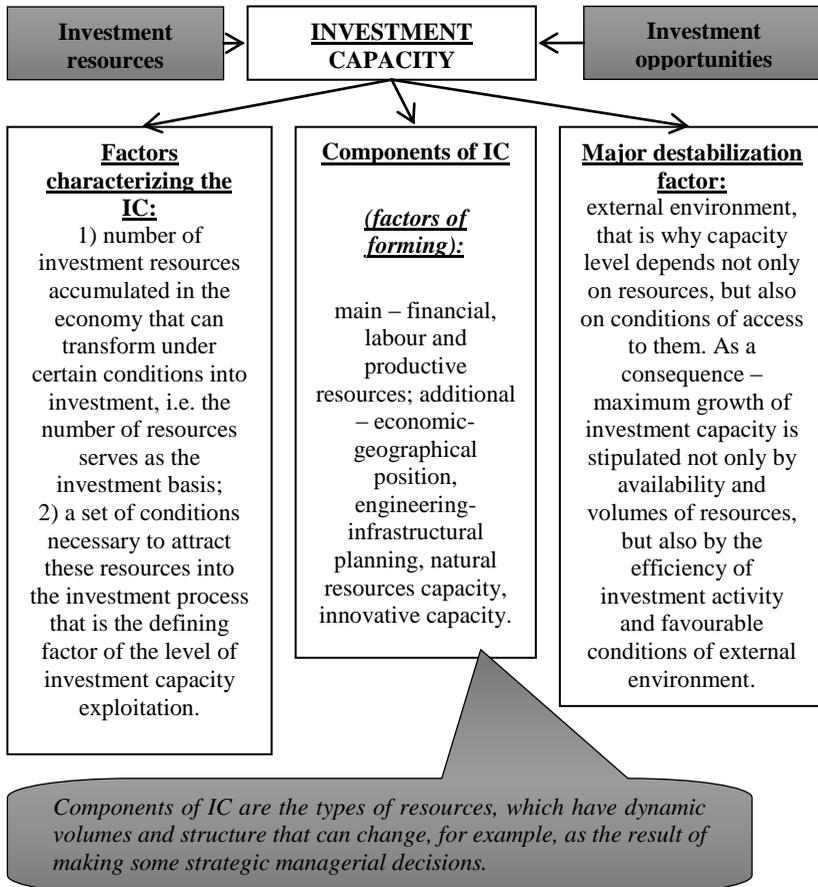
budget provision of territorial communities' functioning. Forming of financial resources of territorial communities takes place in conditions of financial decentralization based on qualitatively new approaches. Budget capacity of a territorial community has an important place in these processes.

It is worth mentioning that there isn't any single scientific ground for interpretation of the "budget capacity" category. Thus, some scientists dwell on the forming of budget resources (Zhebchuk R.L. [6], Kruk O.M. [7], etc.), the others deem an opportunity to increase budget resources to be the major feature (Balatskyi O.Y., Boyko O.A. [8]). It should be noted that some authors equate the concepts of "budget capacity" and "financial capacity". However, we should agree with the opinion of Storonyanska I.Z and Kozoriz M.A. that financial capacity includes budget capacity in addition to the capacity of households, capacity of enterprises and capacity of financial-credit institutions [9]. Therefore, financial capacity of territorial communities is the broader concept, what has been mentioned earlier.

Budget capacity of a community in its narrow interpretation constitutes a set of available (own and attracted) and perspective possible financial resources of budget. However, taking into account that budget capacity concerns the use of budget resources, it is worth developing a broader definition. Therefore, in our opinion, budget capacity of a territorial community is a set of available (own and attracted) budget resources additionally released due to efficient use and possible financial resources of the budget of the territorial community.

Therefore, availability of a certain budget capacity in a community in terms of maintenance of the territorial community's capability manifests itself not only in forming of financial resources, but also in their efficient use that is the basis of maintenance of territorial communities' capacity. Moreover, it is important to take into account possible perspective financial resources to increase financial foundation of the budget.

Endogenous *investment capacity* takes an important place in socio-economic development of a territorial community (Figure 1.3). There are various opinions regarding the definition of the concept "investment capacity", factors of its forming and evaluation methods. After examining of available scientific literature devoted to the issue of a region's investment capacity, we have outlined three major approaches to interpretation of "investment capacity":



**Figure 1.3 Main components that define the nature of investment capacity**

1) as a set of objective preconditions (opportunities) to conduct investment activity at a certain territory (A. Zahorodniy, H. Voznyuk [10], M. Pitylych, K. Mashiko, K. Kudak [11], etc.;

2) as a set of investment resources and production factors necessary to conduct investment activity (F. Tkachyk [12], S. Ivanov [13], etc.);

3) as an aggregate opportunity to form internal and attract external investment based on natural, economic and social conditions of a certain territory (Z. Herasymchuk, V. Tkachuk [14], Y. Kobushko [15], etc.).

Having analyzed the generalized scientific approaches to understanding of the nature of “investment capacity” category, we deem that ***endogenous investment capacity of a territorial community*** is a set of objective preconditions (natural, economic and social) and internal available resources (financial, labour and productive) necessary to conduct investment activity with the view to achieve sustainable development of a territorial community.

*Natural resources capacity* is another important element of sustainable socio-economic development. The nature of the concept “natural resources capacity” can be examined according to various approaches. Some understand resources only as a set of natural resources (that can include natural conditions – relief, climate), but in this case natural resources capacity is seen not only as a set of material natural resources that participate in production process as the means of production, but as the one comprising other resources of an ecosystem to meet various human needs).

From this viewpoint, it would seem that natural resources capacity and natural resources are two identical concepts that encompass the same elements and factors. However, one should take into account the major provision presented in the range of works on the need for complex approach in terms of evaluation of the use of natural resources capacity as far as territorial combination of natural resources in a region is not the aggregate of different resources and separate natural factors. It is rather a single natural complex with interrelated elements. Simple summing of the resources of a territory does not take into account a synergy effect that emerges as the result of the use of the whole aggregate of certain combinations of territories’ resources [16].

Thus, I. Shkuratova defines natural resources capacity as an ability of natural systems to provide the quality and quantity of natural resources necessary for economic development under the formed economic conditions while preserving their natural condition [16]. According to M. Reymers, natural resources capacity is an ability of ecosystems to provide products necessary for people or to do some useful work for them in some specific historical period without any essential losses for ecosystems as well as theoretically marginal number of natural resources that can be used by humanity without any violation of society existence and development conditions [17]. B. Danylyshyn, V. Mishchenko and S. Dorohuntsov understand natural resources capacity as a set of natural resources and natural conditions in certain geographical boundaries that provides meeting of economic, ecological,

social, cultural-recreational and aesthetic needs [18]. V. Rudenko suggests understanding of natural resources capacity of a territory (waters) as “an aggregate productivity of natural resources, means of production and articles of consumption expressed in their social consumption value” [19]. V. Klochkov recognizes such a capacity as a set of resources located within the defined territory that is used in domestic economy at the current level of production forces development [20]. I. Derevyako defines natural resources capacity as a set of natural resources that can contribute to the increased national wealth for a long period of time and those reproduction of which is of objective necessity [21]. P. Zhuk interprets natural resources capacity as an ability of natural resources to meet the needs of the process of production of material, cultural and spiritual benefits in the form of goods and services to provide human living activity and welfare [22].

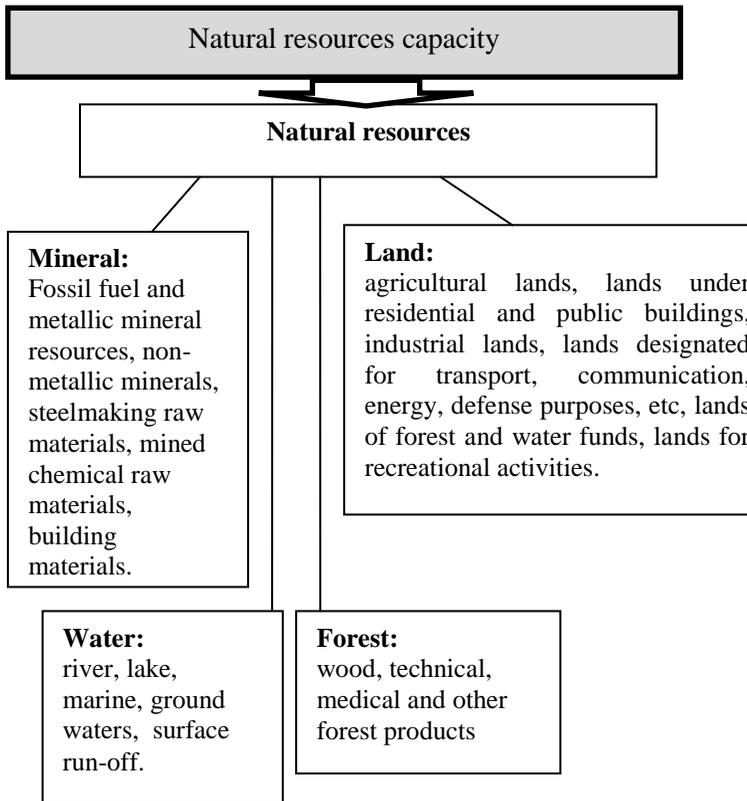
Having outlined the suggested interpretations of natural resources capacity, we think that the composition of natural resources capacity of territorial communities should be examined across the types of natural resources, dividing the territories they are located at according to legal status (lands of public or civil (municipal) ownership), functional needs, volumes of proven reserves of mineral deposits, licenses for use, etc. Environmentally dangerous territories or those subject to negative impact in the future should be defined separately.

Therefore, natural resources capacity of a consolidated territorial community (CTC) is an aggregate productivity of natural resources, means of production and articles of consumption expressed in their social consumption value at a certain territory in some period. In general composition, natural resources capacity is divided into the following resources groups: mineral, water, land and forest resources (Figure 1.4).

*Human* capacity is no less important component of a community's endogenous capacity. *Human capacity content* has a broad functional meaning. In our opinion, it represents a set of physiological, socio-psychological, intellectual-labour, socio-stratification and ethnocultural abilities of a society that can be used now or in the nearest future and implemented in an environment that secures their development (reproduction, accumulation, qualitative exploitation).

Human capacity shows the past, i.e. it is a set of properties accumulated by human economic system in the process of its establishment that stipulates its opportunities of functioning and development [23, p. 277].

Human capacity encompasses modern scientific views over the



**Figure 1.4 Components of natural resources capacity of a territorial community**

abilities of a person and a state from the viewpoint of their approaching the harmonious development [24, p. 15]. It characterizes the new stage of human development, when intellectual, social, psychological and cultural values play an increasing role in addition to productive opportunities [25, p. 188].

Integral understanding of human capacity is not possible without its relation to human capital and human development (Figure 1.4). Human capital is formed as the result of human capacity capitalization. Human capacity capitalization is related to all its components: physiological, expressing the health condition – physical and psychical; psychological, expressing personal features acquired by a person – organization, resilience, morality, adaptivity, activity, etc.; intellectual, expressing the genetically engineered human abilities, level of their development and

use; education-qualification, expressing the level of received (lost) knowledge and skills; social, expressing new social contacts (symbolic field of relations); cultural, expressing the adoption and preserving of values, norms and traditions.

Therefore, human capacity is a powerful factor of a territorial community's capacity. Efficient use of human capacity provides human development as a consistent improvement of environment and human activity.

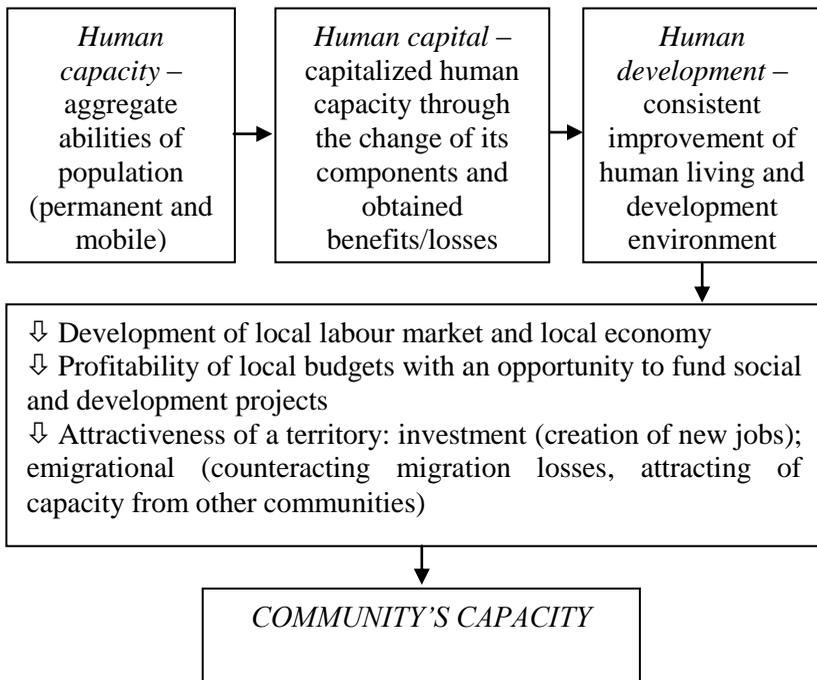
Thus, endogenous capacity of a territorial community as socio-economic category has its own hierarchic structure and component basis. Their forming and implementation takes place under the impact of financial-economic, social, political and organizational-institutional conditions as well as determinants of internal and external environment.

Therefore, the conducted research contributed to defining and theoretical explanation of main components of a territorial community's endogenous capacity:

1. The authors substantiate the scientific approach to definition of financial-economic capacity of a territorial community, which is interpreted as an additive sum of its budget capacity, financial-economic capacity of economic entities (located or operating at the territory of a community), households, extrabudgetary funds and level of their cooperation. Budget capacity as an important component of financial-economic capacity is proven to be characterized by a set of available (own and attracted) budget resources additionally released due to efficient use and possible financial resources of the budget of the territorial community.

2. The paper systemizes approaches to definition of the nature of investment capacity of territorial communities and suggests understanding of endogenous investment capacity of a consolidated territorial community as a set of objective preconditions (natural, economic and social) and internal available resources (financial, labour and productive) necessary to conduct investment activity with the view to achieve sustainable development of a territorial community.

3. The nature of natural resources capacity is defined as an aggregate productivity of natural resources, means of production and articles of consumption expressed in their social consumption value at a certain territory in some period. The authors argue that natural resources capacity of a territorial community should be considered across the types of natural resources in accordance with legal status, functional use, volumes of proven reserves and licenses for use, etc.



**Figure 1.5 Role of human capacity in securing the community's capacity**

4. Human capacity of a territorial community is structured by an aggregate of physiological, socio-psychological, intellectual-labour, socio-stratification and ethnocultural abilities of a society that can be used in the nearest future and implemented in an environment that secures their development.

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**PROBLEMS OF  
THE  
PROFESSIONALS  
TRAINING IN  
ECONOMIC  
SPECIALTIES**

Integration of Ukraine into the European and world economic space requires specialists of various professions capable of working in the real economics sector using modern technologies and the corresponding organization of their production. Among them there should be professionals of various economic specialties, trained at HEE according to modern approaches to understanding the essence of economic transformations, knowledge and skills to form and implement the economic policy of the state. This should be the intellectual elite of the new generation, which, according to prof. Shyriayeva L.V. [5] is able to combine high professional competence with a broad humanitarian erudition. Implementation of such a plan is possible only if the national education meets the requirements of the European Higher Education Area. This is expected due to the implementation of the Law of Ukraine "On Higher Education", in which, based on the principles of the Bologna Process, goals are set as well as instruments to achieve its current level are indicated.

The question of the essence of higher education and the prospects for its development through the implementation of the Law, teaching methods and education quality management were the subject of many scholars research, in particular: Luhovyi V.I., Zhuk L.V., Rashkevych

Yu.M., Talanova Zh., Yastrubskiy M.Ya., were discussed by the participants of the XIII International scientific and practical conference "Higher Education of Ukraine in the Context of Integration into the European Educational Area" (November 22-25, 2018, Kyiv), the VII International Scientific and Practical Conference "The effectiveness of organizational and economic mechanism of higher education innovative development" (2017, Kyiv).

National scholars best practices and recent legislative acts adopted in the last years have substantially changed the approaches to education in Ukraine, made it more interesting and attractive for the obtaining. At the same time, the adopted legislation outlines the general tendencies and approaches in higher education obtaining and is not able to determine absolutely all the nuances of its obtaining and practical application, which is largely determined by the situation in the external environment, the level of economic development, etc. Actually, the uncertainty of practical application at a certain point of time often becomes an obstacle to the obtaining of promising future specialties. At the moment, this also is related with the economic specialties. Undoubtedly, for the effective work, any enterprise should apply economically justified decisions, carry out operational and strategic planning of activities, etc. These enterprises which do not do this work without a perspective.

#### ***Formulation of the problem.***

In the current classifier of professions [1] there are positions of economic direction of different classification levels, which are demanded by the Ukrainian labor market. At the same time, the profession and position of an economist at the enterprises of the real sector of the Ukrainian economics is unjustifiably forgotten. Although, for many years the vast majority of HEEs have been training specialists of various qualification levels in the specialty 051 "Economics" (specialty "Business Economics"). There is no planning-economic department at most Ukrainian enterprises, especially at medium-sized ones and those created during the years of independence [2]. The positions of the economic direction are replaced by managerial specialties, in particular, financial manager, financial analyst, etc. To a large extent, this is due to the understanding of the concepts of «enterprise economics» and «enterprise management» in Ukraine, while the standards of the curriculum of the specialty "Enterprise Economics" were directed more towards the economic substantiation of managerial decisions. This approach was adopted after the training of engineers-economists in Soviet times, when the training of managers was not

carried out, and managerial personnel for enterprises were prepared in the context of branch-oriented economic specialties.

Formation and development of the post-industrial society caused changes in the labor market with the increasing need for managerial professions. But the need for economists for enterprises remains significant. They are entrusted with the tasks of economic support providing for effective activity, competitiveness of enterprises, etc., in accordance with the requirements of the qualification characteristics of a professional.

The purpose of the article is to highlight the views on the professionals training in economic specialties and taking into account many years of authors experience and real possibilities of higher educational establishments. The problem of professionals training of any specialties can be considered through the answers to the questions: among whom should we choose to train; for whom should we train; how should we train? The answer to the first question is to a large extent conditioned by the current situation on the educational services market, where: higher education has become massive (growth of the number of people who want to obtain higher education); significant changes happen in the approaches to education in general and higher education due to changes in domestic legislation; the European Higher Education Area becomes an indicator of the quality assurance in education; the market for educational services and the labor market are becoming increasingly interdependent; deterioration of the quality of enrollees traineeship; increase schools graduates leaving for study abroad; the advantage of "large" HEEs; specific academic mobility – obtaining of a second diploma abroad.

The growth of the number of people who want to obtain a higher education has a stable tendency in the late 90-s of the last century and the first years of this century. At that time, a sharp decline in production caused a collapse on the labor market and the fall in the prestige of vocational education led to the emergence of a significant number of unoccupied school graduates. This in turn led to the emergence of a large number of higher education institutions willing to provide educational services for a relatively small fee. Thus, gaining higher education has become prestigious, and access to education even at the best universities was provided not to the best students. Especially popular were the humanities and economic directions of education, where, for successful study, fundamental mathematical preparation was not particularly needed.

In particular, this is confirmed by the statistics of admission to Lviv Polytechnic (Table 1.1). So, if in 2016 more than 39 thousand of applications were submitted on 57 specialties, then more than 5,700 people submitted economic applications and management applications.

*Table 1.1*

**The dynamics of the submitted applications and admission to the specialties "Economics" and "Management"**

Indicator, people	2015	2016	2017	2018
Submitted applications	6916	5747	4187	4217
Enrolled for the study	1694	1471	1340	1354

At the same time, the dynamics of the total number of applications for the specialty “Economics” (specialization "economics of the enterprise") confirms the tendency to decrease: in 2013 – 1020 people; 2015 – 990 people; 2016 – 928 people; 2017 – 703 people, 2018 – 617 people.

A decline in the number of applications provided during the last year, as shown by studies, is due to a decline in the number of schools graduates, an increase in the prestige of other specialties, especially humanitarian and IT trends, as well as an increase in the number of graduates who go to study abroad at higher educational establishments, especially in Poland, Slovakia and the Czech Republic. At the same time, the best graduates of schools usually leave abroad. This creates problems for recruiting practically at all educational institutions, and only prestigious domestic universities do not have particular problems.

The introduction of the system of entry according to priorities (from 2016-2017 academic years) created the problems of the "small" HEEs and showed the advantages of the "large" HEEs. The data of the enrolled ones for the 1<sup>st</sup> year of the bachelor's degree in the Lviv region confirmed the stability of the enrollment for economic specialties for Lviv Polytechnic National University and Ivan Franko National University of Lviv. In 2016, 521 and 506 people respectively, were enrolled for study in these specialties. At the same time, only 555 people were enrolled for study at the 9 other listed HEEs of Lviv region.

In this situation, the problem lies in the training of professionals-economists for most of the former sectoral HEEs. To date, a paradoxical situation has emerged in Ukraine, when the number of places for the employment of HEEs economic specialties graduates decreases, and number of those who want to study in such specialties – is growing. In addition, the number of Ukrainian schools graduates who go abroad for

the acquisition of economic specialties as well as graduates of Bachelor's degree, who go to obtain further education even at the not most prestigious educational institutions, mostly among our closest neighbors, is increasing.

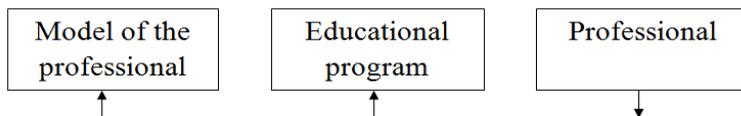
In most cases, the reason for leaving abroad for education is the possibility of passing internships and training at modern enterprises and a further guaranteed employment after graduation from special programs. At the same time, not the best level higher educational institution is often chosen, but with affordable price policy, which in most cases is commensurate with the domestic one.

Another reason for leaving for studying abroad is very popular today the so-called second diploma obtaining, especially in economic specialties. The best students of our universities take part in these programs, which are carried out by partner educational institutions on the basis of the relevant agreements. In practice, this completes in the diploma obtaining from a foreign institution and employment in a country of study. In this way, we contribute to the future of our nation legal transportation abroad. The strengthening of these tendencies is facilitated by the policy of foreign educational institutions providing free education, the creation of preferential conditions, etc.

Concerning new Law of Ukraine "On Higher Education", the questions "For whom to train" and "How to train" are interrelated. The answer to these questions depends on the situation on the labor market, the characteristics of which currently include the following: there is certified specialists overload; increase in the percentage of temporary posts (for the duration of the project, etc.); positions of economic direction which are replaced by managerial ones.

The presence in the labor market of a large number of unclaimed certified professionals-economists is caused by the reasons that have already been discussed. This is the availability of higher education, and job cuts, and the optimization of enterprises organizational structures, oriented to foreign standards, where there are no positions of an economist, etc. Before the graduates of HEEs there are problems with the first place of work according to the specialty or the search for a place of work outside of the profession. According to employers, successful job placement is facilitated by readiness for work, proper self-esteem and availability of business communication skills of the graduate. These qualities, in their opinion, are better formulated in leading higher educational establishments with a proper educational and material base, internship bases and modern methods of the professionals training.

Therefore, as the research shows, low-skilled professionals and graduates from non-prestigious educational establishments with a low level of training are left without work, and graduates who have successfully studied, are self-confident, speak foreign languages, have passed internships during training, etc. without any problems occupy positions according to the acquired specialty even in leading companies. The training system of a professional proposed by the Law should fundamentally change the situation with the employment of HEEs graduates (Figure 1.6).



**Figure 1.6 System of the professional training**

At the input of the system there should be a model of a professional, offered by the labor market through employers and the necessary competencies.

The educational program, through the results of training, taking into account the proposed competencies, should ensure the release of the professional needed at the labor market who will be provided with a workplace by the employer. Thus, in this system, the most important role in the formation of a professional belongs to the employers who must set a model of a professional at the entrance and control his/her training quality at the exit. And they have to set a tone in shaping state standards. And, in general, do we need these standards? According to our opinion, the absence of state standards would allow educational establishments to formulate educational programs on their own and to present their vision of a professional taking into account the needs of the regional labor market. This is favorable to the formation of competition between graduates of different HEEs of one specialty, and their choice will depend on employers.

What is the most appreciated by employers and for what skills are they ready to give the first job? According to European employers, the chances for the first job obtaining depend on [4]: skills that characterize suitability for employment – 78%; positive attitude to work – 72%; relevant practical experience (production internship) – 54%; direction of the obtained education and qualification – 41%; the level of success at the higher educational establishment – 28%; the title (prestige) of a graduated educational establishment – 8%.

That is, in the first positions there are those features of graduates, which mainly depend on them personally and can be acquired by them at the leading national universities.

The European universities graduates point out the following factors that increase the chances for employment [4]: experience for contacts with the professional environment – 25%; intellectual capital – 16%; grades level – 13%; cultural development level – 13%; higher education – 11%; driver's license – 11%; professional work experience – 9%. Among the factors, characteristics related to general competences and graduates mobility are of greater value. Interesting are the survey of teachers, graduates and students of European universities (Table 1.2) [4].

*Table 1.2*

**Ranking of general competencies by teachers, graduates and students of European universities**

Competence	Teach.	Grad.	Stud.	Comb.
Ability to the analyzis and synthesis	2	1	3	1
Ability to apply knowledge in practice	5	3	2	3
Basic general knowledge	1	12	12	12
Acquisition of basic knowledge fundamentals in profession	8	11	14	13
Communication in the native language	9	7	7	5
Knowledge of the other language	15	14	15	15
Elementary computer skills	16	4	10	8
Reasearch skills and abilities	11	15	17	16
Learning ability	3	2	1	2
The ability to critique and self-criticism	6	10	9	10
Ability to adapt to the new situations	7	5	4	4
Ability to create new ideas (creativity)	4	9	6	7
Decisions making	12	8	8	9
Interpersonal skills	14	6	5	6
Ability to work in the interdisciplinary team	10	13	11	11
Positive attitude towards disparity and other cultures	17	17	16	17
Ethical obligations	13	16	13	14

The above mentioned data was based on surveys conducted within the framework of the Tuning project (harmonization of educational structures in Europe). In the first places, according to respondents, there is the ability to the analyzis and synthesis, the ability to learn, the ability to adapt to new situations, creativity. And only according to the teachers

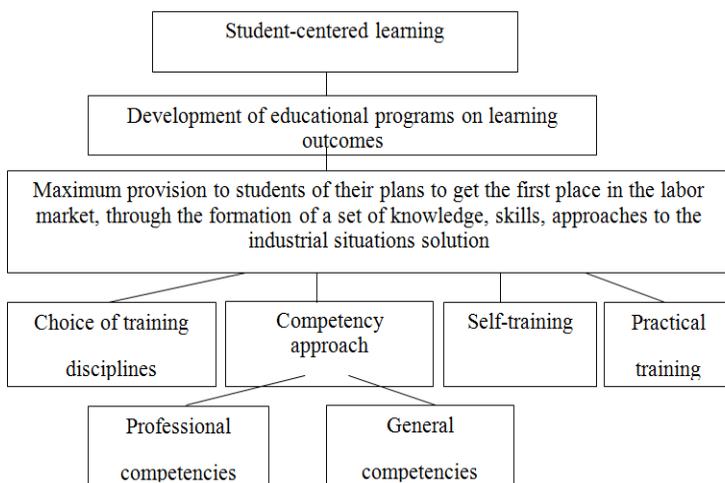
opinion basic knowledge is the most important. Conducted by us studies show a certain inconsistency in rank given in the framework of the Tuning of general competences project [4, p. 36-37] and the surveys received from our teachers and students who prefer the ability to apply knowledge in practice and the profession basic knowledge application in practice (Table 1.3).

*Table 1.3*

**Priorities of the competencies**

Competencies	Teach.	Stud.	Empl.
Ability to the analyzis and synthesis	3	7	10
Ability to apply knowledge in practice	1	3	3
Planning and distribution of time	9	17	4
Basic general knowledge of the field of study	7	5	1
Acquisition of the profession basic in practice	2	2	2
Oral and written communication in the native language	16	16	5
Knowledge of the other language	14	18	6
Elementary skills on PC	8	15	7
Research skills	13	4	14
Ability to self-study	5	6	30
Information work skills	11	14	23
The ability of criticism and self-criticism	21	13	15
Ability to adapt to the new situations	18	9	26
Ability to generate new ideas (creativity)	6	8	20
Solutions of the problems	12	11	11
Decisions making	4	1	25
Team work	10	10	8
Interpersonal skills	22	12	29
Leadership	26	19	22
Ability to work in a team from different departments	16	21	12
Ability to communicate with non-professionals	23	30	16
Attention to differences and cultural influence	30	28	24
Ability to work in the international context	27	26	18
Understanding of other countries cultures and traditions	29	29	27
Ability to work autonomously	25	25	9
Development and management of the project	19	23	17
Initiativity and spirit of entrepreneurship	24	24	28
Compliance with etiquette	28	27	13
Quality assurance	17	22	19
The will to succeed	20	20	21

At a high level among the above mentioned competencies, all categories of survey (even students) note the "ability to self-study", which testifies the awareness of the need and readiness to deepen knowledge acquired in the learning process. The grounds for a certain correction in the professionals training situation, specialization "enterprise economics" are provided by the law "On Higher Education". The absence in educational standards of the list of normative disciplines allows each educational establishment to form its own vision of a particular specialty and to create its training plans for the professionals training, which will lead to the competitive environment formation on the labor market between graduates of different HEEs of one specialty. A proposed paradigm of higher education according to the Law "On Higher Education" – student-centered learning (Figure 1.7), involves the development of educational programs focused on learning outcomes, taking into account the diverse priorities of the learners who study.



**Figure 1.7 Paradigm of higher education**

The starting point for the educational program creation is a model of professional demanded in the labor market, and the key concepts of its creation methodology are the results of learning and competence, and the learning outcomes are formed in terms of competencies. In this approach, the crucial role in the professional model formation is played not by the educational establishment, but by the employers, professional organizations, etc. The formation of what is expected to know,

understand, be able to demonstrate by the student after graduation is carried out by teachers at the level of a separate discipline and the educational program as a whole. Learning outcomes should be clearly measurable. At the output of the educational program there are competences acquired by the learners.

Requirements for a professional are formed through professional and general competencies. The first ones determine the profile of the educational program and qualifications of the graduate, while the latter are universal and characterize the requirements for a professional as a personality and quality, which, in the opinion of employers, a professional must have for successful employment and future labour activity. The professional competencies should be considered as the main ones, which are formed by various academic disciplines. For the specialization "Enterprise Economics", at different educational levels there may be "Enterprise Economics", "Economic Analysis", "Labor Economics and Social-Labor Relations", "Investing", "Enterprise Competitiveness", "Controlling of Enterprise Economic Processes", "Economic instruments of Projects Management and Enterprise Development Programs ", training courses "Process Models in Enterprise Development Management", "Enterprise Resource Management", "Individual and Team Work in Business Management", etc. In this case, professional competencies can be formed within the framework of higher education program one level, and may even go to its higher level.

At the same time, there is innovativeness of the professionals training, which consists, first of all, in the use of modern computer programs, in particular: Audit Expert – for the analysis of the enterprise financial and economic state; Statistica for Windows – for the statistical data processing; IC: Enterprise (enterprise management); MS Project, Project Expert – systems of project management; FMS Diamond – financial management system; ERWIN Date Modeles - database structure modeling system; MS Access – database management system; ARENA – simulation system; Rune WFI – business processes management and regulations administration; All Fusion Process Modeles – business processes modeling system; MutLab – a system of calculations.

The system of the educational process organization also requires significant changes, the main components of which should be: study of disciplines in the form of an online discussion: the teacher as a moderator conducts classes according to the previously known scenario,

provided in advance information, evaluates the students knowledge and skills; training in mini-groups: formation of mini-groups for seminars; work in a team; work on tasks with a well-known result and a scientific search for a solution; assessment of competences, when based not on theoretical knowledge, but on the ability to use them in practice; consultations providing by leading teachers in online mode by preliminary record or schedule.

But the ultimate success in the desired result achievement will largely depend on the students contingent. It may be achieved by the development of the Ukrainian economics on an innovative basis with the emergence of new jobs and the improvement of HEEs educational activities of universities in the professionals training, competitive in foreign labor markets.

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**FACTORS OF  
MARKET AND  
PUBLIC INFLUENCE  
ON THE INCOME OF  
HIRED LABOR  
RESOURCE  
OWNERS**

In his theory of «three factors of production and three sources of income», J-B. Say justified that the income of hired labor resource owner is a salary [1]. Analyzing the essence of salary and its role in the labor market, it is now accepted to consider two concepts. The Marxist theory in its analysis focuses on producing the additional value [2]. It is possible that such an aspect was appropriate from the point of view of determining the extent of a hired employee exploitation, however modern trends in the dynamics of wage are now shaped by factors that have not even existed or were weakly expressed before, such as: strengthening the role of the state in economy; legislative establishment of the minimum wage amount; tripartism development, and changes in the behavior of employers and employees in the social and labor relations field; active work of trade unions, including solving problems in the field of wages (both at the national level and within separate territories and enterprises). All of these allow us to view wages not as object of class struggle, but as one of the most important components of the price of hired labor resource use. P. Samuelson and W. Nordhaus in the famous «Economics» textbook noticed that the wage rate is the most important among all commodity prices, since it is the price of labor and the only source of income for a large part of population [3].

Considering that satisfaction of needs and fulfillment material interests of workers is possible only on the basis of labor then the characteristic features of its manifestation are conditioned by the nature of workforce, as a materialized expression on the relevant market. So the workforce market is more justified, since it fully characterizes the object of sale, but the labor market is also admissible in order to investigate the purchase and sale of labor resources [4].

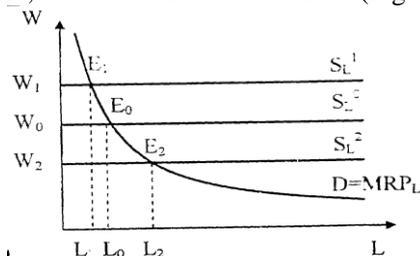
In practice, a hired employee receives his salary not only because he

must recreate the workforce, but also because he works for a certain time with a certain intensity and produces goods with certain parameters, i.e. it depends on the effectiveness and efficiency of the work of the hired employee. This is the production aspect of the salary's essence.

In general (i.e. considering all the production and market factors) salary, as a price of any product, is determined by many factors. First is the quality of workforce (its usefulness). It is a multidimensional concept; which can be described by several parameters: human physical health, general educational and cultural level; level of professional training and industriousness. Second is the amount of work, its quality, productivity and efficiency. And third are the conditions of work. Working places are different in terms of their attractiveness. Hence the salary at less attractive of them must be higher. Such differences in salary that compensate the unattractiveness of jobs are characterized as «comparable differences». The same applies to workplaces with heavy or harmful working conditions. From these positions the principles of division by the quality of work and the workforce in salaries are revealed.

In general, opposing the law of the value of labor and the principle of division by work is very limited, and the absolution of these differences is unjustified and harmful. In addition, general level of salary in the country depends on the degree of society's productive forces development, its technological level, productivity and intensity of work, state's social and economic policy, etc. A comparative analysis of the size of a salary in different countries confirms the dependence of its level on all the above-mentioned factors.

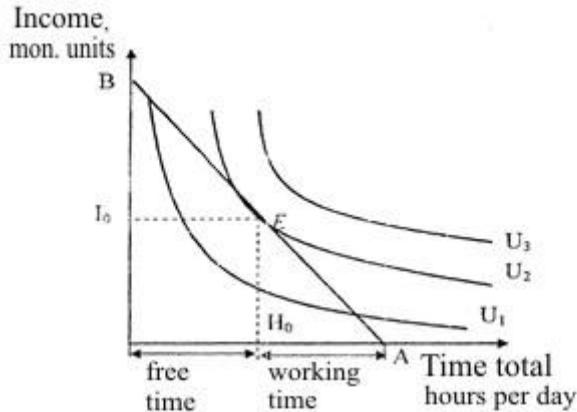
The significant impact on the amount of salary in the market economy has, of course, a demand for the workforce (Figure 1.8).



**Figure 1.8 The connection between a demand for the workforce and the salary**

If the salary increases from  $W_0$  to  $W_1$ , the number of hired workers will decrease from  $L_0$  to  $L_1$ . If the salary drops to  $W_2$  the number of hired employees will increase to  $L_2$ . Thus, the number of employed is inversely proportional to the average salary level, and changing wages causes changes in demand for labor.

Every human being faces a dilemma: to work more or to rest more. Let's assume the maximum revenue, which could be earned in 24 hours, is B. The maximum number of hours per day is 24. Thus, the «income – free time» budget constraint (Figure 1.9) can be described as a direct straight (AB).



**Figure 1.9 The choice between work and rest**

When the market wage is equal to  $W$  money units per hour, the worker receives  $W$  money units of income per every hour of leisure, which he refuses from to work. The number of working hours depends on the size of the wage and individual preferences regarding income and leisure.

At the figure individual preferences are reflected by the indifference curves ( $U_1$ ,  $U_2$ ,  $U_3$ ). The worker stays in equilibrium at point E, where the budget constraint straight AB is tangent to the indifference curve  $U_2$ .

Herewith, free time will be  $H_0$  working time ( $24 - H_0$ ), daily income  $I_0 = W \times (24 - H_0)$ . The slope of budget constraint equals to  $W$  – the wage rate. That means that worker maximizes the utility when the marginal rate of free time replacement by income is equal to the salary:

$$MRS_{IH} = W \quad (1.1)$$

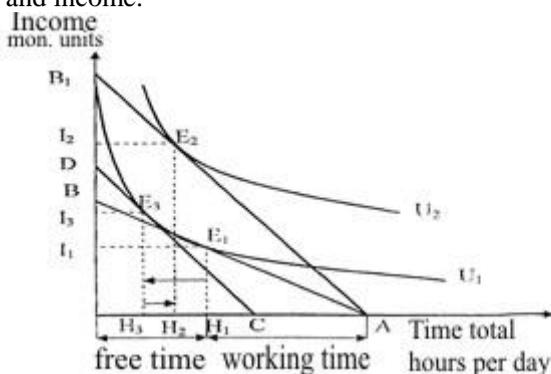
As with the increase in wages, every hour of worked time is highly paid, then every hour of free time is perceived by the worker as a loss, i.e. a lost profit. This benefit could be realized by converting free time into a working – hence the desire to replace a free time with additional work. Accordingly, the leisure is replaced by the set of goods and services that a worker can buy at an increased salary. This process is called the substitution effect. The substitution effect opposes the effect of income, which becomes noticeable when a worker reaches a certain high material welfare level.

The attitude towards free time changes, and higher remuneration, in its turn, allows to enrich and diversify the leisure.

Therefore, it is logical to have a desire to buy not only more goods, but also have more free time. And it is possible to do it only by reducing the proposition of labor, buying the free time not for cash, but for the money that could be due to a leisure break in favor of additional work.

Let's assume that wage rate has increased from  $W_1$  to  $W_2$ . The budget constraint will shift from  $AB$  to  $AB_1$  (Figure 1.10).

In such case work becomes more attractive, which causes a desire to work more. The equilibrium moves from  $E_1$  to  $E_2$ . If we conduct the budget constraint  $CD$ , which is parallel to the constraint  $AB_1$  and tangent to the indifference curve  $U_1$ , we may determine the effects of substitution and income.

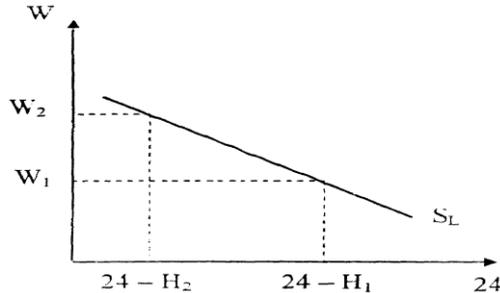


**Figure 1.10 Growth of wages: the substitution effect exceeding the effect of income**

The substitution effect is expressed in reduction of free time and the growth of wages. Graphically it means moving from  $H_1$  to  $H_3$ . However, with the growth of income, the value of such an ordinary thing as leisure – free time for personality development, rises. The income effect lies in

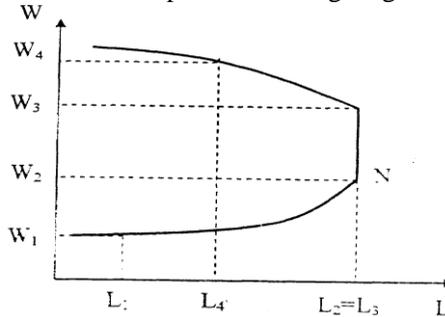


sacrificed. With the wages increase the price of rest becomes higher. Therefore, there comes a moment when the increase in wages does not lead to increasing, but to reducing working hours.



**Figure 1.13 Negative slope of the individual labor supply curve**

Figure 1.14 shows three steps in increasing wages.



**Figure 1.14 The individual labor supply curve**

Wage growth from  $W_1$  to  $W_2$  at the first stage leads to an increase of working hours from  $L_1$  to  $L_2$ , and the substitution effect exceeds the effect of income. Wage growth from  $W_2$  to  $W_3$  at the second stage does not reflect the increasing of working hours, and the substitution effect equals the effect of income. Wage growth from  $W_3$  to  $W_4$  at the third stage, leads to a reduction of a workday, and the substitution effect is less than the effect of income. As the wage grows, the price of the rest also increases.

The cost of the «labor» resource is strongly influenced by trade unions. One of the effective ways to protect the economic interests of workers, according to trade unions, is to eliminate or reduce the competition between workers as sellers of the labor force. The activity of trade unions is also aimed at raising wage rates, reducing the duration

of the workday, providing high pensions, and solving a number of other social issues. Special attention is paid to improving working conditions and safety.

The main task of all trade unions on the labor market is raising wages for its members.

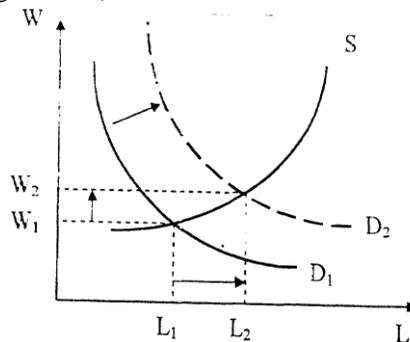
Depending on the methods and ways of solving this problem, there exist two types of trade unions:

- open trade unionism – trade unions that unite all workers of the industry and exert pressure on employers in order to increase the overall level of wages in the industry;

- closed trade unionism – trade unions conduct the policy of narrowing the labor market in the industry in order to increase the wages of its members.

How do trade unions influence the size of wage? Over the past decades, in countries with a developed market economy, there has been a tendency towards increasing the size of wage, and reducing differentiation in salaries. At the same time, wages in those sectors of production where workers have united in trade unions, exceeds the average level and is higher than in sectors where there are no trade unions.

Trade unions are trying to influence the level of wages by increasing demand for labor (Figure 1.15).



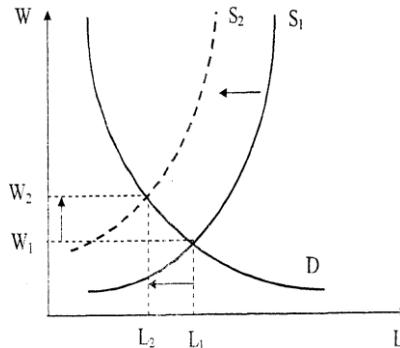
**Figure 1.15 The impact of trade unions on increasing demand for labor**

The increase in demand for labor occurs due to an increase of its impact on the results of labor, the growth of its productivity, the impact of trade unions on the prices of labor substitutes, their support of sanctions, aimed to reduce prices for complement resources. Increasing demand from  $D_1$  to  $D_2$  increases the number of hired workers from  $L_1$  to

$L_2$  at a given proposal (S), and leads to a wage increase from  $W_1$  to  $W_2$ .

But the opportunity of trade unions to influence the demand is insignificant. Their actions are basically aimed at counteracting the decline in demand for labor, rather than promoting its increase.

Trade unions can also act to reduce supply on the labor market (Figure 1.16).



**Figure 1.16 Increasing wages by reducing labor supply**

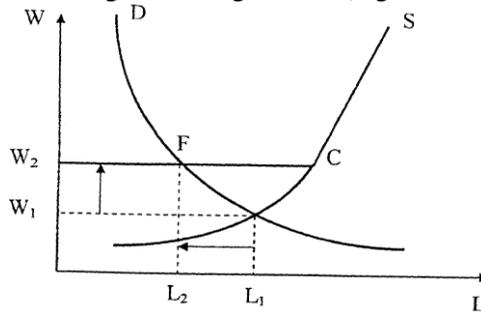
In particular, this applies to supporting immigration restricting legislation; struggle to reduce the duration of workweek and the workday, the use of child labor; struggle for compulsory retirement, etc.; qualifications' licensing; creating trade unions in divisions of large companies (associations, holdings, corporations), which use the method of trade unionism (the long-term skills' training requirements, unreasonable tuition, limiting the acceptance of new members in the union, etc.). Consequently trade unions act at the labor market towards wage increase, both through demand and supply.

Certain role in regulating the labor market is played by collective agreements concluded between trade unions and entrepreneurs. Thereby, trade unions represent the collective interests of employees. Such collective representation of hired employees is considered to be a socio-economic and legal norm. Usually, it is enshrined in the constitution of a particular country. The agreement between trade unions and entrepreneurs (or associations of entrepreneurs) regulates the form and amount of wages (the order and procedure of setting wage and overtime rates, etc.), the duration of workday and holidays, the order and procedure of retirement, dismissal and a number of other issues.

The purpose of collective agreement is to develop mutually acceptable employment conditions. The agreement consists primarily of normative documents, which determine the order and procedure of

setting the wage and overtime work rates, breaks and off days, contributions to the retirement (pension) fund, health care payments, etc., and also wage regulations, considering price changes, inflation, etc. Special attention is paid to working conditions and safety regulations. The agreement is concluded for a certain period of time (in US, for example, for three years).

While concluding the agreements between the worker and employer, in terms of setting the wage rates, trade unions use open or industrial unionism, i.e. – a broad association of all existing and potential employees of a certain major and influence on entrepreneurs while defining the rates of wages in the agreement (Figure 1.17).



**Figure 1.17 Establishing the wage rates with the participation of trade unions**

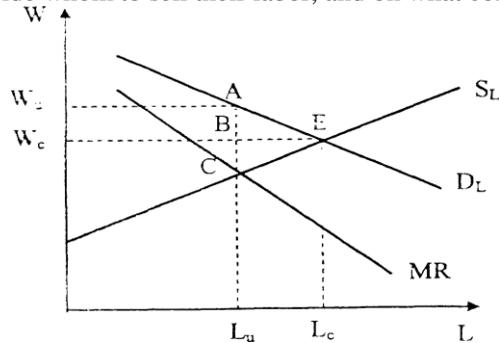
Figure 1.17 shows that the initial wage rate was  $W_1$  at the level of employment  $L_1$ . Through the threat of strike, trade unions can impose on enterprises (employers) which hire such employees, the wage rate  $W_2$ . The new wage rate will lead to a change of the supply curve from  $S$  to the curve  $W_2FCS$ , because the workers (by the decision of the union) would not want to be hired at a wage rate below  $W_2$ . Agreeing with the demands of trade unions, companies (employers) accept this salary, which will correspond with absolutely elastic labor supply at the  $W_2FC$  segment. It means that the marginal cost of labor  $MRC_L$  at this segment will be equal to the wage rate  $W_2$ . To increase it, enterprises should reduce the number of employees from  $L_1$  to  $L_2$ .

The actions of open and closed trade unions on raising wages lead to a decrease in the level of employment.

If the union has a monopoly power on the labor market, it will try to limit the labor supply, to raise the wages of their members (Figure 1.18).

Like any other market, the labor market involves competition. It is possible only due to the maximum freedom of its subjects. The

employer must have a right to freely choose the labor of required quality, to hire, use or fire the employee. The potential employee must have a right to freely dispose of his labor force, choose the place of work, i.e. – to decide whom to sell their labor, and on what conditions.



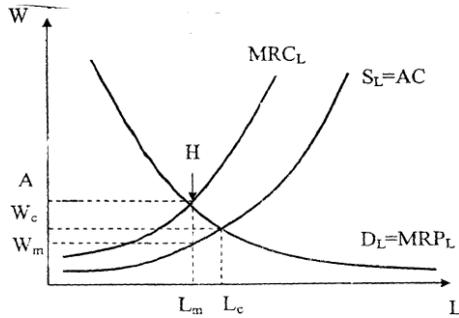
**Figure 1.18 Influence of trade unions' monopoly power on the level of wages and the number of employed**

Under such conditions, the labor market is not monopolized by its subjects and is competitive.

Under perfect competition (see Figure 1.18), the equilibrium would be established at the point  $E$ , with the  $L_c$  number of workers employed, and the  $W_c$  amount of salary. The monopoly power of trade unions allows them to reduce the number of workers employed from  $L_c$  to  $L_u$ , and thus, increase wages from  $W_c$  to  $W_u$ . Alternative income (economic rent) is equal to the area of the  $ABW_cW_u$  figure. It means that economic rent associated with hiring the workforce represents a surplus of wages, paid over the minimum amount which they receive.

Imperfect competition, expressed in a form of monopoly, is typical for most of the labor markets. Company in such a case acts as the sole (only) buyer at a certain labor market, and therefore has the ability to influence the level of wages. It can be achieved by reducing the number of hired workers. As a result of increased competition between employees, their wages are reducing below equilibrium (Figure 1.19).

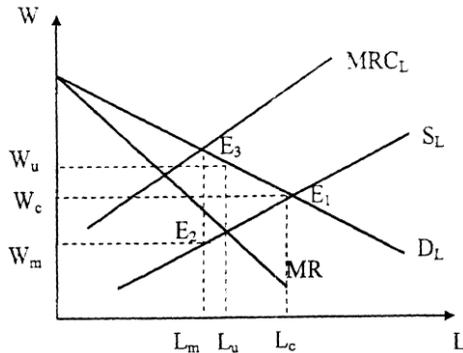
In case of perfect competition, the equilibrium is set at point  $C$ . Wages  $W_c$  would receive  $L_c$  workers. The monopolist pays an equal payment for each unit of labor, so the supply curve is the average cost curve. Involving additional workers would increase the wages compared to their average level, so the marginal cost curve  $MRC_L$  is located above the supply curve.



**Figure 1.19 Model of monopoly at the labor market**

Its intersection with the marginal product curve in monetary terms will determine the amount of employment. Within the  $MRP_L$  monopoly it means that by reducing the number of workers from  $L_c$  to  $L_m$ , the monopoly will reduce wages from  $W_c$  to  $W_m$ . Thus, monopolistic power determines the decline in both the scale of employment and the level of wages, simultaneously increasing the profit of the monopsonist by an amount, equal to the area of  $AHMW_m$  (see Figure 1.19).

If strong unions are formed on the monopsonistic labor market, a two-sided monopoly is created, i.e. a combination of monopsony with the model of trade unions (Figure 1.20).



**Figure 1.20 Two-sided monopoly at the labor market**

In conditions of perfect competition, the equilibrium would have been established at the point  $E_1$  – the point of intersection of the supply and demand curves. It would have employed  $L_c$  number of workers, and the level of wages would be  $W_c$ .

However, the monopsonistic company will try to reduce the salary to  $W_m$  level by reducing the number of employees from  $L_c$  to  $L_m$ .

The trade union in its turn will try to raise the salary to the  $W_u$  level also by reducing the supply of labor.

Thus, with a relatively small difference in the number of hired workers ( $L_m$  and  $L_u$ ) the approaches to determining the level of wages ( $W_m$  and  $W_u$ ) are very different. Thus, establishing the level of wages will depend on the strength of opposing monopolies.

**Conclusions.** Wages are one of the components of the income from renting the hired labor resource. It is determined by its usefulness, quantity, quality and working conditions. As the price of any product in a competitive labor market, wages depend on fluctuations in demand and supply. Changes in the level of wages determine the amount of labor demand and the number of employees is inversely proportional to its average level.

The substitution effect at which the worker can receive an increase in salary while converting the free time to a working time should not exceed the effect of income, which raises value and such an option as leisure.

Establishing the wage rates in collective agreements between employers and employees should be monitored and controlled by trade unions. If a trade union has a monopoly power on the labor market, it will try to limit the supply of labor, which increases the level of wages and vice versa – increasing the labor supply reduces its level. Therefore, trade unions insist on reducing the working week, lengthening the duration of holidays, increasing the duration of vacations, reducing the retirement age, etc.

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**INNOVATIVE STRATEGY  
FOR DEVELOPING  
ENTREPRENEURSHIP AS  
A RESOURCE OF THEIR  
COMPETITIVENESS**

The characteristic features of Ukraine's current economic development are the instability of the economic sphere and the contradiction of market transformations. Such a condition leads to significant losses of business entities. Similar processes of regional transformation are present in many countries. Ukraine's economy is characterized by a certain specificity, which is conditioned by the global changes taking place at the regional and state levels. The period of active formation of market relations is accompanied by significant transformational processes, which call for the formation of competitiveness of economic entities.

Innovative strategy for the development of business entities is associated with significant pace of market transformation and the solution of socio-economic problems. Creation of effective mechanisms for the implementation of innovative processes significantly contributes to the development of the national economy [1, p.18].

The main preconditions for the emergence of an inclusive economy are the main factors of competitiveness of economic entities that include productivity, a significant reduction in the cost of products or services, experience in crisis situations, quality and innovation processes that are the basis for modernization changes.

Economic growth and stability at macro and macro levels are the main components of an innovative strategy with a vector for accelerating the country's economic development. Availability of resource potential of manufacturing industries allows us to provide a high level of production and economic activity, in accordance with the main challenges of the integration processes taking place in Ukraine. The main indicators that characterize the spatial and temporal framework of economic and social transformation are ensuring the implementation of innovation and the ability to properly manage them [2, p.49].

The main factors of competitiveness are closely connected with the

growth of competition in the markets for the sale of goods and services and therefore acutely in the current conditions of development of Ukraine. The main factors of competitiveness determine the direction and nature of the innovation strategy of the state.

Ukraine's transition to an innovative way of development is fundamentally important for increasing the competitiveness of the domestic economy. Awareness of the relevance of innovative development requires the development of perspective ways of forming an innovative model of organization of the national economy. It is also necessary to take into account the processes of transforming the role of the state and the implementation of modernization mechanisms of regulation by innovation processes, which ensure the growth of a strong resource potential and a high level of general competition, different degrees of initial development and resource provision.

The depth of crisis phenomena is the result of a significant technological lag that can only be overcome by introducing innovative technologies into the management and production system.

Entrepreneurs play a leading role in this task. Entrepreneurship has a significant impact on the structural reorganization of the country's economy and makes a significant contribution to creating a favorable environment for the formation of competitive advantages and the elimination of monopoly in the conduct of entrepreneurial activity. The process of spreading innovation is carried out very slowly. This determines the importance of improving the forms and methods of innovation development. On the basis of an integrated approach to theoretical substantiation and practical implementation of the tasks, the implementation of the innovation strategy in the implementation of entrepreneurial activity in Ukraine takes place. This provides the opportunity to implement scientifically substantiated proposals for the regulation of innovative development of business entities. Strengthening economic potential leads to a reduction of economic risk, stimulating competition in the innovation sector. Reducing social tension is due to the increase in living standards [3, p.111].

It should be noted that the competitiveness of the state's economy must be in line with the existing level of scientific and technical potential. Increasing the state's scientific and technological potential can only be achieved through the introduction of large-scale innovative technologies with a high concentration of intellectual, informational and logistical resources. In these conditions, the creation of an informational space, covering the main results of innovative solutions that are

implemented in production infrastructures, as well as in increasing the innovation activity of various sectors of the economy, is an important factor in enhancing sustainable economic growth.

Creation and practical implementation of fundamentally new forms of organization of production contributes to increasing the efficiency of the functioning of economic entities, which are not limited to standard measures and specific management tools. Positive results of new mechanisms of economic integration create a synergistic effect within individual branches or regions. [4, p. 71].

Our researches substantiate the necessity of ensuring the competitiveness of business entities on the basis of the implementation of an innovation strategy based on the following main conditions:

1. In the implementation of innovations it is necessary to ensure the sectoral interaction of the inter-branch association.

2. Regional localization limits the possibilities of entrepreneurship development with emphasis on sector specificity.

3. Technological connections between the branches are carried out in accordance with the existing technologies and considerably extend the possibilities of creating a single information space.

At the present time, the following areas are distinguished: production of finished products, production of technologies providing, creation of services and services in a separate sector. Similarly, financial institutions are distinguished.

An analysis of existing approaches allows us to identify the conceptual aspects of the formation of an innovation strategy, including the creation of spatial informatization of interconnected industries and companies, as well as the definition of existing competitive advantages, which are realized on the basis of a cluster approach. Creation of a localized information space ensures the effectiveness of interaction between business entities and a high level of information communications that form the competitive advantages of a particular industry.

The conditions for effective cooperation are also ensured through integration processes that involve the use of enterprise-level enterprises at the regional and sectoral level, based on public-private partnerships. Information availability and the possibility of exchanging specific information, openness of information databases, provides significant competitive advantages in interaction with the sectoral markets: sales of finished products, use of labor, as well as marketing research.

Innovative technologies that promote the implementation of this

approach ensure the creation of innovation technology initiatives in various fields of activity. With the formed effective system of interaction, the usefulness of such an information space increases.

The most important competitive advantage is the reputation components of entrepreneurship, which considerably increases the opportunities of each economic entity and increases the possibility of concentration of resource potential within a single economic system. Competitiveness of entrepreneurship as a level of its economic, technical and operational parameters, allows to form similar domestic advantages, which depend to a large extent on branch affiliation and strengthening of connections at the level of cluster development.

The main components of the competitiveness of economic entities are determined by the inclusive conditions of efficient work of the industry, which is based on the interaction at all levels. Integration processes foresee cooperation of enterprises on the basis of a single information space [5, p. 23]. Such cooperation provides a number of competitive advantages that include lowering the cost of products or services, ensuring high productivity, creating a high level of product quality, and reducing the cost of significant marketing research that provides a leading level in a specific market segment. The practical implementation of an effective information space affects the main factors of competitiveness and determines the success of the industry. Problems that arise in the system of implementation of innovative technologies, due to the lack of cluster analysis and effective interaction between business and the state.

The study of cluster approach allows to realize modern methods of identification of the main factors of competitiveness of enterprises.

Its application on the platform of international experience provides positive results of the implementation of innovation strategy in the framework of public-private partnership with significant logistical, informational and financial assistance. Modern state policy in the direction of realization of innovative strategy of development of economic subjects is a multifaceted task of different levels of cooperation.

A specific innovation strategy involves the creation of a distinct budget, which involves the introduction of innovation at all levels of management. Solving the tasks of cluster-oriented development is based on the interaction of business strategies of modern enterprises and research organizations. Implementation of innovations provides a high level of infrastructure management, as well as the concentration of

interconnected enterprises.

The main directions of the implementation of a competitive innovation strategy include: direct financing of project management of business entities, ensuring quality administrative transformations on the basis of knowledge economy and modern information and communication technologies. This allows us to combine the positive results of research and scientific work and social priorities into a single economic system. Provision of scientific and professional graduate training is possible with the effective cooperation of universities and business. The exchange of information on a market inquiry, market conditions of the economy, new rules of interaction and cooperation between enterprises of the industry, procedural issues on the implementation of public-private partnership significantly increases the competitiveness of its own economic system. The strategic directions of innovation activity of economic entities in the current development of the national economy is the implementation mechanism of preferences for companies that implement innovative technologies, modernization create change based on new project activities. Implementation of innovative projects in accordance with strategic guidelines allows to accelerate the process of updating production, to effectively use human, informational, natural and other resources.

Investigation of the mechanisms of regulation of innovative development of economic entities allowed to reveal the basic provisions concerning the construction of a model of economic growth and stimulation of public-private partnership:

- the transformation of innovative scientific and technological resources of economic entities into a factor of economic growth is possible only if the business-structures and the state are meaningful cooperation;
- increase of competitiveness of business entities possible under the condition of development of professional competencies of senior management;
- strategies for the development of business entities are created as an innovative breakthrough using modern information technology and digital transformation.

Special significance in the implementation of the innovative strategy for the development of economic entities has the formation of a special infrastructure, which provides the choice and rational use of resource potential at all levels of management. Such a structure provides coordination of financial and economic activities at all levels of

management of industrial clusters. On the basis of multilateral agreements of participants on the development of innovative products of varying degrees of readiness. These include: the formulation of innovative ideas, the development of a technical task, the presentation of information, marketing, management documentation, the production of prototype samples, the conduct of experimental research pilot manufacturing. The meaningful assessment of innovative business plans requires the identification of the environment of innovation projects and their budgeting.

The scientific support of innovations involves the training and consolidation of specialists and staffing with the appropriate level of competence.

Implementation of such approaches will create a systemic impact on the activation of innovation processes in order to increase the competitive advantages of economic entities and provide them with investment resources.

Creating spatial clusters of economic activity provides effective horizontal interconnections between a large number of enterprises and combines different industries to provide efficient, large-scale combinations.

Horizontal direction is formed due to the strengthening of innovative technologies used in modern companies, which are combined into a branch structure with research institutes and educational institutions. The qualitative essence of such an association appears in effective cooperation. The analysis of world experience in implementing such cooperation allows to provide cluster development of the economic system on the basis of the main regularities of the modern stage of the inclusive economy and the dissemination of the main positive decisions on the level of industry, region and state.

The main difference between this approach is to provide a synergistic effect, which is realized in increasing the competitiveness of the industry through the implementation of intra-cluster cooperation within a single industrial sector.

The networking feature of the interaction of participants in the framework of horizontal integration promotes the formation of competitiveness chains with an orientation towards the exchange of experience, knowledge, skills, new technologies and innovations.

The cluster approach is defined as a policy of increasing the competitive advantages of business entities at the regional and state levels and is one of the most effective areas of innovative

entrepreneurial activity.

The combination of all competitive advantages is the main component of the development prospects of any economic system. Features such as geographical location, availability and accessibility of natural resources are national features of the Ukrainian economy.

In the future, the decisive role belongs to the competitive advantages that are created in domestic markets. This is a strategy and tactics of managing business entities and ways of organizing economic systems. It was M. Porter who, in the results of his research, considered such competitive advantages and emphasized that the positive effect of returns is created when clusters are formed [6, p. 601]. Highly productive clustering is the result of the interaction of the main groups of competitive factors. As a result of such an organization, technical innovations of differentiated products and the scale of their realization on the market are. The main components of the competitiveness model are factor conditions and demand in the external market for the products of the industry. By factor conditions, we understand the availability and availability of natural, material, labor information factors of production that are necessary to ensure the competitive advantages of a particular industry. Significant demand in the external market for the products of the industry is the high demands of consumers and responses to the compliance of the main characteristics of products in specific segments.

The support of the industry in each region and in the state is manifested in the availability of reliable suppliers in various industries, which ensures the availability of cluster infrastructures instead of isolated industries.

In the context of globalization, it is necessary to take into account the effect of the interaction of different industries and the possibility of using modern technologies in different industries. The presence of certain territorial barriers, the creation of state regulatory documents of regional, municipal, central management can contribute to the reduction of certain barrier components on the way to cooperation. These areas include consulting services, as well as the expansion of practical experience in the formation and implementation of cluster systems.

Cluster policy significantly increases global competitiveness by obtaining synergistic effects in the form of inverse processes that provide information communication. Growth points in the foreign market allow us to form a process of foreign expansion. This is achieved as a result of a high level of competitiveness in the market and expansion in the area of the nearest environment of consumers and

suppliers. The results of such communications have a positive effect on increasing the competitiveness of business entities.

When creating a cluster, the competitive advantages for each participant increase substantially. Combining efforts and cooperation within the cluster activates the innovation activities of the subjects and increases the synergistic effect. The financial sustainability of cluster enterprises is increasing, and their positions in foreign markets are increasing. The market segment of the presence of business entities is increasing and an atmosphere of trust is created among all cluster members. Combining private, collective and public interests in the framework of public-private cooperation significantly contributes to the optimization of the conditions of cooperation. The opportunity to stimulate regional development is provided by a focused reorientation of unprofitable enterprises in the region, as well as the creation of advantages for the development of the regional economy. The formation of the innovation potential significantly increases the efficiency of the system for enhancing the innovation activity of business entities.

One of the main goals of the cluster approach is to increase the innovative attractiveness of the regions. This happens as a result of certain opportunities of state structures to regulate the directions of socio-economic development of regions, to reduce barriers to entry to foreign markets of business entities. Accordingly, the advantages of regional management provide incentives for the development of innovations in the region. This is due to the fact that international companies are much easier to invest in innovations of those regions where clusters have already been formed or there are prerequisites for their formation. The constant interaction of enterprises that are part of a single cluster facilitates the formal and informal exchange of knowledge, cooperation with scientific organizations and contributes to the formation of skills. The educational process in the cluster is an incentive to further attract new companies, investments, suppliers and create a platform for interaction with government agencies.

The development of clustering processes allows you to create professional personnel of high qualification and to ensure innovative activity in the region, which increases the competitiveness of business entities in the region of companies – members of clusters.

A separate component of the innovation strategy for ensuring the competitiveness of economic entities is the focus on the introduction of new technologies and technologies within a single information space. The main stages of the transition to market relations, their

implementation on the basis of the road map of cluster development provides the creation of national innovation programs. The modern concept of public-private partnerships and collaboration with research and educational organizations, there is the main purpose to improve coordination of the conditions for innovation in production and services, and promote mutual improvement and efficiency of businesses. This allows identifying complex social problems and ensuring that they can be addressed when creating public goods and creating the welfare of the population.

Such interaction provides a high status of entrepreneurship and significant financial support from the state, increasing the international authority of various national brands, which contributes to attracting additional financial resources to the development of the state economy.

Competitiveness of business entities develops cross-sectoral relations between regions, states and creates a network of effective cooperation. Ensuring a high level of innovation policy involves the development of cooperation between industries and the development and implementation of intergovernmental cooperation programs. Therefore, one of the main tasks in the system of ensuring the competitiveness of economic entities is the system of innovation strategy for building the potential of clusterization of the national economy.

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**THEORETICAL  
APPROACHES TO  
DETERMINING  
REGIONS IN THE  
INTERNATIONAL  
ECONOMY**

The term "region" (derived from the Latin "region" - territory, locality, region, district) is used in various fields of knowledge in order to distinguish territorial units on certain grounds. In economic science, the category "region" has become the subject of research relatively recently, only in the second half of the twentieth century began to develop concepts of regional economics. Researchers use this concept when it comes to defining a specific territory for a qualitative and effective solution to national or interregional problems. The boundaries of areas of placement of certain industries do not always coincide with the boundaries of administrative-territorial boundaries [7, p. 10].

At the beginning of the XXI century. Regionalism highlights the benefits of international cooperation of regional systems in a global and dummy space [2]. An important role in the formation of theoretical concepts of studying regionalism and regionalization was played by the local and foreign scientists [4, 5-8, 11, 19, 20, 23, 24].

Strengthening international competition in the context of the growth of globalization processes, rethinking the role of the state in the regulatory mechanism, liberalization of international relations, the transition from interstate cooperation to a qualitatively new supranational level contributed to the revision of ways to optimize the participation of countries (regions) in the processes of regionalization, and from there and actualize the further development of the theory-methodological approaches to determining the place and role of regions in the international economy.

The concept of "region" can be interpreted as a certain territory with its natural and geographical characteristics and, based on them, a specific direction of the development of productive forces. The main emphasis of economic analysis focuses on establishing characteristics of the region that determine its capabilities and certain advantages.

The category "region" is neither definite in the domestic literature

nor in foreign literature, and therefore there is no definition of the subject of regional science. There are allegations that there are about a hundred interpretations of the concepts of "region" and "district" [18, p. 10].

The term "region" appeared somewhat later than the "district", due to the new direction of economic science - the regional economy. Currently, the term "region" is used both as a synonym for the term "district" and for the definition of certain territories that by their features do not correspond to the adopted system of territorial division.

In modern economic literature the definition of the essence of the region is connected, first of all, with the allocation of economic and geographical features of the territory (territorial or geographical approach), which characterize the possibility of organizing a relatively complete complex in the structure of the national economy. Based on the basic principles of the placement of productive forces, most authors define the region as a form of territorial organization of production, formed on the basis of the territorial division of labor and has the appropriate organizational separation, integrity, economic and demographic self-sufficiency, etc.

Such a territorial system has its own character of the functions performed, whose priority is determined by the natural-climatic, economic, historical-cultural and other features of the territory, which has (or creates) an infrastructure for the fulfillment of these functions. The Conference of European Regions defines the region as a territorial unit, which has its own electoral authority and is subordinate to the central authorities [15, p.42]. The regions are determined by a single policy of state regionalism and have their own system of state bodies, which are the relevant subsystems of the state structure of power and the management of the country [1, c.34; 17, p. 10].

Each region has the corresponding economic integrity, which characterizes a set of interconnected and interconnected components of production (mainly material) that has developed within a compact area [9, c.23], respectively, each region has its own "complexing properties" that are defined spatio-territorial concentration of branches of the national economy [14, p.12]. Complexity of the region is manifested in the fact that it acts as a single entity, which consists of three components - natural, material (created by man) and social [12].

In the international economy, the region is understood as a group of countries with a common geographic location, similar natural conditions, similar specialization and the level of development of

production and non-productive spheres [18, p.3]. In addition, in the international economy, the region is also considered from the point of view of the aggregate of countries in a certain region of the world (Balkan region, Middle East region, Asia-Pacific region, etc.) [16, c.27].

Considering the modern theoretical approaches to the definition of the essence of the regions should be noted another characteristic feature, which takes into account the peculiarities of the functioning of the modern world economy as a single space.

The development of international economic integration in a practical plane is realized in a complex of concrete forms of cooperation between countries of the world. Since all of them differ in scope and levels of socio-economic level, all these forms of interaction will differ, have the appropriate institutional framework, and, accordingly, differently feel the impact of globalization - the leading trend of world economic development.

The most developed form of internationalization of economic life is economic integration, which is a process of convergence and the gradual unification of national economic systems, which is reflected in the manifestations of globalization and regionalism.

Each level of integration rapprochement directly affects the effectiveness of territorial administration both in the countries that have created the integration block and in their individual regions [3].

In this case, globalization acts as a manifestation of a new quality of internationalization "at the stage of the maximum possible development of its breadth, and integration - the highest degree of its development deep" [19, c. 17]. And therefore, in the scale of the world economy under the regions should also consider the totality of several countries as an integration association.

The character of the contemporary development of the world economy in analyzing the essence of the region allows, in addition to determining the territorial (or geographical) approach, an integration approach based on the existence of stable economic ties, a high level of complementarity [18, p. 5-6].

The modern world economy has a complex hierarchical structure characterized by a multi-level taxonomic model in which it is possible spatially to distinguish local regional formations, micro-regions, mezuregions, macro regions (or national regional formations), megaregions, metaregions, etc. (Table 1.4).

Table 1.4

**Spatial structure of the world economy**

Region level	Example of application	
	geographical approach	integration approach
Metaregion	North America, Africa, Europe, Asia	American market, European market, Asia-Pacific market
Megregion	Central America, Western Europe, Southeastern Europe	NAFTA, ASEAN, EU, MERCOSUR
Macroregion	Balkan countries, Baltic countries, national countries	Balkan countries, national countries
Mesoregion	Economic regions in the structure of the national economy (Donbas in Ukraine, Alsace and Lorraine in France)	Regional territorial production complexes, free economic zones, Euroregions
Microregion	Territorial part in the structure of the economic region (Silicon Valley in the USA)	Micro-regional associations
Local regional education	Cities, rural areas	Clusters, combines, etc.

Local regional education is based on the peculiarities of the business culture inherent in certain regions, labor organization, historical conditions of development of regions, and others. It is the geographical agglomeration of companies (firms) that operate in one or several related industries that creates a regional cluster, whose positive effects are the effects of scale, expansion and synergy. Local regional education acts as the grassroots level of the region, which together with others can form a set of regions of higher order, and therefore the level of development of the national and world economy depends on them.

Micro-regions are formed within the meso and macro regions and are based on the system of contractual relations that arise as a result of the development of joint productive activities, the creation of foreign affiliates, the formation of inter-territorial territorial production complexes, etc. Mesoregions are based on a set of specific relationships and related relationships that arise between adjacent territories within a single country (or small regions of the adjoining countries), the

existence of which is conditioned by the integrity, constant nature of the production-cooperative ties, etc.

Macro-regions cover a number of relationships, a set of relations that arise in the structure of the national economy (or between a separate group of countries), which requires a common macroeconomic policy and is based on the formation of a coherent economic complex of the country with its structure and management bodies. Megaregions arise in the system of the world economy on the basis of deepening economic ties, the development of the integration of the countries of a particular region, resulting in the emergence of regional associations.

The spread of integration processes between countries (integrational associations) of a certain continent has led to the formation of metaregions in the system of modern world economy.

In the context of deepening the processes of globalization and regionalization, the role of regions is intensifying, and they themselves become important participants of competitive relations not only at the national and international level, but also at global levels. Capacity to provide a high level of productivity in comparison with other regions of the national and world economy, to create new resources of regional development and to ensure the welfare of the population (reflected by a comprehensive system of indicators that reflect the state and dynamics of the region's development), determine the international competitiveness of the region.

In the system of many indicators (indicators), which allow assessing the level of international competitiveness of the region, it is expedient to use a large array of already developed methods that are offered by various international organizations that monitor various aspects of the functioning of the world economy.

Among the most common are the following:

- indicators of market monitoring;
- statistical database COMTRADE;
- indicators that examine changes in the development of a single internal market of the European Union, the state of the regions of this integration association, and their level of competitiveness;
- the OECD's International Trade Indicators Database; The World Bank offers a number of indicators on the environment, the development of demographic processes, economic status, etc .;
- the ESCAP Statistics Division offers an operational database with key annual indicators, in particular economic, demographic indices;
- Freedom House and Heritage Foundation use comprehensive

indexes to rank countries in terms of economic freedom, corruption and bribery. The World Economic Forum annually calculates Global Competitiveness Report Global Competitiveness and Business Indicators; UNCTAD offers trade indices and development index.

The basic approach to the definition of the competitiveness of regions can be formulated based on the concept of competitiveness of the national economy, proposed by M. Porter [13]. In accordance with this concept, in order to determine international competitiveness, it is necessary to apply an integrated approach to assessing the comparative advantages of nations based on the dynamic ratio of demand conditions, related and related industries, and institutional conditions. On the world market, first of all, manufacturers, and not the state, compete. Competition on the domestic market makes it necessary to look for external markets, provided that the product is sufficiently competitive.

To succeed in the global market, it is necessary: firstly, the firm's competitive strategy is rightly chosen, and secondly, the competitive advantages of the country. The conditions of competition, both on the national and on the world market, are constantly changing. Success in the foreign market depends on the right choice of competitive strategy. Competition involves constant changes in the industry, which significantly affects the social and macroeconomic parameters of the country of base, and, on the other hand, the state plays an important role in shaping the competitiveness of the regions.

According to M.Porter, the development of the competitiveness of the region (as well as the national economy as a whole) takes place at appropriate stages, which determine its development at certain periods of time, depending on the four main incentives directly affecting competitiveness in the international division of labor system, and namely: factors of production, investment, innovation and well-being. The first three stages provide economic growth, the latter is a decline.

The competitive advantage of the region is ensured: in the first stage - due to factors of production, favorable conditions of production (that is, provided by one determinant), in the second stage - on the basis of active investment in the education system, technological development (provided by three determinants), in the third stage - new types of products, production processes and other innovations (provided by all determinants); in the fourth stage - due to the already created welfare (based on all the determinants that however not used in full).

Regionalization is a kind of continuation of globalization and stumbles as one of its external forms [10, p. 17]. Formation of regional

economic complexes in the world economy should be considered as an important component of globalization development, and hence, we can talk about the creation in the future perspective of global specialized regions at the expense of [5, c. 129-130]:

- the growth of transnational space, the expansion of the activities of international organizations; formation of the shadow process of transnationalization and globalization;

- separating the regions of the world, forming the global infrastructure for the production of high-tech goods; consolidation of resource and raw material specialization in separate regions of the world.

A positive incentive for integration is the efforts of countries to create a wider market formed by a group of countries with a common geographic location, similar natural and climatic conditions, the corresponding level of development takes place at appropriate stages, which determine its development at certain periods of time, depending on the four the main incentives that have a direct impact on competitiveness in the international division of labor, namely: factors of production, investment, innovation and welfare.

The first three stages provide economic growth, the latter is a decline. The competitive advantage of the region is ensured: in the first stage - due to factors of production, favorable conditions of production (that is, provided by one determinant), in the second stage - on the basis of active investment in the education system, technological development (provided by three determinants), in the third stage - new types of products, production processes and other innovations (provided by all determinants); in the fourth stage - due to the already created welfare (based on all the determinants that however not used in full).

Regionalization is a kind of continuation of globalization and stumbles as one of its external forms [10, p. 17]. The formation of regional economic complexes in the world economy should be considered as an important component of globalization development, and hence, we can talk about the creation in the future of global specialized regions at the expense of [5, c.129-130]: the growth of transnational space, the expansion of activities of international organizations; formation of the shadow process of transnationalization and globalization; separating the regions of the world, forming the global infrastructure for the production of high-tech goods; consolidation of resource and raw material specialization in separate regions of the world.

Summarizing the above, we note that the concept of "region" can be interpreted from different points of view, and also taking into account the historical past: that is, on the one hand, it is a part of a large geographical, cultural and political community, on the other - the commonality of economic and structural features is determined. A key element is the territorial integrity, territorial unit or territorial association characterized by a set of inherent features: the structure of the economy, developed internal relations, population concentration, certain social, economic, institutional infrastructure, local authorities of the territorial administration, etc. Consequently, the extended interpretation of the category "region" is conditioned not only by the author's understanding of this definition, but also by the fact that it may have geographical, economic, ecological, administrative-territorial, historical and ethnographic, sociological nature, which greatly extends the methodological framework for the study of its essence.

From the above it can be concluded that the region is not only a subsystem of the national economy, but also a relatively independent part of it with a closed cycle of reproduction, the special forms of manifestation of the stage of reproduction and the specific development processes.

Summing up, it can be noted that integration processes contribute to the development of economic regionalism. Achievement of a high level of complementarity, achievement of stable economic ties, create qualitatively new conditions for the allocation of regions in the form of integrational entities in the structure of the modern world economy. The member countries of the integration association create special conditions for free trade, transfer of resources. A negative consequence of integration may be discrimination against countries that are not members of an integration education. Therefore, if regionalism does not worsen the conditions for trade with other states, it can be considered a positive factor in the development of the world economy. In general, integration processes open access to many economic resources, technologies, expand the markets, protect against the external competition of the members of the integration association, joint efforts more easily solve social problems.

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**MANAGEMENT OF  
 DEVELOPMENT OF  
 DEPRESSED REGIONS  
 ON THE BASIS**

In economic literature, scientists categorize problematic regions from different positions. First of all, scientists have identified two types of problem regions: backward and depressed. The type of backward problem regions include those with traditionally low (in comparison with other regions) level of economic development and quality of life of the population, they never influenced the country's economy (often occupy a peripheral geographical location with respect to development centers), did not have large productions, in the structure of their economy, agriculture predominated. Depressive regions are regions that in the past occupied the leading places in the country in terms of

economic (industrial) development, but for various reasons have fallen. The term "distressed areas" is translated as "territory in decline", "affected area", "unfavorable territory", "area of distress", although there is no unambiguous interpretation of the term "depressive region". Consequently, the main difference between the backward and depressed regions is that the former never played a leading role in the state, while the latter provided the country's external and internal competitive positions. However, such criteria for the classification of regions as problematic seem somewhat relative, incomplete, and clearly insufficient to identify deep signs of problem and determine strategic actions to overcome them from the point of view of sustainable development.

Some scholars in their writings do not make a clear distinction between the type of problem in the region, mainly using the term "depressive region", which they associate with the general backwardness, crisis, and weak development. For example, Zastavnyi F. concluded that all of Ukraine is in a significant economic, demographic and eco-crisis, that is, in "depression" (stagnation) and conducts research from a position of only depression. In terms of socioeconomic depression, based on the inclusion of indicators such as cash income of the population and investment in fixed assets, the researcher distinguishes four types of areas: the highest level of depression (Chernivtsi and Ternopil oblasts); with a high degree of depression (Ivano-Frankivsk, Rivne, Transcarpathian, Zhytomyr, Khmelnytsky and Kherson regions); with an average level of depression (Lviv, Volyn, Vinnitsa, Cherkasy, Kirovograd, Chernihiv and Sumy regions); with a low level of depression (other regions of Ukraine) [3]. Thus, firstly, outside the focus of the researcher remained the environmental sphere, which directly affects the quality of life of the population and economic development of the regions. Secondly, we consider only two indicators - population income and capital investment - to be insufficient - to identify signs and understand the cause of the region's depression. In addition, the assessment of the state of depression of the region only on the economic indicators of its development will not give a reliable picture of the quality of living in it (demography, the development of social infrastructure, the rate of disease of the population).

The National Institute for Strategic Studies has developed a methodology of 29 indices of human development in the regions, reflecting demographic processes, gross domestic product per capita, life expectancy and covering both the state of the economy and the

effectiveness of the health care system, the environmental conditions of residence, psychological well-being of the population. According to this rating, the regions with a high index of human development include Kiev, Kiev, Vinnytsia, Kharkiv, Ternopil and Ivano-Frankivsk regions. Luhansk, Kherson, Zhytomyr and Donetsk regions have the lowest development. All other regions are characterized by an average level of human development. According to the results of the study, the researchers observed an interesting paradox: despite higher indicators of economic growth and income levels of traditionally developed industrial regions (Donbass, Pridniprovya) above agrarian-backward regions, the first ones are in deeper social depression (the highest level in the country of drug addiction, alcoholism, crime, incurable diseases) [3]. Hence, rising incomes are not always a sign of high quality of his life or solving social problems.

Kolomiichuk V.S. became one of the first domestic scholars who carried out the typology of the regions. He classified 5 types of administrative regions from the standpoint of depression: administrative regions affected by the Chernobyl accident; administrative regions that are heavily polluted in the ecological sense, but the main and very powerful depressants are located in adjacent territories; border administrative regions; depressive administrative regions of the mountain territories; depressed areas whose territory becomes depressed due to the extremely weak development of the transport network and other elements of the supporting framework of the territory [6]. The scientist specified the signs of depressed regions: environmental pollution, location (border and mountain areas), weak transport links. But in identifying the signs of depressed regions, the social component is ignored, although its degree and scale of influence on the long-term sustainable development of the region are in no way inferior to economic or environmental threats.

In Ukraine, as a result of the general economic crisis that has not yet been overcome, depressive regions can include too many not only individual settlements but entire regions [3]. Since most scientists, especially domestic ones, are investigating the problem of regions from the point of view of depression, then let us dwell in more detail on the interpretation of this term by experts (Table 1.5).

Thus, experts consider depressed regions that have passed the stage of a recession or go to the economic downturn with all the consequences (crisis, unemployment, outflow of population, aggravation of eco-problems, the aging of infrastructure, production and housing funds).

Table 1.5

**Definition of the term "depressive region"**

<b>Definition and Signs of the Depressed Region</b>	<b>Authors</b>
An industrially developed territory, the crisis situation of which is a manifestation of the structural crisis of the economy and inequalities in the development of industrial production by industry and region	Novikova A.M. [6]
Areas in which there is a decline in production capacity, and sometimes and the curtailment of individual productions, rising unemployment and not favorable socio-economic situation in general	Lysenko I.V. [4]
Territories that are strongly and steadily lagging behind others on the main socio-economic indicators, in particular, the pace of development	Smirnyagin L.V., Bilov G.V. [6]
Characterized by low indicators of socio-economic development, their negative dynamics, imperfect structure of the economy, low investment activity and living standards of the population and the inability to provide self-reproduction	Institute of Reforms [2]
Territories suffering from such problems as obsolete, and sometimes inappropriate for use housing and infrastructure, neglected industrial sites, complex environmental and social (aging population, poverty, low standards of health) problem	Maiboroda G.M. [6]

Processes and phenomena observed in problem areas are an integral part of models of theories of growth and placement of productive forces that explain the causes and effects of economic growth or decline of territories over time [7]. Pashkevich M.S. indicates that depressive areas are always considered by Western scholars in close connection with developed areas to determine the nature of mutual influence and patterns of development: if they were surrounded by service areas, then, of course, they are in stagnation [7]. The situation is the same nowadays in the depressed regions of Ukraine.

Maiboroda G.M. draws attention to the fact that in economic theory, depression is a situation in which "characterized by falling production, a tendency to lower prices and rising unemployment ..." is characterized by a cumulative process in which the fall in demand (investment, consumer) leads to a decrease in production and a decrease in the use of resources, which, in turn, supports low demand [6]. The scholar stresses

that this definition is not suitable for describing the Ukrainian situation, since the fall of production occurred not only without lowering prices, but also with galloping inflation, while the growth of unemployment absolutely did not correspond to the rates of economic recession, which was caused by fundamentally different phenomena than those, which cause depression. So, if we use the traditional understanding of depression, then depressive regions in Ukraine can not, in principle, be, because there is no depression in its classical sense [7]. In our opinion, this is confirmed by the thesis that each region has its own specifics and individual peculiarities of development, which, accordingly, is manifested through the signs of the depression of the territories.

Recall that for the first time, the concept of "depressive territory" was used in England in 1929, and this term was used in relation to industrial areas of old development (stone and coal basins) that suffered from unemployment caused by the cessation of production in some sectors of heavy industry [6]. Then, under the influence of mainly scientific and technological progress, the old mining industries suffered the most. In our time, a new technological approach, replacing the industrial one, based on advances in the areas of microelectronics, computer science, biotechnology, genetic engineering, new types of energy, materials, satellite communications, etc. [9]. It is natural that the regions that failed to pass and adapt to the new conditions of functioning, become depressed. In principle, all regions are undergoing a downturn sooner or later, but some of them have a quick upgrade in line with a new round of scientific and technological progress, while others require state aid [3]. The key factor of the 5th innovation wave is microelectronic components, therefore, the electronics, computing and optoelectronic technology, software, telecommunications, robot engineering, and digital technologies are the nucleus of a new technology [9]. The transition to a new innovation wave is quantitatively-qualitative change for all branches and areas of activity of the region, which opens up new opportunities for finding solutions to socio-ecological and economic problems of territories. Therefore, we believe that the achievement of sustainable development should begin with the strategy of transition of the main sectors of depressed regions to a new technological wave, less dependent on natural resources, which will help to establish a balance between the elements of the socio-ecological and economic system of the region. However, while the state prefers subsidized maintenance of the outdated and harmful industries of industrial (depressed) regions.

Dzhaman M.O. has developed a classification of regions of Ukraine, separating the regions into 4 types - leaders, highly developed, developed, problematic - depending on the importance of socio-economic indicators. Leaders (1) - regions with sufficiently developed production and services, significant volume of investment, developed market structures, well-developed social sphere. Economic growth rates are higher than national ones. In our opinion, this mainly applies to donor agglomerations - Kyiv, Odessa, Dnipropetrovsk, Lviv. Highly developed (2) includes industrial regions with advanced industrial production. It creates a significant share of gross domestic product (GDP) of the country. Have a high human and financial potential. The scientist has taken into account that the main part of GDP of Ukraine is created precisely in depressed regions and according to this criterion, they were attributed to the highly developed. However, outdated material, resource and energy-consuming production are the main pollutants of the environment and create serious environmental problems, in addition, in the industrial regions the highest proportion of diseases in the country. Developed type (3) - regions with developed production and agriculture. The development of regions is characterized by a set of indicators whose values are equal to the average national level or  $\pm 10\%$ . Problem region (4) - on the aggregate of indicators the situation of regions is worse than the average level of 10% or more. Production has not received sufficient development. State aid in the budget structure. Insufficient financial potential. Some social indicators are alarming in terms of state security. Potentially Depressive [1]. We believe that on the basis of the above, the fourth type of problem regions is more suitable for a backward, rather than potentially depressed region.

In our view, industrial production of regions that provide a larger share of Ukraine's GDP today and depend on subsidies and constitute a social and environmental hazard - this is one of the main obstacles to achieving sustainable development. Industrial production constrains progress: as if depressed regions provide jobs, but preserve predominantly raw material specialization. Accordingly, the achievement of sustainable development requires more effective use of state aid than to support the survival of uncompetitive outdated productions. But this should be fixed at the legislative level.

The Law of Ukraine "On Stimulating the Development of the Region" (from 2005) recognizes one type of problem region - a depressive one, which means "the region or part thereof whose level of development is the lowest among the territories of the corresponding

type" [8]. The law provides that depressive areas are divided into the following groups: region; industrial district; rural district; city of oblast significance. In accordance with this Law, depressed territories are recognized, in which for the last 5 years, the lowest average gross value per person; industrial districts - in which, over the last 3 years, the unemployment rate and the share of employed in industry are much higher, while the volume of realized industrial output per person and the average monthly salary level are much lower than the corresponding average indicators of the development of the territories of this group; rural district - in which for the last 3 years the density of the rural population, the coefficient of natural population growth, the level of average monthly wages and the volume of sales of agricultural products per person is much lower, and the share of employed in agriculture is significantly higher than the corresponding average development indicators territories of this group; a city of regional significance in which the level of registered long-term unemployment has been significantly higher for the last 3 years, and the average monthly salary level is significantly lower than the corresponding average indicators of the development of the territories of this group; a settlement in the territory of which coal mining and coal processing enterprises have been liquidated since 1996, but not fully implemented measures for solving socio-economic and eco-issues, as foreseen by the projects of elimination of these enterprises [8]. We believe that this approach does not reflect the real situation in the region, and therefore is not suitable for practical application, in particular, it ignores the eco-component and does not relate the exit from the crisis of depressed regions with the introduction of sectoral innovations. Specialists of the Institute of Public Initiatives noted that the rigorously established by the current Law recognition of depressed territories at the level of the lowest or highest indicators of the development of a separate territory for a sufficiently long period (3-5 years) leads to the absence of signs of "depression". Moreover, the establishment of this division of laws in industrial and rural areas is an outdated approach, since today such territories are virtually nonexistent [2]. We agree that the above-mentioned approach is typical for the planned economy.

Kachan Ye.P. also argues that depressed industrial regions are most suitable for innovation development - through the creation of technological parks, technopolises and other innovative zones. The new development of the old industrial regions usually goes through innovation, they become centers for the introduction of new

technologies, research and development activities [3].

The typology of problem regions concerning the peculiarities of innovative processes is conducted by Kuklinsky A., who classified: creative and innovative regions - laboratories of the NTP, where basic innovations are born and undergo initial testing; adaptive territories capable of widely introducing innovations at the stage of their mass distribution; conservative habitats that do not perceive many innovations [3]. It should be noted that in this classification, the scientist did not mention the intellectual and creative (startups) human potential as the basis for the creation of innovations. Also, scientists have missed the fact that modern innovations should be safe for the environment. Conservative areas can serve for the development of tourism (cognitive, cultural, ethnic, historical) and recreation, so do not necessarily make them technically progressive.

Lysunets K.S. thinks that the development of depressed regions depends on the import of foreign technology into Ukraine. Considering the innovative development of the economy of depressed regions at the expense of national productive forces, technologies and the national innovation system, the transfer of technologies in accordance with Ukrainian legislation only partially concerns the support of domestic innovation production, otherwise the transfer of foreign technologies will contribute to the development of the economy of depressed regions, but on an investment basis, at the same time, activating the innovative activity of those countries whose technologies will be imported to Ukraine [5]. Among the measures that will improve the situation in favor of the development of domestic technologies, the scientist proposes to encourage innovative entrepreneurship and research development of research institutions, promote their commercialization, establish mutually beneficial links between enterprises of the region and scientific institutions, and seek additional sources of financing for innovation projects.

Thus, based on our research, we draw the following conclusions:

- 1) in modern conditions, effective management of the development of depressed regions can not be carried out without the development and implementation of a strategy to stimulate innovation, which is primarily related to the transition of industries to a new innovation wave, more advanced than the previous one. The current socio-ecological and economic changes of depressed regions are based on the use of alternative energy and energy-saving technologies, the potential of the digital economy, technological innovation in the environmental field

and nanotechnology;

2) to date, the Law of Ukraine establishes the procedure for assessing the level of depression of the regions, but from the standpoint of only economic and demographic indicators, without taking into account the environmental indicators of development. Scientists in their studies also do not take into account that measures to overcome the depression of the regions must be consistent with the objectives of the concept of sustainable development;

3) effective methods of development of depressed regions, in accordance with the tasks of sustainable development, can be the following: simplification of the procedure for renting land plots (buildings) for production needs; preferential taxation of enterprises that carry out ecologization of production; establishment of restrictions on activities of the enterprises that are the most polluting the environment;

4) stimulation of innovative processes of depressed regions should begin with the formation of the innovation infrastructure of the region in order to support research institutions that should become the locomotive of innovation development of the territories, as well as all elements of the regional innovation system.

In our opinion, the future of depressed regions can be considered in two directions: the deepening of the crisis and, as a result, social, demographic and environmental degradation, or the transition to a new wave of innovation, and thus a way out of the crisis and integration into global processes. But this can only be achieved through state support for stimulating innovation processes in the regions. To overcome depression in the regions, a comprehensive strategy is needed that takes into account all aspects of the socio-ecological and economic development of territories and the possibilities of adapting elements of the system of sustainable development to progressive changes.

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# MECHANISMS MANAGEMENT THE INNOVATION PROCESS OF ECONOMIC ENTITIES

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**PREVENTING AND  
COUNTERACTION  
CORRUPTION RISKS IN  
INTRODUCING AND  
IMPLEMENTING RISK-  
BASED APPROACH IN  
FINANCIAL  
MONITORING SYSTEM**

The development of prevention and combating corruption is the essential aspects of the Sustainable Development Strategy "Ukraine - 2020" [1], in terms of update authorities and anti-corruption reforms. The anti-corruption reform make feasibility of introducing anti-corruption mechanisms [1]: declaration of property status of public servants, preventing and resolving conflicts of interest, check the integrity of employees and monitoring their lifestyle.

Also, planned to provide an efficient institutional system of preventing and combating corruption: The National Anti-Corruption Bureau of Ukraine – for detect and investigate corruption of senior officials; National Agency on Corruption Prevention – as tools for implementing corruption prevention and control of Ethics employees (rules on conflict of interest, declaration of assets, etc.).

The principles, adopted by state anti-corruption policy in Ukraine (Anti-Corruption Strategy) for the years 2014-2017 [8] is the basis of new anti-corruption strategy and the successful introduction of new anti-corruption mechanisms.

It should be noted, that corruption risks affecting the increase in losses to the state budget and business due to corruption, and reducing Ukraine's position in international rankings that assess corruption [1].

According to the Strategy of development of prevention and counteraction the legalization (laundering) of proceeds from crime,

terrorist financing and the financing of the proliferation of weapons of mass destruction (WMD) for the period 2020 [1] the main activities are: consistent and effective fight against corruption and improving the forms and methods of improving risk-based approach in financial monitoring system.

Fundamental change in the system of financial monitoring development mechanisms is improving risk-based approach. The existing liaison between processes of laundering funds derived from the commission of corruption indicates that are relevant for expediency preventing and combating corruption risks when introducing a risk-based approach to financial monitoring system.

*The purpose of research* is to development process of preventing and combating corruption risks in introducing and implementing the risk-based approach in financial monitoring system.

The National risk assessment is the system to measures undertaken to determine (identify) risks (threats) legalization (laundering) of proceeds from crime and terrorist financing, in order to analysis, evaluation and development of measures to prevent and / or reduce the negative effects.

According to the report of the National risk assessment on prevention and counteraction to legalization (laundering) of proceeds from crime and terrorist financing assessment of the level of corruption in Ukraine was the second element of the evaluation within the political and institutional component [9]. According to this report, the overall level of corruption in Ukraine is high [9]. According to the survey, that is conducted by Kyiv International Institute of Sociology in August-October 2015, almost 2/3 of respondents indicated that they have faced corruption over the past 12 months. In 2014, a study by an international anti-corruption non-governmental organization «Transparency International», Ukraine ranked 142 positions out of 175 countries with a high index of corruption in the country. For 1 year, Ukraine has managed to make only one additional point on the results of the global Corruption Perceptions Index and in 2015 Ukraine took 130 place in terms of corruption perception from 168 countries.

Ukraine's position among the world's corruption perception index, according to Transparency International that counts listed in Table 2.1, which is defined by source [2]. As seen from the Table 2.1, according to 2017 year the corruption perceptions index that calculates Transparency International, Ukraine won the 130 position out of 180 countries and compared to the year 2016 raised one position (position from 131 to 130).

Table 2.1

**Ukraine's position among the world's corruption perception index  
that calculates the Transparency International**

Year	Position	The number of countries participating	The change compared to previous year
2017	130	180	↑ 1
2016	131	176	↓ 1
2015	130	168	↑ 12
2014	142	175	-

The position of Ukraine according to the corruption perception index – 2017, that calculates the Transparency International, counts did not change, therefore, advisable to introduce new anti-corruption mechanisms, including the prevention and combating corruption risks through risk-based approach for the activities of the state and initial financial monitoring.

It is expedient to note, that under the framework for implementing the Sustainable Development Strategy "Ukraine - 2020" [1], expected to achieve 25 key indicators that evaluate the implementation of reforms and programs, one of that is Ukraine's entry into the top 50 of the world corruption perception index, that calculates the Transparency International.

According to the report of the National risk assessment on prevention and counteraction to legalization (laundering) of proceeds from crime and terrorist financing in 2016 a high level of corruption is one is external threats to the national system of combating legalization (laundering) of proceeds from crime and terrorist financing [9].

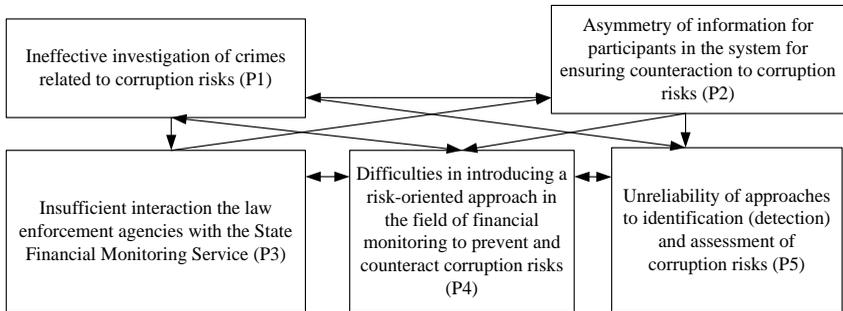
Based on the report MONEYVAL [4] (Committee of Experts of the Council of Europe to assess measures to combat money laundering and terrorist financing) published results for the fifth round of evaluation, Ukraine has significant risks of money laundering, particularly because of corruption as prosecution on money laundering rarely affect the interests of corrupt officials, and even when affected, the results of these proceedings is quite doubtful for sentencing happens to them following retraining on probation, that indicates a lack of convincing results in the fight against one of the highest national risk - money laundering.

Based on the analysis of Report on National risk assessment on prevention and counteraction to legalization (laundering) of proceeds from crime , Strategy development of prevention and counteraction the legalization (laundering) of proceeds from crime, terrorist financing and the financing of proliferation for the period 2020 and action plan for its

implementation, Anti-Corruption Initiative goals of the European Union (EUACI), regulations on preventing and combating corruption, recommendations associations and international institutions in combating corruption formed a list of problems.

Using the method hierarchy [5] built their hierarchy (Figure 2.1), that helped to define the basic contradictions that arise in the process preventing and combating corruption. Thus, the set of elements obtained problems associated with the need to improve measures to prevent and combat corruption among which there are relationships that should be structured using the method hierarchies.

Figure 2.1 shows the relationship between the elements, where the direction of the arrow conditioned orientation dependence: the arrow indicates the element that determines the element from which it comes.



**Figure 2.1 Interaction between elements of the problems associated with the need to improve measures to prevent and combat corruption**

*\* Note: The arrow determines the direction of the impact element to element*

Based on Figure 2.1, built a matrix of reach. For its construction is formed logical matrix  $(I + B)$ , where  $I$  - identity matrix and rises to the level  $k$ . Matrix range, that allows divided the entire set of vertices in a subset of the levels shows in the Table 2.2.

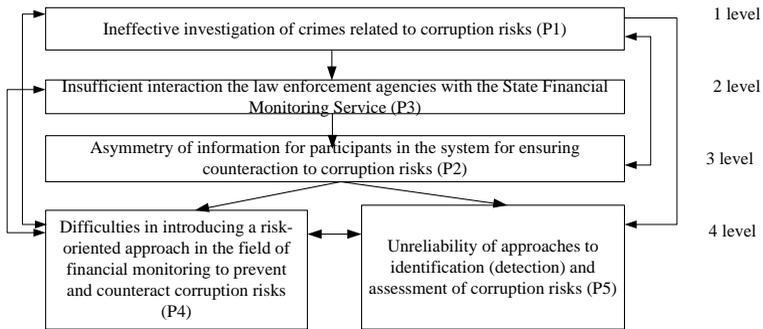
Based on the data held iterations, built hierarchical model problems, associated with the need to improve measures to prevent and combat corruption that should be used in Ukraine (Figure 2.2).

The analysis (Figure 2.2) showed the level of location problems. Based on the existing hierarchical model, the necessity to improve state regulation that involves the use of tools in the implementation of a risk-oriented approach in the field of financial monitoring to prevent and counteract corruption risks, is substantiated.

Table 2.2

**Matrix reaches elements of the problems, associated with the need to improve measures to prevent and combat corruption**

Problem	P1	P2	P3	P4	P5
P1	1	1	1	1	1
P2	1	1	0	1	1
P3	0	1	1	1	0
P4	1	0	1	1	1
P5	0	0	0	1	1



**Figure 2.2 The hierarchical model problems associated with the need to improve measures to prevent and combat corruption**

Thus, the received level problems - the first level of the hierarchy - ineffective investigation of crimes related to corruption risks. At the second level is insufficient interaction the law enforcement agencies with the State Financial Monitoring Service. On the third level are a problem - symmetry of information for participant’s assurance system and combating corruption risks.

The introduction of a risk-based approach in all business activities of financial monitoring including entities of state financial monitoring will serve as basis for the implementation of the first recommendations of the Financial Action Task Force on Money Laundering [3] (Hereinafter - FATF), that is an intergovernmental body whose purpose is to develop and promote strategies to combat money laundering, both nationally and internationally.

According to the prevailing hierarchical model problems, associated with the need to improve measures to prevent and combat corruption,

the necessity of improving state regulation that involves the use of tools in the implementation of risk-based approach in the field of financial monitoring, was substantiated. If you oversight on prevention and counteraction to legalization (laundering) of proceeds from crime and terrorist financing by the State Financial Monitoring Service of Ukraine applies a risk-based approach to reporting entities of initial financial monitoring of Ukraine.

To determine the impact of the introduction and implementation of a risk-based approach to the activities of the state and initial financial monitoring to prevent and counter corruption risks in scenarios of financial monitoring system to ensure that combating corruption risks in Ukraine used the analytic hierarchy T. Saaty [5]. Priority implementation scenarios of financial monitoring system for preventing and combating corruption risks in Ukraine are in the Table 2.3.

The results of Table 2.3 shows, that there are the highest priority with 3 goals of financial monitoring system to ensure that combating corruption risks in Ukraine: the introduction and implementation of a risk-based approach to entities of initial financial monitoring of Ukraine to prevent and counter corruption risks - 1st place (0.324); the introduction and implementation of a risk-based approach to the activities of the State Financial Monitoring of Ukraine for preventing and combating corruption risks - 2nd place (0.184); improving tools detect suspicious financial transactions as predicate offenses of corruption - 3rd place (0.287).

The introduction and implementation of a risk-based approach to entities of initial financial monitoring of Ukraine to prevent and counter corruption risks will strengthen implementation of the accelerated scenario of financial monitoring system to ensure that combating corruption risks in Ukraine as the most preferred scenario (0.522) since the likelihood of realization - 52.2%.

The risk-based approach at the national level applicable to reporting entities aimed at the analysis of financial transactions.

However, according to this assessment report on prevention and counteraction to legalization (laundering) of proceeds from crime and terrorist financing [9] existing legal framework for providing communications established under the concept of "mandatory monitoring" based on automatic notification of transactions that exceed specified threshold (150 thousand UAH), provided they meet certain predetermined criteria (set out in Law [7]).

Table 2.3

**Priority implementation scenarios of financial monitoring system for preventing and combating corruption risks in Ukraine**

Scenarios of financial monitoring system for preventing and combating corruption risks in Ukraine	The introduction and implementation of a risk-based approach to the activities of the State Financial Monitoring of Ukraine for preventing and combating corruption risks	Increased information transparency national financial intelligence unit of the anti-corruption body	Improving legislation Combating corruption risks	Reducing asymmetric information support system for participants Combating corruption risks	The introduction and implementation of a risk-based approach to entities of initial financial monitoring of Ukraine to prevent and counter corruption risks	Improving tools detect suspicious financial transactions as predicate offenses of corruption	The priority for the weight ratio
	0.184	0.073	0.042	0.089	0.324	0.287	
The scenario of accelerated development	0.281	0.647	0.204	0.647	0.583	0.583	0.522
Neutral scenario (no change)	0.583	0,073	0.698	0.073	0.136	0.281	0.273
Script of inhibition	0.136	0.280	0.098	0.280	0.281	0.136	0.205

Also, entities of initial financial monitoring of Ukraine are required to report to the national FIU about their suspicions about the activities of persons or assets if there is reason to believe that they relate to the offense defined by the Criminal Code of Ukraine, or if there is reason to give a message through suspicion of corruption sources of funds.

However, in practice, entities of initial financial monitoring of Ukraine primarily focusing on providing information on financial transactions based on automatic (the legislation) signs, though whether they actually show suspicion of financial transactions. This formal

approach makes it impossible to change the approach to determine the impact of corruption risks in the commission of predicate offenses [9].

The formation of an efficient institutional structure of the risk-oriented system of counteraction to the funds laundering, financing of terrorism and financing the proliferation of weapons of mass destruction by improving the personnel, financial, informational, methodical provision of counteraction to the funds laundering, financing of terrorism and financing the proliferation of weapons of mass destruction is the basis of development of the risk management system [10].

The lack of results to hear from banks and other financial institutions about information on financial transactions subject to financial monitoring and the issue of no separate statistics on the number of suspicious transactions as predicate offenses of corruption, curb the strengthening of external threats to the national system of counteraction legalization (laundering) of proceeds from crime and terrorist financing.

Therefore, preventing and combating corruption risks should form the basis risk-based approach in the activity of state financial monitoring.

**Conclusions.** Thus, as a result of the research achieved objective, namely grounded process of preventing and combating corruption risks when introducing a risk-based approach to financial monitoring system. Upon reaching the goal the following results:

It was determined the impact of corruption risks in Ukraine according to the reports on the results of this assessment on prevention and counteraction to legalization (laundering) of proceeds from crime and terrorist financing and MONEYVAL the results of 5 of the mutual evaluation. The overall level of corruption in Ukraine is high, there significant risks of money laundering, particularly through corruption.

Using the hierarchy method, a hierarchical model of problems, associated with the need to improve measures to prevent and combat corruption is constructed. Based on the hierarchical model, the necessity to improve state regulation that involves the use of tools in the implementation of a risk-oriented approach in the field of financial monitoring to prevent and counteract corruption risks, is substantiated.

Consequently, levels of problems were obtained - the first level of the hierarchy - ineffective investigation of crimes related to corruption risks. It was established that the introduction and implementation of a risk-oriented approach in the activities of entities of initial financial monitoring of Ukraine for prevention and counteraction to corruption risks will contribute to strengthening the implementation of the

accelerated scenario of the development of the financial monitoring system to ensure counteraction to corruption risks in Ukraine as the most priority scenario (0.522), since probability of its realization – 52.2%.

Determined that essential for development national system of combating legalization (laundering) of proceeds from crime and terrorist financing will introduce a risk-based approach in the activity of state financial monitoring and the entities of initial financial monitoring of Ukraine to prevent and counter corruption risks.

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**ACCOUNTING  
PROVISION OF  
INNOVATIONS'  
LIFECYCLE AS  
MANAGEMENT  
OBJECTS**

Modern tendencies of economic science development are characterized by growing interest in innovations, focused on creating and implementing energy saving technologies, waste management technologies, ecological production; biotechnology resources. These processes are accompanied by significant expenses that need full coverage in the system of enterprise management accounting and in financial reporting indices.

The analysis of scientific papers on this topic revealed that in international professional journals, scientists focused mainly on the development of the concept of environmental management accounting. In particular, Burritt (Burritt, R., & Herzig, C., & Schaltegger, S. & Viere T., 2019) considered the diffusion of innovations theory in accounting, which enabled to understand the dynamics of implementing environmental management accounting more deeply and search new effective tools of accounting and management.

The above-mentioned authors concluded that in order to ensure complex conditions of innovative development it is not enough to use only one method of management (namely expenses accounting). This method is extremely important as it is aimed at obtaining reliable

information. However, it requires an inter-discipline understanding of innovations in accounting and environmental management.

Al-Sayed (Al-Sayed, M. & Dugdale, D., 2016) stressed on the growing dynamics of innovations in business processes and analyzed the group of factors influencing:

1) initiation and making decisions “Activity-based innovations” (ABI);

2) the degree of using ABI. As a result of detailed analysis of the studied factors the authors made the conclusion: “ABI can now be regarded as mainstream management accounting practice”.

The main peculiarity of such approach is that the practical management mainly does not use standard (unitary) models of decision-making. However, “any innovation-specific contextual factor (such as level of overhead) in management accounting innovation studies” (Al-Sayed, M. & Dugdale, D., 2016) is the object of constant interest for management.

In solving the main tasks of expenses accounting on innovations Ukrainian scientists concentrate their attention on the following problem questions:

1) the existence of multi-choice concept “innovation expenses” and its terminological discrepancy in theoretical, legislative, and practical spheres (Ozeran, H. & Hyk, V., 2013, pp. 21-22; Benjko, M. M. 2013, pp. 5-11; Gholub Ju. Ju. 2012, pp. 253-260);

2) the multi-choice of methods of reflecting innovation expenses in accounting system (Ozeran, H. & Hyk, V., 2013, p.p. 22-28; Jefimenko, T. I. 2014, pp. 158-162; Ghnylycjka, L. 2007, pp. 45-48);

3) the gaps in working out recognition criteria of innovative objects’ origin as a part of assets; such gaps prevent from adequate disclosing information about them in reporting (Meljnychuk, I. V. (2014, pp. 180-185; Jefimenko, T. I. 2014, pp. 167-172);

4) the absence of uniform accounting methods on innovation expenses that could provide their adequate reflection in the enterprise information system (Ozeran, H. & Hyk, V., 2013, p. 29; Jefimenko, T. I. 2014, pp. 167-172; Chebanova, N. V. & Jefimenko, T. I. 2015, pp. 60-63; Yushchak, Zh. M. 2014, pp. 449-457; Ghrycaj, O. I. 2010, pp. 198-201; Ghurina, N. V. 2010, pp. 53-57; Kantajeva O. V. 2009, pp. 25);

5) the absence or inadaptability of ledgers for accounting innovation expenses (Yushchak, Zh. M. 2014, pp. 449-457; Borodkin, A. S. 1981; Saenko, K. S. 1991; Ghnylycjka, L. 2007, pp. 45-48; Pustovyt, A. N. 2000, pp. 40-44; Pushkar, M. S. 2006);

6) “human factor”, which is the cause of ineffective accounting, i.e. the lack of professional interest of accountant, the subject of business operations’ registration, in full disclosing and increasing data analyticity of innovation expenses (Ozeran, H. & Hyk, V., 2013, p. 29).

Scientific discussion around these problems does not lose topicality. However, some issues that are declared by the authors as “problem ones” in reality do not require scientific approaches to their solving. For example, “the problem of the absence of ledgers to reflect innovation expenses” is a far-fetched scientific myth, which points to absolute isolation of scholar-theoretician from accounting practices. We consider that there is no problem of the absence of ledger “form” in modern accounting, because it is a question of professional competence and opportunities of the subject responsible for organizing accounting at enterprise.

In real conditions the fundamental knowledge of accounting being the basis of accountant’s professional competences enables him to imagine and model any ledger, which corresponds to the parameters of non-standard situation. Head of enterprise or chief accountant cannot but “know” about computer or special software products for conducting accounting and also many suggestions as to adaptation and integration of automated software products in information environment of a particular enterprise.

Accordingly, if research is limited to abstract recommendation “to automate accounting”, it means that the author’s suggestions are based on archaic approaches to understanding the essence of the problem (or the problem which actually no longer exists).

In this context it is expedient to focus on the most important aspects of scientific discourse on the problems of innovation processes’ accounting.

### **1. Recognition of innovations as an object of accounting.**

Some authors ground their research on the need to reflect “innovations that have the status of quantity determined or separated objects” in accounting records (Sachenko, SI & Chereschniuk, OM, 2018, p.743).

However, “innovations” are not and will never be the subject of accounting. Even if innovation is understood as creation of a particular product – good or service, first of all expenses are accounted, and then – the newly created product that has a specific name, quantitative parameters and corresponding economic characteristics according to which it is recorded to a particular account.

Singling out accounting objects of innovation activity is possible only if the rules of their identification and methods of cost measurement are formulated.

According to V. M. Zhuk (Zhuk, V. M. 2011, pp. 36-39), the main objects of accounting innovation activity are:

- estimates on creation;
- expenses on investments in new technologies and research activities;
- innovative products;
- processes of products' commercial using (or their using for further innovation activity).

Most scholars connect the objects of accounting innovations with the concepts of "intangible assets" and "intellectual property". There are some significant differences along with common features of disclosing in accounting the information on intangible assets and innovations (Meljnuchuk, I. V. 2014, pp. 178-185).

1) most of intangible assets' accounting objects, such as the firm's reputation, brand creation, do not undergo the processes of research and development, which is characteristic of innovations;

2) objects of intangible assets are not necessarily characterized by novelty, which is one of the main indicators of innovations;

3) a number of intangible assets by their essence cannot be alienated (licenses, preferences, etc.), at the same time, innovations are new products of the firm which are unique and can be sold or leased to get additional economic benefits.

HCBO 8 "Intangible assets" includes three criteria of recognizing the results of research and developments as part of assets. This list of criteria does not fully meet market demands; that is why I. V. Meljnuchuk (Meljnuchuk, I. V. 2014, pp. 178-185) suggests the following additional criteria:

- if there is a possibility to get economic benefit from selling innovation, which cannot be identified, but there are interested buyers;
- if there is a possibility of singling out the object from unidentified intangible assets for own using in the production system in order to obtain economic benefits;
- if the asset can be exchanged for another asset to obtain economic benefits.

Thus, summarizing research papers enables to generate two "scenarios" of identifying the objects of accounting innovations (Jefimenko, T. I. 2014, pp. 167-172).

- **as an asset of innovative origin** (fixed asset or intangible asset) in balance sheet. Provided that the enterprise proved or “intends or is technically capable and has resources to bring the asset to the state in which it is suitable for using or selling and expects to receive future economic benefits from such asset” (Ministry of Finance of Ukraine 2013, *National Accounting Standards*);

- **as an item of expenses** (administrative, expenses on selling, other operating expenses) of the reporting period in which such expenses were made, if economic benefits from using such object have already been received.

## **2. multi-choice of concepts.**

The authors, using the method of induction in the process of cognition, often quote the definition of “innovation” that in the future may cause substantial deviations from searching the true ways to overcome the problems of accounting. An example of such deformation is a false interpretation of innovation expenses as “new objects of accounting”.

In this aspect, we support the opinion of scholars who consider that innovation expenses are not an absolutely new object of accounting. Such expenses are the object of management and one of the key indices in the process of making managerial decisions related to increasing the efficiency of enterprises’ financial-economic activity (Ozeran, H. & Hyk, V., 2013, p. 28).

Rapid development and active introduction of innovations cause the modification of economic processes and are accompanied by the corresponding expansion of the terminological base, which enables to understand in more detail the essence of real economic operations taking place at enterprise.

For the analysis and synthesis of terminological aspects of defining innovations one should refer to their historical genesis.

The origins of innovation categorical interpretation date back to the 30s of the XXth century, when Y. Schumpeter in his fundamental researches explained the causes of economic development by the attempts to get super-profits generated at the expense of temporary monopoly, which appears in connection with introducing innovations that is “... changes aimed at introducing and using new kinds of consumer products, new production and transport facilities, markets and forms of production organization in industry” (Lebedeva, L. V. 2010, pp. 16-24).

Critical analysis of scientific opinions on interpreting the content of

the term “innovation” enables to substantiate two enlarged approaches: dynamic in which innovation acts as “innovation- process, innovation – a complex of measures”; and static, in which innovation is “innovation-product, innovation - the final result” (Gholub Ju. Ju. 2012, pp. 253-260).

The representatives of “dynamic terminology” interpret innovation as a process in which an invention or idea acquire economic sense, during which the scientific idea or technology are brought to the stage of practical using and begin to give economic effect; or as a new impetus to scientific-technical knowledge ensuring market success.

The related substantiation of the studied term as a complex of technical, production, and commercial measures directed at introduction in the economy of new machinery, technologies, inventions and so on, causing the appearance of new products, improved industrial processes and equipment on the market; as a new phenomenon; as a new scientific-organizational combination of production factors motivated by entrepreneurial spirit (Benjko, M. M. 2013; Volkov, O. I. & Denysenko, M. P. 2007; Mykytjuk, P. P. 2007; *Quality management systems*; Fatkhutdinov, R. A. 2008).

The supporters of “static” terminology interpret innovations as the final result of innovation activity – a new or improved product introduced on the market. (Mezenina, N. S. 2012; *The measurement of scientific and technological activities. proposed guidelines for collecting and interpreting technological innovation data.*; Verkhovna Rada of Ukraine 2002, «*Law of Ukraine» On Innovation Activity*»).

We consider the definition of dynamic approach more substantiated because the final product of innovation activity will be recognized in the future as a part of current or fixed assets (including intangible). And, in fact, innovation is a process of emerging novelty which generates consumer values, which ensure sustainable growth of the financial result, i.e. new economic benefits.

The conducted studies give the reason to consider that multi-choice of approaches to interpreting the term “innovation expenses” does not pose real threats to practical accounting because methods of their solving are highlighted quite widely in scientific and professional literature. The specific subject of accounting – accountant, is the key aspect in solving this problem; much depends on his (her) competence, business skills, and ability to adapt to the requirements of modern information environment.

Using professional judgment of accountant based on using basic

terminological minimum and comprehensive studying additional terms that correspond to the specific production situation is a determining factor of accounting effectiveness. Similar to the model presented in the scientific paper by Kantsedal (Kantsedal, N. A., 2019, p. 33), the combination of accountant's basic skills together with taking into account specific circumstances of enterprise innovation activity envisages:

- multi-aspect study of economic terminology and specific technical terminology related to accounting and characterizing innovation processes more fully;

- search of the most representative term, which enables to understand the economic essence of innovation expenses for determining criteria of their recognition and registration in the accounting system at a particular period of time;

- constant interaction with relevant regulatory base in order to confirm or refute terminological identity of the notion "innovation expenses" as the object of accounting with the aim to predict economic, tax, or legal consequences of registering corresponding economic operations in accounting information system.

Following these rules will help to avoid incorrect terminological borrowings, which make the illusion of "a new vision of accounting".

### **3. Multi-choice methods of accounting innovation expenses.**

Systematizing scientific notions about the ways of constructing accounts' correspondence of accounting the objects of innovations demonstrates multi-choice approach in scholars' recommendations: to keep records of them as a part of other operating activity expenses, to keep records as a part of fixed assets, to keep records as a part of deferred expenses, to keep records as a part of capital investments.

To form the initial asset value of innovative origin, most scientists suggest the using of sub-accounts of capital investments accounting with possibility of their detailing (Jefimenko, T. I. 2014, pp. 167-172; Chebanova, N. V. & Jefimenko, T. I. 2015, pp. 60-63; Meljnychuk, I. V. 2014, pp. 178-185; Kirsanova, V. V., Sukhareva, T. O. & Kovaljova, O. M. 2011, pp. 216-221).

For example, the following sections of analytics can be the units of detailing sub-accounts of capital investments accounting in innovations: "Expenses on acquisition (creation) of innovation assets"; "Innovative technologies purchased under license agreement"; "Innovation assets and technologies received from the science park"; "Innovation assets created as a result of joint activity".

The supporters of “expenditure” approach, recognizing synthetic accounting of innovations, offer to keep records of innovation expenditures as a part of other operating activity expenses according to the following list of analytical accounts: “Information expenses”; “Expenses for preparing innovation activity (intangible)”; “Expenses for preparing innovation activity (tangible)”; “Production expenses of innovation activity (Yushchak, Zh. M. 2014, pp. 449-457).).

Within this scientific approach, the suggestions concerning the reflection of innovation expenses as a part of deferred expenses are substantiated. Thus, L. Hnylytska (Ghnylycjka, L. 2007, pp. 45-48.) offers to conduct expenses’ analytical accounting within the accounts of deferred expenses accounting according to the types of developed products within the range of expenditures and stages of conducted work in order to improve phased accumulation of expenses for developing new products and writing off the costs on serial production. The suggestion to conduct accounting of innovation expenses cumulatively starting from preparing design documentation and to manufacturing experimental series of products is the procedural peculiarity. This approach corresponds to the provisions of international accounting and financial reporting standards.

Zh. M. Yushchak (Yushchak, Zh. M. 2014, pp. 449-457) suggests using the combination of several expense accounts for the formation of accounting records to confirm the lifecycle stages of innovation assets. In accounting practice, in the author’s opinion, at first, the expenses connected with innovation activity, should be recognized as a part of deferred expenses. After completing the project, in case of positive result, the accumulated innovation expenses are to be written off on the account “Capital investments”, and in case of negative result – on the account “Expenses on research and development”, which reduce the financial result.

Hrytsai A. and Z. Yanchenko substantiate the separation of account of innovation expenses accounting (Ghrycaj, O. I. 2010, pp. 198-201; Janchenko, Z. B. 2014, pp. 344-354).

Separate account for accounting expenses on innovation processes has to contain information about all enterprise expenses, connected with innovation activity. Expenses on innovation processes will be recognized as expenses during a certain period together with recognizing profit, for which they are made. To determine financial result this account will be closed by the account “Financial results” (Ghrycaj, O. I. 2010, pp. 198-201). Developing the above-mentioned

scientific approach, Z. Yanchenko notes that after singling out innovation expenses on a separate account, the methods of calculating the cost of innovative product will become clearer and more transparent, which will increase investment attractiveness of enterprise innovation activity (Janchenko, Z. B. 2014, pp. 344-354).

We consider “expenses” approach more substantiated in constructing the principles of accounts’ correspondence in accounting innovation objects, as innovative products have to be recognized in future on accounts of fixed assets or stocks. Separating innovation expenses on a separate account is rational, because “Expenses on research and development” envisage the result of recognizing the object of intangible assets, which, as it was proved above, in most cases is not identical with the object of innovative developments. Introducing of the above mentioned account will result in changes of methodological approaches to expenditure accounting, in particular, it is necessary to substantiate the criteria of innovation expenses “productivity” for detailing the mechanism of including “productive expenses” in the primary cost of future innovative development and decreasing the financial result of the corresponding kind of activity by the sum of “unproductive” expenses (the expenses were made, however, “the product” does not meet the criteria of innovative product).

Possible complications of finding sources of financing innovative programs, developments, projects and the risks of determining the degree of innovativeness of the original product prove the substantiality of scientific suggestions in creating the reserves of providing innovation activity expenses (Ghurina, N. V. 2010, pp. 53-57; Kirsanova, V. V., Sukhareva, T. O. & Kovaljova, O. M. 2011, pp. 216-221).

We consider that it is expedient to conduct accounting records of the above mentioned object in the enumeration of capital’s components, namely, in the part of created provisions for deferred expenses and payments.

### **Conclusions.**

1. Innovation processes cause broadening of economic terminology and ambiguous approaches to interpreting certain terms. This is an indicator of demand for advanced solutions of the subject of accounting – accountant, using innovative approaches by him in searching substantiated and effective methods of accounting corresponding objects.

2. Scientific solving problems in accounting (including accounting of innovation expenses) should be considered by the method “from

reverse”, which answers the question: “Does practical accounting really make such a request in scientific environment?”. This will help to avoid developments having the signs of “pseudo”, in which the problem is far-fetched, and methods of its solving have “zero” effectiveness for management.

3. While reflecting innovative processes in the accounting system, “innovation expenses”, but not “innovations” are the object of accounting observation. “The reserve of ensuring innovation activity expenses” can be recognized as the related accounting object as a part of financing sources

4. Generalizing scientific papers enables to generate two “scenarios” of identifying the objects of accounting innovations: as asset of innovative origin; as expense item.

5. Critical analysis of scientific positions on interpreting the content of the term “innovation” enables to substantiate two enlarged approaches: dynamic, in which innovation is “innovation-process, innovation - complex of measures”; and static, in which innovation is “innovation - product, innovation - final result”.

6. We consider “expenses” approach more substantiated in developing the principles of accounts’ correspondence of accounting innovation objects, because innovative products have to be recognized in future on accounts of fixed assets or stocks. Separating innovation expenses on a separate account is rational, because “Expenses on research and development” envisage the result of recognizing the object of intangible assets, which, as it was proved above, in most cases is not identical with the object of innovative developments.

7. There are the following prospects of further scientific search in this direction: developing approaches to generate internal reporting forms for innovation expenses management; training and regulatory approving methodical recommendations on accounting innovation activity objects of industrial enterprises at the national level; substantiating analytical indicators of innovation activity success (e.g. the level of innovation activity profitability; payback period of innovative projects; the duration of the production cycle of innovative development; the degree of innovation expenses’ productivity, etc.).

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## **USE OF GRAVITATIONAL MODELS FOR SPATIAL SYSTEMS STUDYING**

One of the most promising branches of the national economy of Ukraine is the resort and recreation sphere. As well as the development of other industries, the development of the resort and recreation sector largely depends on the investment of financial resources in the industry. But, due to the difficult financial situation in Ukraine, political changes in the country, significant investments in the industry are now very problematic.

In this regard, the important direction of the industry's development is the search for and implementation of practices that do not require significant funding, but can provide significant development. One of these areas is a set of activities aimed at expanding the geography of holidaymakers and their numbers.

When studying the resort and recreation industry, a very important point is the study of the geography of the tourists' permanent residence.

Knowing the answer to this question the heads of the resort and recreation facilities, local authorities will be able to strengthen their marketing activities in those regions, whose inhabitants today are outsiders in terms of visiting one or another recreational region.

Determine the dependence of the number of vacationers in a particular resort population from living in one or another region of Ukraine is possible through the use of different methods: statistical, statistical and mathematical, economic and mathematical.

In studying spatial systems, considerable interest is the use of gravitational models, as well as models of potentials and spatial interaction. American sociologist F. Kerry in the middle of the XIX century noted the presence of an analogue of gravitational force in social phenomena [1]. For the first time, the idea of a gravitational model was substantiated in the works of Yang [2] and Reilly[3]. A detailed study of the gravitational model was performed in the works Stewart[4,5], Zipf [6] and Stouffer [7]. However, the most famous is the gravitational model of Stewart, based on the concept of the analogy between social and physical phenomena. Stewart proposed three basic social concepts based on the laws of classical Newtonian physics. He introduced the concept of demographic strength, which is similar to the force of gravity; the notion of demographic energy is analogous to the content of gravitational energy; the third term introduced by Stewart - demographic potential - corresponds to the physical concept of gravity potential [4]. The work of S.A. Stouffer influenced the development of gravitational modeling. The model for the analysis of spatial interactions proposed by him is based on the assumption that migrants are at some point attracted by the so-called favorable opportunities which Stauffer considers as mass gravity points; As a mass of the exit point, he suggested using population figures [7]. The model of S.A. Stouffer is asymmetrical, as interacting settlements have qualitatively different masses.

His hypothesis, Stouffer formulated in the following way: "the connection between population mobility and distance is not obligatory; the number of people moving at a certain distance is directly proportional to the number of favorable opportunities at the end of this distance and inversely proportional to the number of intermediate possibilities, the relationship between mobility and distance is determined by an additional dependence, in which the number of intermediate capabilities is a function of distance "[6]. Thus the distance in S.A. Stouffer's model is expressed through the number of favorable opportunities available between the points of entry and exit which detain

the migrants. The longer the distance, the more there are the intermediate capabilities and, consequently, the less is migration flow.

Further development of S.A. Stouffer's hypothesis was obtained in the works of Warnes [8], Garner [9] and Ulman [10]. Ulman's idea of complementarity, collision of opportunities and mobility deserves attention. Ulman explains complementarity as follows: "For interaction between two territories to emerge, there must exist the demand from one of them and a proposal from another ... In order to begin interchange, we need to have strictly certain conditions for mutual complementarity of communication objects. This is the complementarity" [10]. As for the collision of capabilities, Ulman points out that "the complementarity results in the development of an exchange between two territories only if there is no interference from another source of supply" [10]. The last factor required in the system of interchange involves, according to Ulman, is "the mobility of objects of exchange or, in other words, the distance between the interacting territories, expressed through the costs inherent in a particular type of communication, or through the time expended" [10].

Gravitational model is a model that describes the social and economic interactions between spatial objects (cities, regions, countries). This model was called "gravitational" because of its apparent similarity to the Newtonian law of universal gravitation. By its very essence it corresponds to the first law of Tobler's geography: "everything affects everything, but the one that is closer - influences more strongly" [11]. The general feature of these models is that the force of interaction (intensity of flows) in them depends on the significance (magnitude) of objects and the distance between them [12]. The practical disadvantages of the model include the following:

- 1) the predicted values at times differ significantly from the actual ones;
- 2) the model does not reveal the influence of various factors on the migration;
- 3) the model assumes the symmetry of counter flows, which is practically not observed.

In addition, the disadvantage of this method is that it only shows the existence of a certain connection between the data, but can not prove the cause-effect relationship with it [1]. In order to eliminate disadvantages the changes are made in the correlated data array, however, the value of coefficients must be kept or changed slightly.

The advantage of this model is its rigorous theoretical justification.

The model has many different modifications which are used to analyze the process of urbanization, to study export-import relationships, the location of industry, population migration, the number of trips of population between different regions, etc. Correlation of migration statistics was used by American and Swedish scientists (Renkow, Lindgren, Urban, Westerlund, Olle, etc.) in studying pendulum migration [16].

The gravitational model is based on the following simple assumption: the correspondence from area  $i$  to area  $j$  is proportional to the total volume of departure from center  $i$ , the total volume of arrival at the center  $j$  and some function  $C(t_{ij})$  depending on the transport distance  $t_{ij}$  between the centers  $i$  and  $j$ . From an intuitive point of view, the transport distance reflects the degree of proximity of districts, taking into account the speed and convenience of movement provided by the transport network. The method for determining this value may vary in different versions of the model. When calculating a homogeneous matrix of correspondence, that is, correspondence composed of one type movements and users of the same class, the numerical expression of the transport distance is the generalized price (in a particular case the time of travel) of the optimal (the shortest) path connecting two regions.

In a gravitational model, the magnitude of the interaction is proportional to the product of indicators of significance (magnitude, quantity) of objects and inversely proportional to the distance between them:

$$M_{ij} = k \frac{P_i P_j}{d_{ij}^2} \quad (2.1)$$

where -  $M_{ij}$  - indicator of interactions between objects  $i$ ;

$k$  - correspondence coefficient;

$p$  - some measure of the significance of the object;

$d$  - the distance between objects.

It is easy to see that the given formula is similar to the physical formula of the gravitational interaction of the bodies: hence the name of this model.

The classical formula of a gravitational model is the formula proposed by J. Tinbergen for foreign trade [17]:

$$E_{ij} = \alpha_0 Y_i^{\alpha_1} Y_j^{\alpha_2} D_{ij}^{\alpha_3} \quad (2.2)$$

where -  $E_{ij}$  - volume of exports from country  $i$  to country  $j$ ,  $Y_i$  - GDP

of the exporting country serving as a proxy variable to determine the volume of manufactured goods that this country can potentially offer to the international market;

$Y_j$  - GDP of the importing country, which characterizes the volume of its domestic market;

$D_{ij}$  - distance between countries  $i$  and  $j$ .

In 1966, the Dutch economist H. Linneman proposed an improved gravity model, which received the following form [18]:

$$X_{ij} = \alpha_0 (Y_i)^{\alpha_1} (Y_j)^{\alpha_2} (N_i)^{\alpha_3} (N_j)^{\alpha_4} (D_{ij})^{\alpha_5} (P_{ij})^{\alpha_6} + \varepsilon, \quad (2.3)$$

where -  $E_{ij}$  - the value of goods turnover from country  $i$  to country  $j$ ;  
 $Y_i, Y_j$  - indicators characterizing the nominal GDP of the respective countries;

$N_i, N_j$  - population of countries  $i$  and  $j$ ;

$A_{ij}$  - any other factor hindering or facilitating trade, trade barriers (eg, the presence of borders or antidumping regimes in one of the countries);

$P_{ij}$  - trade preferences existing between states (if not,  $P_{ij} = 1$ ; otherwise,  $P_{ij} = 2$ );

$D_{ij}$  - distance between countries  $i$  and  $j$ ;

$\alpha_1 - \alpha_7$  - coefficient of elasticity of exports in accordance with the GDP of the exporting country, of the country's GDP, of the population of the country  $i$ , of the population of the country  $j$ , of the distance between countries  $i$  and  $j$ , of any other factor and of trade preferences;

$\alpha_0$  - free member;

$\varepsilon$  - random error

Rewriting the equation [19, 20] in a logarithmic form, we obtain an equation in the form:

$$\ln X_{ij} = \ln \alpha_0 + \alpha_1 \ln(Y_i) + \alpha_2 \ln(Y_j) + \alpha_3 \ln(N_i) + \alpha_4 \ln(N_j) + \alpha_5 \ln(D_{ij}) + \alpha_6 \ln(P_{ij}) + \varepsilon \quad (2.4)$$

To determine the degree of dependence of the number of vacationers in a particular resort town, the gravity model H. Linneman was adapted as follows:

$$X_{ij} = \alpha_0 (Y_i)^{\alpha_1} (Y_j)^{\alpha_2} (N_i)^{\alpha_3} (N_j)^{\alpha_4} (P_{ij})^{\alpha_5} + \varepsilon, \quad (2.5)$$

where  $X_{ij}$  – tourists flow from region  $i$  to region  $j$ ;

$Y_i, Y_j$  – indicators that characterize the average wage of the relevant

regions;

$D_{ij}$  – the remoteness of the administrative centers of the regions  $i$  and  $j$ ;

$N_i$ , and  $N_j$  – the population in these regions;

$P_{ij}$  – preferences of different types that exist between regions (in the absence of preferences  $P_{ij} = 1$ ; in another case  $P_{ij} = 2$ );

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5$ , – the elasticity of the number of vacationers according to the average wages of the relevant regions, the distance between separate regions, the population in these regions, the availability of preferences between regions.

To calculate the gravity model, statistical data was obtained from the authors by interviewing the owners of the resort and recreation establishments (6 boarding houses and recreation centers with a total of 2047 beds) and owners of mini-hotels (34 mini-hotels with a total of 562 beds for holidaymakers) ) of the city of Berdyansk. Data collection period 2015-2016.

The geography of vacationers in the city of Berdyansk is described by the following equation:

$$X_{ij} = 52,73(Y_i)^{0,67} (Y_j)^{-0,62} (N_i)^{1,41} (N_j)^{-2,14} (D_{ij})^{-2,4} \quad (2.6)$$

The most meaningful and precise conclusions concerning the model by the results of observations were obtained under the following assumptions:

1. The values of variables are non-random variables.
2. The mathematical expectation of a random error in each observation is zero, i.e.

$$M(\varepsilon_i) = 0, \quad i=1 \dots n$$

3. The dispersion of a random error is constant for all observations, i.e.

$$D(\varepsilon_i) = M(\varepsilon_i^2) = \sigma^2, \quad i=1 \dots n$$

4. Random errors of different observations are not statistically related, i.e.

$$M(\varepsilon_i \varepsilon_j) = 0, \quad i \neq j.$$

5. Random have a common normal distribution, in particular  $\varepsilon_i : N(0; \sigma^2)$  .

This model meets the following criteria:

1. The significance of the regression coefficients was determined using Stewdent's criterion (significance level 0.05). The hypothesis of the insignificance of the regression coefficients was discarded since all Prob. (T-statistic)  $< 0.05$ . All regression coefficients are significant at the level of significance 0.05. According to Fisher's criterion, the model is significant because Prob (F-statistic) is also less than 0.05.

2. In this model, the corrected determination coefficient is the most important in comparison with other models.

3. Compared to other models, the correlation coefficient of the predicted value by the model and the actual value of the vector of the values of the dependent variable is also the largest.

The stationary of the sequence of residues was checked using the serial Wald-Wolfowitz criterion, which is aimed at assumption check: if it is possible to assume that the residues are obtained as a result of independent observations of the same random variable:

$$k_{\text{settlement}} = -1,81 \quad k_{\text{table}} = 1,96.$$

Calculating the value of the criterion by modulus turned out to be less than the table value. Then a zero hypothesis was adopted: the residue vector is a random variable.

After that, the model was checked for the normality of errors using the Jarque-Bera test, which involves testing the simultaneous equation of zero asymmetry and excess residue rates.

$$k_{\text{settlement}} = 4,02 \quad k_{\text{table}} = 5,99;$$

As  $k_{\text{settlement}} < k_{\text{table}}$ , the null hypothesis was adopted, that is, at the level of significance of 0.05 it can be affirmed that the data have a normal distribution.

Besides, the residues check on autocorrelation and heteroscedasticity of random errors was carried out, using the Durbin-Watson autocorrelation test and White test.

The disadvantage of Darwin-Watson criterion is the presence of an uncertainty area of the criterion, which does not allow to solve the problem of checking hypotheses under certain values of the statistics of Darwin-Watson. The presence of the uncertainty area of the criterion is

due to the fact that the distribution of statistics depends not only on the number of observations and the number of explanatory variables, but also on the values of explainable variables. Critical values of statistics are determined for sample sizes of at least 15.

In our case:

$$DW_{settlement} = 2,14, \quad D_U = 1.62$$

As  $1,77 < DW_{settlement} < 2,14$ , then at the significance level of 0.05 the hypothesis of the auto-correlation absence was adopted.

In addition, the residue checks on autocorrelation and heteroscedasticity of random errors were performed, using White's test.

Checking heteroscedasticity of random errors using White's test showed that the probability of a first-type error was equal to 0,1; as a result, the hypothesis of absence of heteroscedasticity (if Probability = 0,1 > 0,05, then the hypothesis is accepted) (dispersions are the same)).

Thus, the calculated model of forecasting the dependence of the number of vacationers in a particular city-resort from the place of their permanent residence was reliable and significant.

To test the quality of the built-in multiple linear regression model was necessary to test it on the so-called out-of-sample, that is, sample data not used in constructing the model. For this purpose, the model was checked on later data. To do this, the statistics were used as of 01.01.2017, and the data as of 01.01.2018

The results of the statistical analysis showed that the model is adequate and can be used as a predictive equation. Determination coefficient  $R^2 = 0,92$ . The highest level of correlation is characterized by the connection between the number of vacationers and the distance between the city of Berdyansk and cities of permanent residence (correlation coefficient - 0,96).

In general, we can conclude that the built model corresponds to the real state, and a sample check showed that its application is not limited to the only data on which it was built. The model has the potential to predict the number of vacationers in a particular city-resort from their place of permanent residence.

The model was tested using Student, Darwin-Watson criteria and on the base of RS criteria, and the test results showed that the model is adequate and can be used as a predictive equation. Determination factor is  $R^2 = 0,92$ . The connection between the number of vacationers and the distance between the city of Berdyansk and cities of permanent

residence (correlation coefficient - 0,96) is characterized by the highest level of correlation.

In an effort to use the gravity model not only as a means to describe the existing situation, we are faced with even greater difficulties. The main obstacle in using gravity models for predictions is the lack of a theory that can explain the values of weight functions and degree indicators.

Striving to use the gravity model not only as a means of describing the existing situation, we face even greater difficulties. The main obstacle in using gravity models for predictions is the lack of the theory that can explain the values of weight functions and indicators degree .

Currently, the application of a gravitational model is based simply on the fact that the interaction of two masses of the population should be in other equal conditions in direct proportion to their magnitude. And since the distance also has a braking effect and its overcoming is associated with inconvenience and costs, then the interaction will be inversely proportional to the distance.

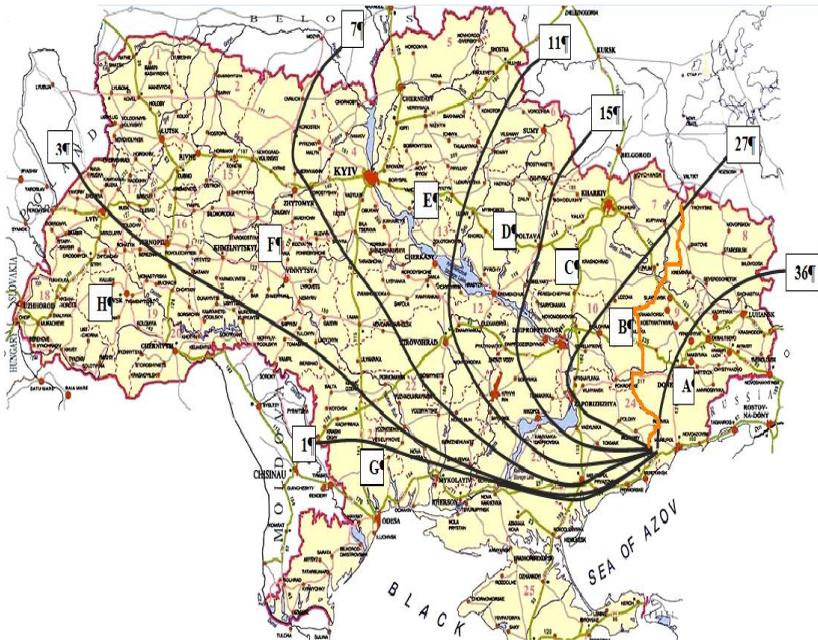
The absence of an acceptable theory becomes apparent on the example of Harris' and Dun's works, who first tried to improve the methods of using the gravity model in practice. Harris compiled a map of US potentials. As a unit of mass measurement in a separate region he used the volume of its retail trade, and he took transport costs for the unit of distance measurement. He accepted indicators of the distance and mass, weight and gravitational constant as equal units. The formula of the potential proposed by Harris has the following form [21]:

$$V_i = \sum \frac{P_j}{d_{ij}} \quad (2.7)$$

where  $P_j$  – fare from  $i$ -to- $j$  point.

Based on the distance between individual settlements of Ukraine and Berdyansk city, as well as an average cost of 1 liter of fuel (gasoline A-95) and average fuel consumption per 100 km there were calculated potentials and constructed a map of potentials (Figure 2.3).

The calculations have shown that separate regions of Ukraine have different potentials regarding the number of vacationers who come to rest and treatment in Berdyansk. The highest level of interaction has zone A (36%), the lowest level has zones F and H (3 and 1 percent, in accordance).



**Figure 2.3 The potential of the resort and recreation industry of Berdyansk**

Taking into account the political and economic situation that has developed in separate regions of Lugansk and Donetsk oblasts, next few years, a significant reduction in the number of vacationers coming to rest and treatment from these regions (zone A) should be expected. It is also possible a certain decrease in the number of vacationers arriving in Berdyansk from the zone B. That is why the local authorities in Berdyansk, the heads of the resort and recreation facilities, owners of mini-hotels should concentrate efforts to attract the rest of vacationers from zones E, F and H. A focused marketing company will significantly expand the geography of vacationers and increase their number in a particular resort and recreational region.

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**COMPREHENSIVE  
ASSESSMENT OF  
THE QUALITY OF  
THE «PANCAKES»,  
CONSIDERING ON  
THE NORMS OF  
THE  
PHYSIOLOGICAL  
NEEDS OF THE  
AVERAGE PERSON**

**Introduction.** The assessment of the quality of dishes used by a person is in demand and involves a set of operations, which includes the choice of nomenclature of quality indicators of the product, the definition of the values of these indicators and their comparison with the basic. The aim of the work is to evaluate the quality of a new pancake dish for Ukraine, from the point of view of the norm of physiological needs of a human.

**Materials and methods.** Methods of research: qualimetric – complex quantitative assessment of the quality of pancakes, taking into account the norms of physiological needs of the average person.

**Results and discussions.** Taking into account the norms of the physiological needs of the average person, a comprehensive assessment of the quality of the «pancakes» dish is calculated. To combine the quality indicators into a generalized (complex) indicator, an additive mathematical model is used as the most common in qualimetry.

**Conclusions.** The method of estimating the quality of the «pancakes» dish is considered, taking into account the norms of the physiological needs of the average person. The structure of the quality indicators and the results of experimental studies of the complex-quantitative assessment of the quality of the «pancakes» dish are presented. Taking into account the norms of the physiological needs of the average person, a comprehensive assessment of quality is calculated. For a given dish, complex quality indicators for a group of energy substances, minerals and vitamins are defined.

Healthy eating has many benefits and is very important for everyone [1-3]. The formation of useful habits in the early years in many respects influences our future [4]. This helps to reduce the risk of subsequent diseases such as obesity, cardiovascular disease, diabetes and even cancer.

Efficient nutrition defines the physiological needs for the use of a particular product, because if everyone will be careful about planning their daily diet, we can refer to age-related diseases (cardiovascular, oncological, diabetes, obesity, osteoporosis) [5].

The Order of the Ministry of Health № 1073 «On Approval of the Norms for the Physiological Needs of the Population of Ukraine in the Basic Nutrients and Energy» takes into account the recommendations and standards of the World Health Organization (WHO) and the European Food Safety Agency, in particular, regarding the reduction of the caloric value for children of all ages. The problem of overweight and obesity in children and teenagers is becoming increasingly widespread in the European region.

Childhood obesity is considered one of the most serious challenges for public health in the 21st century. According to WHO, every third teenager in Europe has overweight or obesity. Particular concern is caused by the fact that the epidemic is increasing in Eastern European countries, where indicators have traditionally been lower.

The problem is also relevant for Ukraine. According to the Center of Medical Statistics of the Ministry of Healthcare of Ukraine, each year 15.5 thousand new cases of obesity in children are recorded. In total,

such children in Ukraine are about 70 thousand (according to 2016). Therefore, the updated of the Ministry of Healthcare of Ukraine rules reduce the energy requirement for children of different age groups by reducing the need for non-animal proteins and carbohydrates. At the same time, the requirement for the most balanced animal protein is increased. At the same time, reduced need for fats for preschool children and increased similar need for fats for school children.

Revised Mineral and Vitamin Needs for Children and Adults. Based on research results, recommendations of reputable Ukrainian and world health organizations, reduced vitamin A requirements, increased vitamin D, folic acid.

In 2017, the Law «On the Norms of Physiological Needs of the Population of Ukraine in Essential Nutrients and Energy» [6] was approved, which separately identified the daily needs of children and adults in the main macro- and micronutrients (vitamins, minerals, minerals and biologically active substances). Daily energy expenditure is determined for people depending on body weight, age, sex with the main metabolism and certain physical activity, which is divided into 5 groups.

Taking into account the above mentioned calculation will be conducted for women aged 18-29 with a physical activity rate of 1.6.

To calculate we have used the complex method of assessing the quality of products. This method consists in the expression of the level estimation by a single number resulting from the combination of the selected individual indicators into one complex index [7-8].

The most common method of assessing the quality of products is the most common. However, a comprehensive food assessment does not exclude a differential assessment, since in some cases the high value of a complex quality index may disguise the low level of product quality by some unit values.

Each quality index, being a quantitative characteristic (measure) of one of the properties of the model of the quality of the object (phenomenon), must reflect (to a greater or lesser extent) the ability (property) of this object (phenomenon) to satisfy the public needs (interests, values) in specific conditions. Thus, when forming (introducing) any quality indicator, the following components of quality must be taken into account: public needs; specific conditions; object and measure of satisfaction (gradation) needs. Quality Score should answer the question: to what extent this object (phenomenon) has the property (ability) to meet public demand (interest, value).

Method of determination of the complex assessment of the quality of the «pancakes» dish [9-13]:

1) The values of the indicators for given diets are determined by the formula:

$$P_{ij} = \frac{M_{ij}}{\sum M_{ij}}, \quad (2.8)$$

where  $M_{ij}$  – the contents  $i$  nutrients in the  $j$  group of substances with the diet.

2) In the same way, the basic values are determined according to the recommended norms:

$$P_{ij}^{basic} = \frac{M_{ij}^{basic}}{\sum M_{ij}^{basic}}, \quad (2.9)$$

where  $M_{ij}^{basic}$  – the value  $i$  nutrients in  $j$  the group of substances according to the norms of physiological needs.

3) Estimation of individual parameters of proteins, fats and carbohydrates is calculated by the formula:

$$K_{ij} = \frac{P_{ij}^z}{P_{ij}^{basic}}, \quad (2.10)$$

where  $P_{ij}$  – index of nutrient content in the daily ration (food intake);  
 $P_{ij}^{basic}$  – basic (balanced) value of index of a nutrient material in daily ration (according to norms of physiological needs);

$z$  – index, that considers the influence of changing index value on qualitative rate of an object, that is equal to plus 1 in proteins and carbohydrates content estimating and minus 1 in fats content estimating.

4) The values of the weighting factors  $m_{ij}$  of nutrients calculated by the formula:

$$m_{ij} = \frac{\frac{\sum M_{ij}^{basic}}{M_{ij}^{basic}}}{\sum \frac{\sum M_{ij}^{basic}}{M_{ij}^{basic}}}. \quad (2.11)$$

5) The complete index of the quality of the «pancakes» for the balance of nutrients for a two-tier structure will be determined using the

additive model:

$$K_o = \sum_{i=1}^l M_j \cdot \sum_{j=1}^{n_i} m_{ij} \cdot K_{ij}, \quad (2.12)$$

where  $M_j$  – weighting factor groups of nutrients.

**Results and their discussion.** According to the norms of content of energy substances, minerals and vitamins, which are included in the dish «pancakes», a re-calculation of nutrients content (Table 2.4).

Absolute values of the quality indices of energy nutrients, minerals and vitamins stimulate formula (2.8), which are: for proteins –  $P_p=0,129644$ ; fats –  $P_f=0,153755$ ; carbohydrates –  $P_c=0,716601$ ; calcium –  $P_{Ca}=0,495886$ ; phosphorus –  $P_p=0,442442$ ; magnesium –  $P_{Mg}=0,054901$ ; iron –  $P_{Fe}=0,003496$ ; zinc –  $P_{Zn}=0,002175$ ; iodine –  $P_I=0,0000241$ ; cuprum –  $P_{Cu}=0,0000697$ ; chromium –  $P_{Cr}=0,0000082$ ; molybdenum –  $P_{Mo}=0,0000332$ ; selenium –  $P_{Se}=0,0000229$ ; manganese –  $P_{Mn}=0,0009431$ ; ascorbic acid –  $P_C=0,1292338$ ; retinol –  $P_A=0,0071102$ ; tocopherol –  $P_E=0,2623967$ ; calciferol –  $P_D=0,0000466$ ; thiamine –  $P_{B1}=0,0213970$ ; riboflavin –  $P_{B2}=0,0270302$ ; pyroxidine –  $P_{B6}=0,0237165$ ; niacin –  $P_{B3}=0,4317261$ ; folate –  $P_{B9}=0,0031953$ ; cobalamin –  $P_{B12}=0,0000496$ ; biotin –  $P_{B7}=0,00089$ ; vitamin K –  $P_K=0,0024128$ ; pantothenic acid –  $P_{B5}=0,0907950$ . The values obtained are listed in Table 2.5.

Similarly, according to the recommended norms of physiological need (Table 2.4), the basic values of formula (2.9) were determined. The basic values of quality indices for energy, minerals and vitamins are: for proteins –  $P_p=0,146667$ ; fats –  $P_f=0,128889$ ; carbohydrates –  $P_c=0,724444$ ; calcium –  $P_{Ca}=0,3883741$ ; phosphorus –  $P_p=0,4236809$ ; magnesium –  $P_{Mg}=0,1765337$ ; iron –  $P_{Fe}=0,0060022$ ; zinc –  $P_{Zn}=0,0042368$ ; iodine –  $P_I=0,0000530$ ; cuprum –  $P_{Cu}=0,0003531$ ; chromium –  $P_{Cr}=0,0000177$ .

Molybdenum –  $P_{Mo}=0,0000247$ ; selenium –  $P_{Se}=0,0000177$ ; manganese –  $P_{Mn}=0,0007061$ ; ascorbic acid –  $P_C=0,6235636$ ; retinol –  $P_A=0,0089081$ ; tocopherol –  $P_E=0,1336208$ ; calciferol –  $P_D=0,0000446$ ; thiamine –  $P_{B1}=0,0115805$ ; riboflavin –  $P_{B2}=0,0142528$ ; pyroxidine –  $P_{B6}=0,0160345$ ; niacin –  $P_{B3}=0,1425288$ ; folate –  $P_{B9}=0,0035632$ ; cobalamin –  $P_{B12}=0,0000267$ ; biotin –  $P_{B7}=0,0004454$ ; vitamin K –  $P_K=0,0008908$ ; pantothenic acid –  $P_{B5}=0,0008908$ .

The values of the weighting factors  $m_{ij}$  of the nutrients were calculated according to the recommended physiological requirements (Table 2.4) by the formula (2.11).

Table 2.4

**Recalculation of the content of energy substances, minerals,  
vitamins, which are included in pancakes**

Nutrients	Name of the ingredient							Total
	Milk	Chicken yeggs	Wheat flour	Ripper	Oil	Sugar	Salt	
Mass, g	210	40	200	5	25	30	3	513
<b>Energy substances, g:</b>								
Proteins	6,1	5,1	21,6	0	0	0	0	32,8
Fats	6,7	4,6	2,6	0	25	0	0	38,9
Carbo- hydrates	9,9	0,3	139,8	1,4	0	29,9	0	181,3
<b>Mineral substances, mg</b>								
Ca	252,0	22,0	36,0	293,8	0	0,9	11,4	616,1
P	189,0	76,8	172,0	109,6	0	0	2,3	549,7
Mg	29,40	4,80	32,00	1,35	0	0	0,66	68,21
Fe	0,210	1,000	2,400	0,551	0,005	0,090	0,087	4,343
Zn	0,840	0,444	1,400	0	0	0	0,018	2,702
I	0,019	0,008	0,003	0	0	0	0	0,030
Cu	0,025	0,033	0,020	0	0	0	0,008	0,087
Cr	0,004	0,002	0,004	0	0	0	0	0,010
Mo	0,011	0,002	0,025	0	0	0	0,003	0,041
Se	0,004	0,012	0,012	0	0	0	0	0,028
Mn	0,013	0,012	1,140	0	0	0	0,008	1,172
<b>Vitamins, mg:</b>								
C	2,730	0	0	0	0	0	0	2,730
A	0,046	0,104	0	0	0	0	0	0,150
E	0	0,240	3,000	0	2,303	0	0	5,543
D	0	0,001	0	0	0	0	0	0,001
B <sub>1</sub>	0,084	0,028	0,340	0	0	0	0	0,452
B <sub>2</sub>	0,315	0,176	0,080	0	0	0	0	0,571
B <sub>6</sub>	0,105	0,056	0,340	0	0	0	0	0,501
B <sub>3</sub>	1,680	1,440	6,000	0	0	0	0	9,120
B <sub>9</sub>	0,011	0,003	0,054	0	0	0	0	0,068
B <sub>12</sub>	0,001	0	0	0	0	0	0	0,001
B <sub>7</sub>	0,007	0,008	0,004	0	0	0	0	0,019
K	0,001	0	0,001	0	0,049	0	0	0,051
B <sub>5</sub>	0,798	0,520	0,600	0	0	0	0	1,918

Table 2.5

**Calculation of absolute values, baseline values, weighting factors  
and unit quality indices**

Absolute values		Basic values		Values of weighting factors		The values of unit quality indicators	
<b>Energy substances</b>							
P <sub>p</sub>	0,129644	P <sub>p</sub> <sup>b</sup>	0,146667	m <sub>p</sub>	0,42728	K <sub>p</sub>	0,883938
P <sub>f</sub>	0,153755	P <sub>f</sub> <sup>b</sup>	0,128889	m <sub>f</sub>	0,486215	K <sub>f</sub>	0,838275
P <sub>c</sub>	0,716601	P <sub>c</sub> <sup>b</sup>	0,724444	m <sub>c</sub>	0,086505	K <sub>c</sub>	0,989173
<b>Mineral substances</b>							
P <sub>Ca</sub>	0,495886	P <sub>Ca</sub> <sup>b</sup>	0,3883741	m <sub>Ca</sub>	0,0000145	K <sub>Ca</sub>	1,2768249
P <sub>P</sub>	0,442442	P <sub>P</sub> <sup>b</sup>	0,4236809	m <sub>P</sub>	0,0000133	K <sub>P</sub>	1,0442809
P <sub>Mg</sub>	0,054901	P <sub>Mg</sub> <sup>b</sup>	0,1765337	m <sub>Mg</sub>	0,0000320	K <sub>Mg</sub>	0,3109932
P <sub>Fe</sub>	0,003496	P <sub>Fe</sub> <sup>b</sup>	0,0060022	m <sub>Fe</sub>	0,0009397	K <sub>Fe</sub>	0,5823898
P <sub>Zn</sub>	0,002175	P <sub>Zn</sub> <sup>b</sup>	0,0042368	m <sub>Zn</sub>	0,0013312	K <sub>Zn</sub>	0,5133067
P <sub>I</sub>	0,0000241	P <sub>I</sub> <sup>b</sup>	0,0000530	m <sub>I</sub>	0,106499	K <sub>I</sub>	0,4544151
P <sub>Cu</sub>	0,0000697	P <sub>Cu</sub> <sup>b</sup>	0,0003531	m <sub>Cu</sub>	0,0159749	K <sub>Cu</sub>	0,1972602
P <sub>Cr</sub>	0,0000082	P <sub>Cr</sub> <sup>b</sup>	0,0000177	m <sub>Cr</sub>	0,3194976	K <sub>Cr</sub>	0,4650536
P <sub>Mo</sub>	0,0000332	P <sub>Mo</sub> <sup>b</sup>	0,0000247	m <sub>Mo</sub>	0,2282126	K <sub>Mo</sub>	1,3417513
P <sub>Se</sub>	0,0000229	P <sub>Se</sub> <sup>b</sup>	0,0000177	m <sub>Se</sub>	0,3194976	K <sub>Se</sub>	1,2986394
P <sub>Mn</sub>	0,0009431	P <sub>Mn</sub> <sup>b</sup>	0,0007061	m <sub>Mn</sub>	0,0079874	K <sub>Mn</sub>	1,3355473
<b>Vitamins</b>							
P <sub>C</sub>	0,1292338	P <sub>C</sub> <sup>b</sup>	0,6235636	m <sub>C</sub>	0,0000251	K <sub>C</sub>	0,2072504
P <sub>A</sub>	0,0071102	P <sub>A</sub> <sup>b</sup>	0,0089081	m <sub>A</sub>	0,0017571	K <sub>A</sub>	0,7981798
P <sub>E</sub>	0,2623967	P <sub>E</sub> <sup>b</sup>	0,1336208	m <sub>E</sub>	0,0001171	K <sub>E</sub>	1,9637420
P <sub>D</sub>	0,0000466	P <sub>D</sub> <sup>b</sup>	0,0000446	m <sub>D</sub>	0,3514157	K <sub>D</sub>	1,0468803
P <sub>B1</sub>	0,0213970	P <sub>B1</sub> <sup>b</sup>	0,0115805	m <sub>B1</sub>	0,0013516	K <sub>B1</sub>	1,8476763
P <sub>B2</sub>	0,0270302	P <sub>B2</sub> <sup>b</sup>	0,0142528	m <sub>B2</sub>	0,0010982	K <sub>B2</sub>	1,8964742
P <sub>B6</sub>	0,0237165	P <sub>B6</sub> <sup>b</sup>	0,0160345	m <sub>B6</sub>	0,0009762	K <sub>B6</sub>	1,4790948
P <sub>B3</sub>	0,4317261	P <sub>B3</sub> <sup>b</sup>	0,1425288	m <sub>B3</sub>	0,0001098	K <sub>B3</sub>	3,0290445
P <sub>B9</sub>	0,0031953	P <sub>B9</sub> <sup>b</sup>	0,0035632	m <sub>B9</sub>	0,0043927	K <sub>B9</sub>	0,8967566
P <sub>B12</sub>	0,0000496	P <sub>B12</sub> <sup>b</sup>	0,0000267	m <sub>B12</sub>	0,5856928	K <sub>B12</sub>	1,8563969
P <sub>B7</sub>	0,000089	P <sub>B7</sub> <sup>b</sup>	0,0004454	m <sub>B7</sub>	0,0351416	K <sub>B7</sub>	1,9981066
P <sub>K</sub>	0,0024128	P <sub>K</sub> <sup>b</sup>	0,0008908	m <sub>K</sub>	0,0175708	K <sub>K</sub>	2,7086035
P <sub>B5</sub>	0,0907950	P <sub>B5</sub> <sup>b</sup>	0,0445403	m <sub>B5</sub>	0,0003514	K <sub>B5</sub>	2,0384938

The weighting factors were for: for proteins – m<sub>p</sub>=0,42728; fats – m<sub>f</sub>=0,486215; carbohydrates – m<sub>c</sub>=0,086505; calcium – m<sub>Ca</sub>=0,0000145; phosphorus – m<sub>P</sub>=0,0000133; magnesium – m<sub>Mg</sub>=0,0000320; iron – m<sub>Fe</sub>=0,0009397; zinc – m<sub>Zn</sub>=0,0042368; iodine – m<sub>I</sub>=0,0000530;

cuprum –  $m_{Cu}=0,0159749$ ; chromium –  $m_{Cr}=0,0159749$ ; molybdenum –  $m_{Mo}=0,2282126$ ; selenium –  $m_{Se}=0,3194976$ ; manganese –  $m_{Mn}=0,0079874$ ; ascorbic acid –  $m_C=0,0000251$ ; retinol –  $m_A=0,0017571$ ; tocopherol –  $m_E=0,0001171$ ; calciferol –  $m_D=0,3514157$ ; thiamine –  $m_{B1}=0,0013516$ ; riboflavin –  $m_{B2}=0,0010982$ ; pyroxidine –  $m_{B6}=0,0009762$ ; niacin –  $m_{B3}=0,0001098$ ; folate –  $m_{B9}=0,0043927$ ; cobalamin –  $m_{B12}=0,5856928$ ; biotin –  $m_{B7}=0,0351416$ ; vitamin K –  $m_K=0,0175708$ ; pantothenic acid –  $m_{B5}=0,0003514$ .

Estimation of the individual indicators of the quality of energy, minerals and vitamins was calculated using formula (2.10), using the data Table 2.5. The assessment of individual indicators was for: proteins –  $K_p=0,883938$ ; fats –  $K_f=0,838275$ ; carbohydrates –  $K_c=0,086505$ ; calcium –  $K_{Ca}=1,2768249$ ; phosphorus –  $K_p=1,0442809$ ; magnesium –  $K_{Mg}=0,3109932$ ; iron –  $K_{Fe}=0,5823898$ ; zinc –  $K_{Zn}=0,5133067$ ; iodine –  $K_I=0,4544151$ ; cuprum –  $K_{Cu}=0,1972602$ ; chromium –  $K_{Cr}=0,4650536$ ; molybdenum –  $K_{Mo}=1,3417513$ ; selenium –  $K_{Se}=1,2986394$ ; manganese –  $K_{Mn}=1,3355473$ ; ascorbic acid –  $K_C=0,2072504$ ; retinol –  $K_A=0,7981798$ ; tocopherol –  $K_E=1,9637420$ ; calciferol –  $K_D=1,0468803$ ; thiamine –  $K_{B1}=1,8476763$ ; riboflavin –  $K_{B2}=1,8964742$ ; pyroxidine –  $K_{B6}=1,4790948$ ; niacin –  $K_{B3}=3,0290445$ ; folate –  $K_{B9}=0,8967566$ ; cobalamin –  $K_{B12}=1,8563969$ ; biotin –  $K_{B7}=1,9981066$ ; vitamin K –  $K_K=2,7086035$ ; pantothenic acid –  $K_{B5}=2,0384938$ .

To calculate the complex index of pancakes for the balance of nutrients for a two-tier structure, formula (2.12) was used, in which the values of the mass factors (M) were taken for energy substances – 0,35; vitamins – 0,55; mineral substances – 0,1.

As a result of calculations, the «pancakes» has a comprehensive quality assessment, which is  $K_0=1,27$ .

**Conclusions.** The method of estimation of the quality of the «pancakes» is considered. The structure of quality indicators and the results of experimental studies of complex quantitative quality assessment are presented. Taking into account the norms of the physiological needs of the average person, namely women aged 18-29 with a physical activity factor of 1.6, a comprehensive assessment of the quality of the «pancakes» dish was calculated. For a given diet, complex quality indicators for a group of energy substances, minerals and vitamins are defined. It is also suggested to add to the diet of raspberries, which balances it on the index of vitamin C. It was found

that when adding raspberries the values of a complex quality index became the most balanced.

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**INNOVATIVE  
ENSURING OF  
AGRICULTURAL  
ENTERPRISES  
ON PRINCIPLES  
OF PRIVATE-  
STATE  
PARTNERSHIP**

One of the main directions of ensuring reproductive processes in agriculture is now considered as a widespread application of the latest scientific achievements in the field of technology and production organization in order to increase volumes and improve the quality of products. The possibilities of using innovations by agrarian enterprises are rather limited due to the influence of many factors: the lack of financial resources; a sharp rise in prices for new means of production; the lack of regulatory mechanisms that promote the use of innovations in agriculture.

Domestic agrarian sphere, whose entities operate in favorable natural-climatic conditions, due to the technical backwardness and inefficient organization of its reform according to the neoliberal model, can not now provide the population available at reasonable prices and quality food products. The unresolved issue is the very low level of demand for agricultural science results in agricultural production, which naturally leads to a decrease in the quality of its functioning.

It is known that Ukraine was the first among the CIS states to legislate on a scientific-technical modernization of the economy. The Law of Ukraine “On the Principles of State Policy in the Field of Science and Scientific and Technical Policy”, adopted in 1991, stated that it was scientific-technical progress that was the main factor in the development of society and proclaimed that “the state provides priority support to the development of science as a determining sources of economic growth”. In a slightly different version, this provision is also contained in the Law of Ukraine “On Scientific and Scientific-Technical Activity”, which was adopted in 1998 instead of the above: “The development of science and technology is a determining factor in the progress of society, increasing the welfare of its members their spiritual and intellectual growth” [1].

The realization of such a direction of the state policy and the choice of an innovative model of economic development is specified by the Resolution of the Verkhovna Rada of Ukraine dated July 13, 1999, No. 916-XIV [2], which approved the Concept of Scientific-Technical and Innovative Development of Ukraine, as well as a number of laws of Ukraine: “On the special regime of innovation activity of technical parks”; “On priority directions of development of science and technology”; “On innovation activity”; “On priority directions of innovation activity in Ukraine”; “On the national comprehensive program for the development of high technologies”; “On state regulation of activities in the field of technology transfer”; “On the science park “Kyiv Polytechnic”.

These documents and numerous by-laws in Ukraine were created a regulatory framework which not only provided a general orientation to the innovative development of the economy, but also outlined the main mechanisms for the implementation of such a course by the state. However, the practical implementation of these mechanisms in Ukraine did not take place.

After removing by the Verkhovna Rada of Ukraine articles 21 and 22 of the Law of Ukraine “On innovation activity”, it practically lost its meaning and essentially turned into a purely declarative document, which defines a certain terminology and mentions world-wide mechanisms of state influence on innovation processes, but none of these mechanisms is not really implemented [3]. Perhaps an attempt to organize support and incentives for all, without exception, innovation projects, provided for in the first version of the law, was somewhat premature.

The idea of forming on a competitive basis the state scientific-technical programs aimed at realization the priority directions of the development of science and technology in Ukraine was compromised by the fact that in their implementation the Ministry of Finance allocated a very small share of the total financing of science. That is, they really did not meet the notion of “priority”. Significant complaints were also caused by the procedure for identifying priority directions for the development of science and technology and the thematic orientation of programs. Mechanisms for the formation and realization of SSTE (state scientific-technical enterprise), despite the fact that they were the first to realization a progressive competitive approach to the selection of projects, virtually departed from the requirements of the program-targeted approach, and therefore did not give the opportunity to take advantage of this approach.

Today, our country is the only country in Europe, which in no way stimulates investment in scientific research and developments, there is virtually no state influence on innovation processes in the economy, due to insufficient state support, the scientific potential degrades. Without solving these problems, efforts to transfer the economy to an innovative way of development will not be grounded.

Consequently, the current legislative base of scientific-technical and innovation development, despite the considerable efforts spent on its development, does not meet modern requirements and practically does not influence the pace of such development. Issues remain unresolved such as the stimulation of innovation activity and the cost of research and development, the formation of innovative venture funds, the realization of the policy of innovation priorities of the state, the use for this of the opportunities and benefits of the program-targeted approach and the private-public partnership.

At present, agrarian science offers developments, the use of which allows improving the system of agriculture, increase productivity of land use and livestock, improve the efficiency of agricultural production. However, agricultural producers do not properly implement scientific-technical products, which are related not only to their unfavorable financial situation, but also to the low interest of specialists and managers in this process. The weak susceptibility of the results of scientific-technical progress, as a rule, is due not only to lack of information but also to inappropriate training.

In the current conditions is not formed marketing ensuring of orders for scientific research and developments, innovative products. As a rule,

in the selection of projects there is no deep economic examination, nor does it evaluate the indicators efficiency and risks, no schemes are being developed for the promotion of the obtained results in production, resulting the innovative developments not becoming an innovative product.

It is obvious that in the modern conditions an important role is played by the informational-consultative ensuring of agricultural commodity producers. The foreign experience of the leading countries of the world proves that the key to successful promotion developments on the market is the level of organization management of the whole cycle of innovative projects.

Investigation of the practice of informational-consultative ensuring of the activities of agricultural enterprises in the leading countries of the world convinces the importance of establishing a dialogue between agricultural producers and state authorities. In the framework of the All-Ukrainian Hakaton Agrarian Innovations 2018, was announced cooperation between AgTech Ukraine and the French company Valeur-Tech on the plan to launch an exchange program technology projects in the field AgTech between Ukraine and France [4].

One of the directions to ensure the effective dissemination of the latest developments is the advisory support that provided by the British Sugar Area Manager. This group maintains direct contacts with farmers and researchers, which enables prompt prove of developed scientific programs to immediate consumers and adapts them to suit the soil properties.

Another method of disseminating information on scientific achievements is the day's open doors in the counties, where a direct demonstration of major achievements in agriculture and field testing are carried out. The main task that is solved at such events is the display in the real conditions of production of the basic directions of the Foundation about activity concerning spring field work, modern methods of seed processing, possibilities of new varieties, management control and pest control, weed, disease, harvesting harvest, environmental protection works, new developments in communication ensuring activities, etc.

The simplest method of communicating information to direct users is to publish it by the Foundation and distribute it using the direct-mail method, use of independent consultants for agrochemical offices, providing consultation through telephone and Internet, carrying out of conferences, and also popularization of publications of scientific-research centers of the country, such as Clinics from plant protection (The Broom's

Barn Plant Clinic). Promotes the dissemination of information on scientific achievements among farmers as well as the organization of operational publications under the Foundation program in renowned professional editions, in particular, the British Sugar Beet Review.

Generalization and analysis of foreign experience in the development of innovation processes showed the following: the peculiarity of the development of innovative processes lies primarily in orientation on the profile industries of the region, the priorities of its development and the maximum use of those or other advantages; successful development of innovation activity in most countries is connected with the system of state support of scientific-innovative sphere of agro-industrial complex; the most important modern mechanisms for stimulating innovation development is the system of preferential lending and state insurance of loans at all stages of the innovation cycle.

The issues discussed are relevant to domestic agricultural science, which, even in the face of limited funding, tries to participate in the innovative ensuring of the industry. In order to achieve the positive effect of agrarian science on the development of agricultural production, it is necessary to strengthen the state's actions in the following directions: conducting scientific developments and introducing innovative products into the practical activities of commodity producers; formation of attractiveness of scientific-research activity among high school graduates; assistance in the development of innovation infrastructure and the formation of an information system accessible to commodity producers. State support should be reoriented from agricultural production on support of individual projects, which are defined in advance by well-known categories, which ensure their high efficiency [5].

The study of foreign experience shows that the process of innovation development in the agrarian sector should begin with stimulating the scientific-research activities of sectoral scientific-research institutes by providing them with incentives, creating conditions for the integration of business, universities and scientific-research centers with innovative small enterprises, that working on the state scientific-technical subjects in the field of agrarian economics within national programs. Creating a comprehensive lending mechanism to stimulate innovation activity in agriculture – a field that is characterized by a high degree of risk and uncertainty, will enable the intensification of scientific-technical developments throughout the chain – from fundamental research to the introduction of developments in production.

Given the specifics of agriculture, scientists distinguish the following types of innovations in the agroindustrial complex: breeding-genetic, technical-technological and production, organizational-managerial, economic, social, environmental and informational. The main sources of funding for agrarian science should be the state budget and the activities of scientific-research institutions on the self-supporting subject. The possibility of concluding contracts for scientific research with enterprises and organizations is limited, since most customers (agricultural producers) are not able to pay for them. Therefore, the only effective way of development innovations in the agrarian sector is to turn it into a market basis, subject to limited state control and substantial fiscal support in the form of indirect financial-credit stimulation.

Today, an important task for the development of innovative activity in agricultural production is the development and implementation of a holistic innovation system, which is organized independently for the basic industry of agriculture, which structurally and functionally combines the closely interconnected scientific, personnel, production and financial potentials. It is clear that effective implementation of technical decisions in production processes can take place only on condition of partnership between the state, business and the developers of the new technologies by creating innovative agrohabs or technical agroclusters, which will be the focus of ideas, new approaches in agribusiness and the drivers of progress in the agrarian sector and in the economy in general [6]. An integral part of such clusters should be a specialized bank, which provides preferential lending to the entities of the innovation cluster.

The necessity of developing a system of state lending stimulation for the development of innovations in agriculture is conditioned by the fact that adaptation of agricultural enterprises to innovations is now passive in nature, which involves the adoption of sales scientific products, which are created outside of agricultural enterprises. The passive character of adaptation is explained by the following conditions: the implementation of significant innovations in the field of innovation for the vast majority of agricultural enterprises is problematic due to the lack of available funds and skilled scientific workers; objectively, as a result of the division of labor, there are organizations that involved of generating, developing and disseminating innovations; the innovation process requires significant investment support, which the vast majority of economic entities can not provide; insufficient resource of entrepreneurial activity in agriculture [7].

An effective way of organizing and stimulating innovation activity in agriculture should be the active participation of state capital in the principles of private-public partnership, which involves the use of state mechanisms that stimulate private capital in the development of innovation processes in order to combine resources, distribute profits and risks, to form a competitive environment and, at the same time, to spend more efficiently on budget funds.

We have substantiated the components of the economic mechanism for stimulating the development of innovative ensuring of economic entities in the agrarian sector of the economy (Figure 2.4).

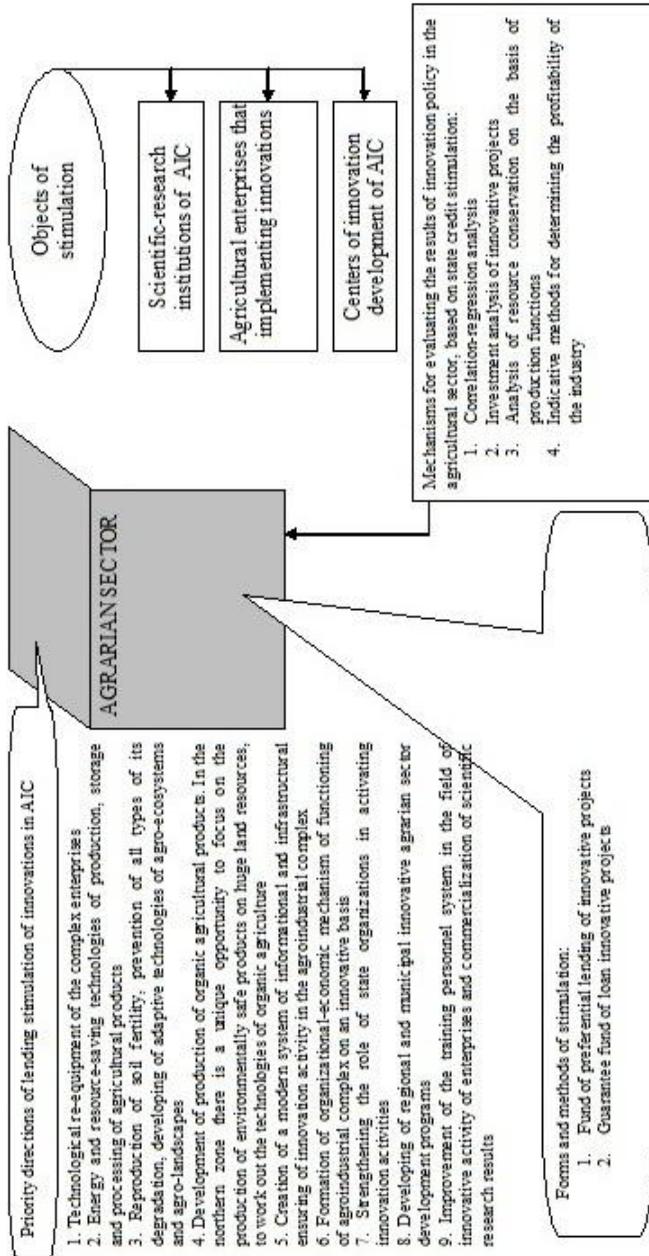
Among the directions of innovation ensuring of the material-technical base of agricultural production can be identified such an institutional form of organization and stimulation of innovation activities as the formation of technological platforms. The regional technological platform (RTP) is a form of realization of private-public partnership, a way of mobilizing opportunities and mutually beneficial interaction of the interested parties (state, business, science, education, consumers) and an instrument for the formation of scientific-technical policy in support of innovative development and technological modernization of the agrarian sector in aspect of ensuring food security and rational nature management.

In order to enhance the innovative ensuring of production processes, we propose the creation of technological platforms (Figure 2.5).

It should be noted that RTP is an association of organizations of any form of ownership based on the realization of the principles of voluntary and equal rights of participants. As part of the formation of an organizational mechanism for the functioning of this technology platform it is necessary to developing a passport for the stages of its realization, to identify target indicators, and the volume of private and public funding.

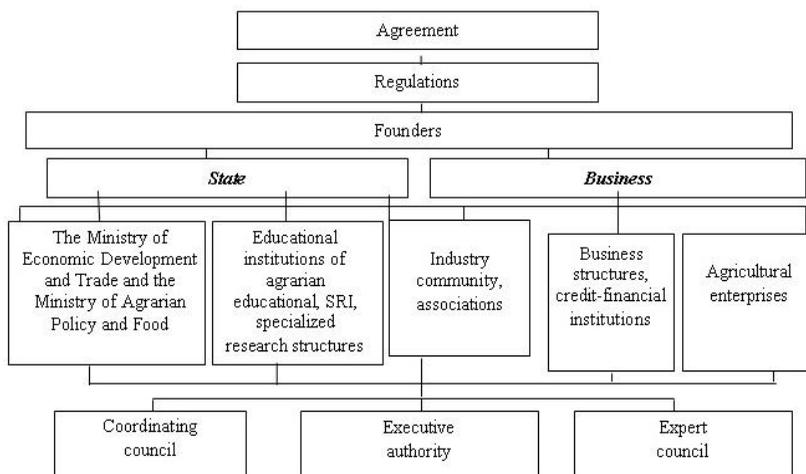
However, in order to accelerate the implementation of science achievements in agricultural production it is necessary to create an innovative infrastructure that is adequate to market relations, which will function on the basis of combining budget support and own means of entities innovation activity.

Since not all agricultural producers can use typical scientific developments due to various circumstances (climatic features, infrastructure, quality and type of soils), it is necessary to adjust them according to the conditions of a particular economy. Therefore, growing the role of consultative and information functions [8].



**Figure 2.4 Mechanisms of state credit stimulation of agribusiness enterprises on the principles of private-public partnership**

*Source: compiled by authors*



**Figure 2.5 Structure and organization activity of the RTP within the framework private-public partnership**

*Source: compiled by the author*

The infrastructure existing in the regions for diffusion of innovation developments results corresponds to the period when most agricultural enterprises were losing and solvent demand for scientific, highly effective developments were very low. Today it has become necessary to supplement the existing mechanism of implementation achievements of the STP in state-owned production, an agency in direct contact with agricultural producers.

In order to improve the system of innovative ensuring for agricultural producers, to promote the introduction of the latest developments in science and technology, innovative technologies in the field of agro-industrial production, it is advisable to create innovation centers. The main functions of activity the scientific structure are the definition of priority directions and the developing of concepts of agricultural development in the region with mastering achievements of scientific-technical progress, as well as the promotion of cooperation the participants in the organizational mechanism for mastering of innovative developments in agriculture.

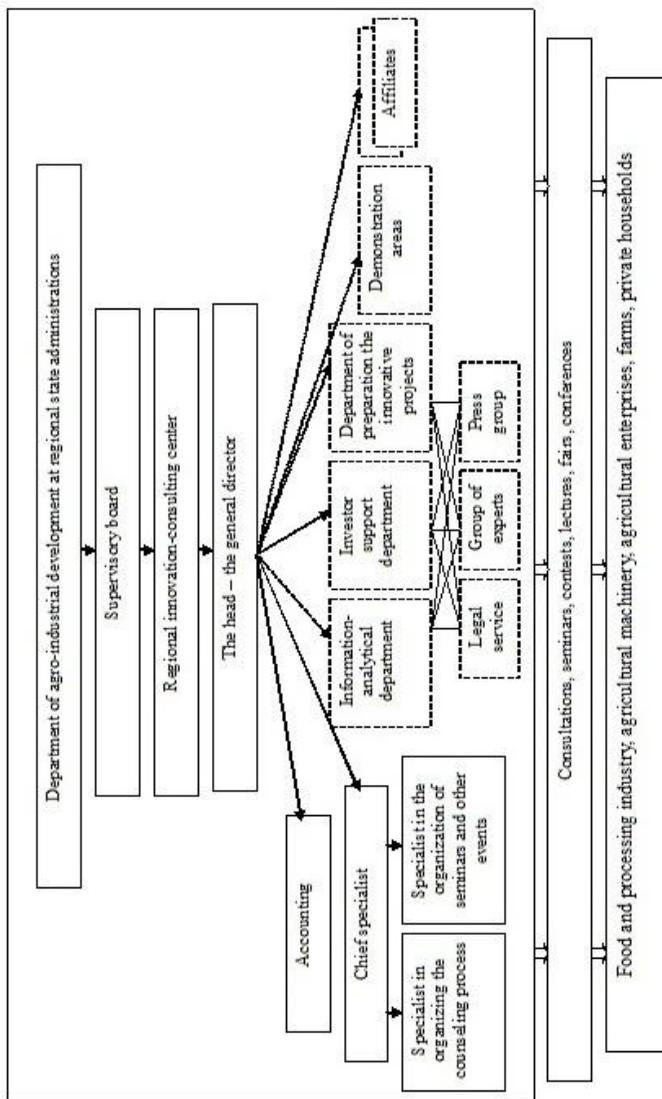
The main tasks of innovation-consultative centers should include: assessment of the current state of the technical and innovative state of agrarian production in the region; identification the needs of potential consumers of the results of scientific-research and innovation activities;

forecasting and planning of scientific-technical development of agriculture; developing of state innovation programs and projects that provide conditions for the introduction of innovative products; establishment of interaction with agrarian enterprises and organizations of innovation sphere with the purpose of creation, promotion of scientific developments, products and technologies; assistance in attraction of investments in scientific-technical projects on the most promising directions of development of agricultural production; provision of information-consultative services to agricultural commodity producers; organization of district points of remote counseling; development of links between the innovative and real sector of the economy, between the scientific-educational complex, the financial sector and public administration; assistance in the training of personnel for innovation activities; organization and conducting of educational and practical measures for legal and physical persons on questions of legal, accounting, economic, insurance, credit-financial, advertising support of innovative projects; developing of organizational-technological and methodical manuals and recommendations; creation of experimental-demonstration sites and demonstration shows; conducting regional, inter-district and district meetings, seminars for conferences, fairs, exhibitions on issues of agro innovations; creation of information databases in the field of agro-industrial complex and organization of access to them by individuals and legal entities; propaganda and advertising of best practices in agribusiness.

Proceeding from the defined tasks, the structural construction of innovation-consultative centers it is advisable to supplement and organize in such a way that all components of the process of solving the tasks can be realized by internal efforts. Therefore, we are proposed to create the following departments: informational-analytical, preparation of scientific-technical projects, support of investors, as well as a group of experts, a press group, and a legal service (Figure 2.6).

Information-analytical department will carry out functions of monitoring, analysis and generalization of demand and proposals on the results of scientific-technical progress, coming from agricultural producers, innovation structures, institutes, private individuals, etc. The competence of the department staff will include the elaboration of proposals on economic, legal and social issues, as well as on projects that are being prepared for implementation.

Among the main functions of the department for the preparation of scientific-technical projects: the coordination of the economic interests



**Figure 2.6 Organizational ensuring for the introduction of innovative developments into the practical activities of agricultural enterprises**

*Source: compiled by authors*

of participants in promising projects, leadership developing and mastering of projects, coordination of the conclusion of agreements between the participants in the process of mastering innovative products.

The department investors' support will provide consultative services to potential investors, as well as developing of economic relations development programs and investment activity in the region.

The main task of the legal service will be legal examination of the accompanying documents developed, legal ensuring of contractual relations with agricultural commodity producers, investors, scientific-research institutes, educational institutions, etc.

The main function of experts – to conduct an independent assessment of the feasibility of introducing scientific developments, their economic justification. The group of experts should include scholars in different specialized areas.

The need to create a press group is justified by the low level of dissemination of information on the achievements of scientific-technical progress among potential consumers of high-tech products. It is advisable to conduct this work through close cooperation with district information-consultative services and mass media.

Also, within the framework of innovation centers, it is necessary to create a network of affiliates and demonstration areas in regions for closer and more operational work directly with agricultural producers, especially in remote regions.

The final stage of the creation of an organizational unit for the mastering of scientific achievements in agricultural enterprises should be the unification from help single information system of the efforts of all the scientific, educational, industrial and innovative formations of the region, focusing their attention on activities to accelerate the modernization of the resource potential of agrarian enterprises.

### **Conclusions**

The proposed measures will promote the innovative ensuring of production potential of agricultural enterprises on the basis of the introduction of scientific-technical developments, will allow to create a single data bank of orders by manufacturers and proposals, as well as to achieve the demand for scientific developments by interested customers and reduce the terms of the mastering of innovative products.

Propaganda of a positive experience in agricultural production should promote the advancement of scientific-technical progress in other agricultural enterprises. The role of basic farms can be carried out by organizations ahead of the entities of the region by the main technical-

economic indicators, the level of use of existing potential, which introduced into the practice of the achievement of science, technical and best practices.

In order to create a mechanism of private-public partnership, such an approach will promote satisfaction of the economic interest of both the state and agricultural producers, the interaction of all stakeholders in the search and mastering of innovative developments.

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**STRATEGIC  
ASPECTS OF  
FINANCIAL RISK  
MANAGEMENT OF  
ENTERPRISES**

Corporate executives around the world have sought new and imaginative ways to hedge their exposures to the increasing volatility of foreign exchange rates, interest rates, and commodity and equity prices. The financial services industry has responded by offering a plethora of financial products, including currency swaps, interest rate swaps, and options. These financial instruments have developed very rapidly and global accounting standard setters are currently working on appropriate measurement and reporting principles. Because many of these financial instruments are treated as off-balance-sheet items, the real risks inherent in their use are often masked.

The main goal of financial risk management is to minimize the risk of loss arising from unexpected changes in the prices of currencies, interest rates, commodities, and equities. The exposure to such price changes is known as market risk. Market risk is considered the risk of rising stock prices.

An unexpected rise in stock prices is undesirable if the issuer could have issued fewer shares for the same amount of cash by waiting. On the other hand, would view risk as the possibility of a fall in equity prices. If stock prices were to fall significantly in the near future, the investor would rather wait before buying.

Market participants tend to be risk averse. Many will trade some potential profits for protection from adverse price changes. Financial intermediaries and market makers have responded by creating financial products that enable a market participant to transfer the risk of unexpected price changes to someone else – a counterparty.

Market risk has many dimensions. Although we will focus on price or rate risk, risk management needs to consider other risks [1]. Liquidity risk exists because not all financial risk management products can be freely traded. Highly illiquid markets include real estate and small capitalization stocks [2]. Market discontinuities refer to the risk that markets may not always produce gradual price changes. Credit risk is the likelihood that counterparties to a risk management contract will not

meet its obligations. For example, a counterparty agreeing to exchange French euros for Canadian dollars may fail to deliver euros on the promised date. Regulatory risk is the risk that a public authority may prevent a financial product from being used for its intended purpose. For example, the Kuala Lumpur stock exchange does not permit the use of short sales as a hedge against equity price risk. Tax risk is the risk that certain hedge transactions will not receive the desired tax treatment. An example is the treatment of foreign exchange losses as capital gains when ordinary income is preferred. Accounting risk is the risk that a hedge transaction will not be accounted for as part of the transaction it is intended to hedge. An example of this is when the gain on the hedge of a purchase commitment is treated as “other income” instead of a reduction of the cost of the purchase.

The rapid growth of risk management services suggests that management often can increase firm value by controlling financial risks. Moreover, investors and other stakeholders increasingly expect financial managers to identify and actively manage market risk exposures [3]. If the value of the firm equals the present value of its future cash flows, active exposure management is justified on several grounds.

First, exposure management helps stabilize a firm’s expected cash flows. A more stable cash flow stream helps minimize earnings surprises, thereby increasing the present value of expected cash flows [4]. Stable earnings also reduce the likelihood of default and bankruptcy risk, or the risk that earnings may not cover contractual debt service payments.

Active exposure management enables firms to concentrate on their primary business risks. Thus, a manufacturer can hedge its interest rate and currency risks and concentrate on production and marketing. Similar benefits are available to financial institutions [5].

Debt holders, employees, and customers also gain from exposure management. As debt holders generally have a lower risk tolerance than shareholders, limiting the firm’s risk exposure helps align the interests of shareholders and bondholders. Derivative products allow employer-administered pension funds to enjoy higher returns by permitting them to invest in certain instruments without having to actually buy or sell the underlying instruments. Finally, because losses caused by certain price and rate risks are passed on to customers in the form of higher prices, exposure management limits customers’ exposure to these risks [6].

Management accountants play an important role in the risk management process. They identify exposures to market risks, measure

the benefits and costs of risk protection, and account for specific hedge products.

J. P. Morgan has devised a useful framework for identifying a firm's exposure to various types of market risks. Risks are supposed to be considered in the management information system, exploring the interrelation of various market risks with the factors determining the value of the company and its competitors (competitor A → competitor B → Your company: maker risks (foreign exchange; interest rates; commodity prices; equity prices; other) value drivers (revenue; cost of sales; operating expenses; taxes; current assets; current liabilities; fixed assets; other)).

The value driver refers to the principal financial condition and operating performance items that impact the firm's value. Market risks refer to foreign exchange and interest rate risk, as well as commodity and equity price risks. In the management information system, market risks and cost factors are interrelated for each of the company's main competitors.

To ensure the economic security of the company requires proper risk management: interest rate risk may affect the revenue of the firm in the following manner. Credit sales are normally collected after a certain period, depending on the credit terms offered the client (30, 60, or 90 days). The firm usually relies on short-term loans to finance current operations, such as wages and other operating expenses. Rising interest rates before the receivables are collected would reduce the firm's return from sales. Credit sales denominated in foreign currency would yield less than expected parent currency should the foreign currency lose value before collection. Fluctuating commodity prices can have a significant impact on revenues.

The next link in risk management is associated with competitive currency exposure.

In the process of risk management to ensure the economic security of the company accounting plays the role of determining financial trade-offs. Management may prefer to keep some exposures rather than hedge all financial risks [7]. As an example, an importer who has a firm purchase commitment denominated in foreign currency may prefer not to hedge if he believes the foreign currency will weaken before the delivery date. In similar instances, accountants would measure the benefits from hedging against its costs plus the opportunity costs of foregone gains from speculating in market movements.

Financial hedge products are financial contracts or instruments

that enable the user to transfer market risks to someone else. They include, but are not limited to, forward contracts, futures, swaps, options, and combinations of these. Knowledge of accounting measurement rules for hedge products is especially important when designing an effective hedge strategy for the firm. Here are basic methods of accounting for hedging. This requires a detailed analysis of the report on financial results.

(Operating revenues — Operating expenses = Operating income +  
Other income — Other expense = Net income)

Analysts usually focus on operating income in evaluating how well management has operated its core business. However, net income includes the confounding effects of extraordinary or nonrecurring events.

The standard accounting treatment for financial instruments among corporations is to mark that product to market with any gains or losses recognized as a component of nonoperating income [8]. An exception is permitted if the transaction meets the following hedge criteria: the item being hedged must expose the firm to a market risk; the hedge instrument must minimize that risk; the firm must designate the financial instrument as a hedge with supporting documentation.

If these criteria are met, the firm can use the gains or losses recognized on marking the hedge product to market to offset the gains or losses on the transaction that is being hedged.

If the currency devalues before delivery, the gain on the foreign exchange contract will offset the loss on the sales contract. Other things equal, operating income will meet its target.

Many of the market price movements are interrelated. We confine our analysis to a specific price exposure: foreign exchange rate changes. The risk management concepts and the associated accounting treatments for foreign exchange risk parallel those for interest rate, commodity, and equity price risks.

The system of strategic risk management, we propose to develop analysis management concept. Exchange risk management and accounting for exchange rate changes are interdependent. Often, a knowledge of accounting treatments provides a conceptual framework for exchange risk management.

Foreign exchange risk refers to the risk of loss due to changes in the exchange value of national currencies.

For operations with foreign currency, it is necessary to provide for the "Profit or loss of transaction" mode.

At the date the transaction is recognized, each asset, liability, revenue, expense, gain, or loss arising from the transaction shall be measured and recorded in the functional currency of the recording entity by use of the exchange rate in effect at that date.

At each balance sheet date, recorded balances that are denominated in a currency other than the functional currency of the recording entity shall be adjusted to reflect the current exchange rate.

On this basis, a foreign exchange adjustment (gain or loss on a settled transaction) is necessary whenever the exchange rate changes between the transaction date and the settlement date. Should financial statements be prepared before settlement, the accounting adjustment (gain or loss on an unsettled transaction) will equal the difference between the amount originally recorded and the amount presented in the financial statements.

In international practice, there are two methods of accounting for profits and losses on transactions.

**Single-transaction perspective:** under a single-transaction perspective, exchange adjustments (both settled and unsettled) are treated as an adjustment to the original transaction accounts on the premise that a transaction and its settlement are a single event. The following example illustrates this treatment.

**Two-transaction perspective:** under a two-transaction perspective, collection of the krona receivable is considered a separate event from the sale that gave rise to it.

The international practice of accounting for the interests of uniformity requires the use of the two transaction method to account for transactions in foreign currency.

Gains and losses on settled and unsettled transactions are included in the determination of income. Major exceptions to this requirement occur whenever exchange adjustments relate to certain long-term intercompany transactions and transactions are intended and effective as hedges of net investments (i)hedges of foreign operations' exposed net asset and liability positions) and foreign currency commitments.

Fluctuating exchange rates affect the present value of the entire foreign investment by impacting future cash flows, that is, expected sales and cost streams.

Companies that face foreign competitors in their domestic markets or accounts payable and receivable billed in foreign currencies will also be affected by cash flow whenever exchange rates are discussed.

In a world of floating exchange rates, risk management includes:

- 1) anticipating exchange rate movements;
- 2) measuring a firm's exposure to exchange risk;
- 3) designing appropriate protection strategies;
- 4) establishing internal risk management controls.

In developing an exchange risk management program, the financial manager should have an idea of the potential direction, timing, and magnitude of exchange rate changes. Forewarned of exchange rate prospects, financial managers can more efficiently and effectively arrange appropriate defensive measures. The ability to accurately predict currency movements is considered a problem.

Information frequently used in making exchange rate forecasts (currency depreciation) relates to changes in the following factors:

**Inflation differentials.** Evidence suggests that a higher rate of inflation in a given country tends, over time, to be offset by an equal and opposite movement in the value of its currency.

**Monetary policy.** An increase in a country's money supply that exceeds the real growth rate of national output fosters inflation, which affects exchange rates.

**Balance of trade.** Governments often use currency devaluations to cure an unfavorable trade balance (exports → imports).

**Balance of payments.** A country that spends (imports) and invests more abroad than it earns (exports) or receives in investments from abroad experiences downward pressure on its currency's value.

**International monetary reserves and debt capacity.** A country with a persistent balance of payments deficit can forestall a currency devaluation by drawing down its savings (level of international monetary reserves) or drawing on its foreign borrowing capacity. As these resources decrease, the probability of devaluation increases.

**National budget.** Deficits caused by excessive government spending also worsen inflation.

**Forward exchange quotations.** A foreign currency that can be acquired for future delivery at a significant discount signals reduced confidence in that currency.

**Unofficial rates.** Increases in the spread between official and unofficial or black market exchange rates suggest increased pressure on governments to align their official rates with more realistic market rates.

**Behavior of related currencies.** A country's currency will normally behave in a fashion similar to currencies of countries with close economic ties to it.

**Interest rate differentials.** Interest rate differentials between any two

countries predict the future change in the spot exchange rate.

Although these items help predict the direction of currency movements, they are usually not enough to predict the timing and magnitude of currency changes. Politics strongly influences currency values in many countries. Political responses to devaluation or revaluation pressures frequently result in temporary measures rather than exchange rate adjustments. These temporary measures include selective taxes, import controls, export incentives, and exchange controls. Awareness of the politics of a country whose currency is under pressure helps financial managers discern whether the government will lean toward market intervention or rely on free-market solutions.

Some claim that exchange rate forecasting is a futile exercise. In a world where exchange rates are free to fluctuate, foreign exchange markets are said to be efficient [9]. Thus, current market rates (forward exchange rates) represent the consensus of all market participants about future rates of exchange. Information that is generally available is immediately impounded in current exchange rates by the market and thus has little value in predicting future exchange rates. Under these conditions, exchange rate changes are random responses to new information or unforeseen events. Forward exchange rates are the best available estimates of future rates. The randomness of exchange rate changes reflect the diversity of opinions on exchange values by participants.

For management accountants in the management system, on the one thing, use of exchange rate forecasting as a risk-reduction technique means that accountants must develop systems that can gather and process comprehensive and accurate information on variables correlated with exchange rate movements.

Such information systems can incorporate information provided by external forecasting services, financial publications that track currency movements and daily contacts with foreign currency dealers. These systems should be online and computer based to ensure managers a superior source of information on which to base their currency forecasts. Financial managers must also clearly understand the consequences of not using other forecasting methods.

If installing such a system is not possible or is too expensive, then financial managers and accountants should arrange their company's affairs to minimize the detrimental effects of rate changes. This process is known as exposure management.

Structuring a company's affairs to minimize possible adverse effects

of exchange rate changes requires identification of its exposure to exchange rate risk. Foreign exchange exposure exists whenever a change in foreign exchange rates changes the value of a firm's net assets, earnings, and cash flows. Traditional accounting measures of foreign exchange exposure center on two major types of exposure: translation and transaction.

Translation exposure measures the impact of exchange rate changes on the domestic currency equivalents of a firm's foreign currency assets and liabilities. A foreign currency asset or liability is exposed to exchange rate risk if a change in the exchange rate causes its parent currency equivalent to change. Based on this definition, foreign currency balance sheet items exposed to exchange rate risks are those items that are translated at current (as opposed to historical) exchange rates. Accordingly, translation exposure is measured by taking the difference between a firm's exposed foreign currency assets and liabilities.

An excess of exposed assets over exposed liabilities (those foreign currency items translated at current exchange rates) causes a net exposed asset position referred to as a positive exposure. Devaluation of the foreign currency relative to the reporting currency (domestic currency) produces a translation loss. Revaluation of the foreign currency produces a translation gain. Conversely, a firm has a net exposed liability position or negative exposure whenever exposed liabilities exceed exposed assets. In this instance, devaluation of the foreign currency causes a translation gain. Revaluation of the foreign currency causes a translation loss. Accounting measures of exposure vary depending on the translation method adopted. A multicurrency report also enables the parent company to aggregate similar exposure reports from all of its foreign subsidiaries and analyze, on a continual basis, its worldwide translation exposure by national currency. This type of analysis is particularly helpful when local managers are responsible for protection against translation exposure. One can easily imagine a situation where local managers in two foreign subsidiaries may face opposite exposures in the same currency. Multicurrency exposure reports enable a parent company to make sure its local managers avoid hedging activities that are disadvantageous to the company as a whole.

Transaction exposure concerns exchange gains and losses that arise from the settlement of transactions denominated in foreign currencies. Unlike translation gains and losses, transaction gains and losses have a direct effect on cash flows.

Centralized control of a firm's overall exchange exposures is possible by having each foreign affiliate send its multicurrency exposure reports to corporate headquarters continually. Once exposures are aggregated by currency and by country, the company can implement centrally coordinated hedging policies to offset potential losses.

Accounting analytical reporting system emphasizes the possibility of a foreign exchange risk at a particular point in time. The indicator of economic security is the impact of changes in the value of a currency on future operating performance and cash flow of the company.

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**SYSTEM OF  
MOTIVATION OF THE  
TRANSPORT  
COMPANY'S STAFF**

Constantly growing competition in the modern global economy promotes the development of new approaches to the management of the company, such as managing not only the quality of goods and services which are produced, but also the effectiveness of the processes of their creation and delivery.

The system management in Ukraine necessitates new forms and methods of human resource management businesses in order to increase motivation productive and high quality work. Especially urgent problem is the problem of creating a system of evaluation of personnel organization.

Without effective human resources management company cannot rely on long-term development. Improving the quality of the personnel and their motivation is the foundation of effective development.

Personnel assessment involves comparing certain characteristics of people - vocational qualifications, competencies, results of work of the relevant parameters, requirements, standards. Is rightly claim that evaluate staff - meaning inferred by comparing "ideal" employee with the real person working in a particular organization, on a specific position [1].

To date, the existing system of personnel assessment does not meet the requirements of modern business. For the successful management of the enterprise and its staff, managers need innovative tools and techniques focused on setting goals and defining personal responsibility of employees. In a survey conducted in the US found that 60% of senior management are dissatisfied with their performance evaluation systems, by national estimates of the number of local managers even more - 80%

[2]. This dissatisfaction is reflected in the lack of communication between the plan, implementation, results and motivation.

Recently, Ukrainian companies in their management practices are increasingly using the term KPI and transport companies are not exception. KPI - an abbreviation and stands for Key Performance Indicators.

Key Performance Indicators - a system of evaluation that allows the organization to determine the achievement of strategic and tactical (operational) targets [3].

KPI system serves primarily employers to assess their employees, it allows to analyze the company as a whole and each employee and understand how today's situation meets the strategic objectives of the company.

Unfortunately in Ukrainian companies' practice introduction of KPI does not always produce the expected result. A number of factors that can cause application failure KPI include structural defects and errors in the selection of indicators and also organizational defects of the processes of development and implementation itself.

Usually economists distinguish reporting metrics, statistical criteria or regulatory requirements. One of the directions of the theory of personnel management includes the concept of "key competencies of employees", which is somewhat closer to the concept of "key performance indicators".

The main difference between key performance indicators and criteria that taken in Ukraine to assess the results of the orientation the KPI system to the strategic objectives of the organization and their achievements, while Ukrainian criteria are not correlated with the company's strategy and assess mostly tactical objectives. An effective tool for strategic and operational management, which allows to correlate the strategic objectives with the business processes and daily actions of employees at every level of management is BSC (balanced score card). This unique system is the result of research of Robert Kaplan and David Norton which allows to integrate financial and non-financial indicators of economic activity, thereby determining the degree of efficiency, balance objectives and their causal relationship [4].

The main contradiction inherent in the organization of processes for the development and implementation of KPI, is that the strategy of the company, the definition of its goals and objectives is the privilege and responsibility of the senior management of the company, business owners, while implementing the strategy is staffed at the level of

structural subdivisions.

Insufficient exchange of information between the company's management and employees, due to the separation in the transport companies of manufacturing units between themselves and managers, especially in maritime transport, makes it impossible to monitor for the implementation of the strategic objectives of personnel. On the other hand, performers do not coordinate their actions with the global goals of the company and do not have the ability to navigate in strategic settings [5].

On the other hand, the lack of specific strategic objectives of personnel and lack of appropriate motivation system leads to the fact that the performers do not coordinate their actions with the global objectives of the company and are not able to focus on strategic installations.

Analysis of the practice of strategic management in a number of transport companies revealed significant risks of failure to achieve economic growth rates despite the presence of strategic plans. One of the root causes of the ineffective implementation of the strategy is the lack of a relevant system of staff motivation.

The system of motivation which is created on the basis of appropriate performance indicators (KPI) either does not completely correlate with the strategic goals of the company or is completely absent [6]. Thus, according to R. Kaplan, who created the balance score card (BSC), only 25% of managers are encouraged in relation to the successful implementation of the strategy [7]. Harvard Business School's research among Global-1000 companies shows that the strategy is not effectively implemented in companies: 93% of staff do not associate the results of their work with the company's strategic goals [8].

In many transport companies the personnel remuneration system is not tied to the achieved results of the strategy; as a basis for staff motivation, as a rule, a short-term net profit indicator is used, which reflects the financial result of the current period, thus excluding the possibility of assessing the impact of management activities on the value of a company in a strategic perspective. As a result, the stimulation of the interest of the company's employees in the successful implementation of the growth strategy is not fully involved. As consequence, the number of transport companies that successfully implemented the growth strategy is extremely small. This creates additional risks for the implementation of the Transport Strategy of Ukraine [9].

A significant number of scientific publications in the field of strategic management, including on the transport, contains a wide range of theoretical and methodological developments on various aspects of management, while one of the least highlighted problems in this area remains the methodology and tools for building a system of personnel motivation that is aimed at implementing the strategy growth.

This allows the designation of a system of key performance indicators, as well as a system of balanced indicators, as new management tools that form the basis for decision-making, which are based on the evaluation of the company's performance and aimed at achieving its strategic goals.

KPI makes it possible to evaluate the effectiveness (in this context it is appropriate term) and, therefore, arm the management of the company with a tool that allows to determine how much the management of a company meets the level of achieving strategic goals, in particular, strengthening and increasing the market value of the company. Staff, when reporting on the results of their work on the given indicators, has the opportunity to compare the results with the key indicators and assess the real effectiveness of their contribution to the achievement of global business goals [4].

This feature of KPI is based on the system of employee motivation, bonus methods and staff incentives.

In order to build an effective staff motivation system which is aimed at implementing a growth strategy of a transport organization, in our opinion, the following principles should be followed:

- staff motivation should be aimed at achieving the strategic goals of the company;
- the system of key performance indicators for motivation should be formed on the basis of an approved growth strategy, balanced, and indicators (goals) should be communicated to employees, understandable to them, achievable and measurable [6];
- personification of KPI should take into account the distribution in the company of authority and responsibility among employees;
- a substantial part of the remuneration should be presented in the form of a variable part, which depends on the performance of the company during the reporting period;
- the mechanism of payment of the non-fixed part of the remuneration should take into account possible risks that may arise in the future regardless of the quality of work;
- in the basis of the motivation system which is aimed at the

implementation of the growth strategy should be indicated the economic value added indicator, the condition for the payment of remuneration, so that companies provide the implementation of the budget assignment for this indicator;

- to ensure the functioning of the motivation system which is based on the KPI, it is necessary to ensure its relationship with the company's budget and with the work plans of the divisions for the coming period, which should contain measures to achieve the specified key indicators;

- the size of the variable part, which is accrued to the employee, can be reduced in case of unsatisfactory results of the company as a whole.

These principles should be applied differentially to different categories of staff, taking into account their different degree and zones of influence on growth factors [10].

Transport is a complex production and economic system, its management should be primarily strategic in nature, which means that the system of key performance indicators should involve indicators of achievement of strategic objective. Performance and effectiveness indicators are individual for each company. Depending on the type of activity, the scale of production, the competitive environment and other factors, the company can set itself various strategic objectives, such as:

- improving the efficiency of the company's activities;
- increase the potential and business growth;
- creation / strengthening of international reputation and investment attractiveness of the company;
- improving the efficiency of the non-financial part of the business value [11].

To achieve these strategic objectives, it is necessary to build the company's management system which transfers the strategic objectives into operational activities through processes. Effective approach to the construction of the control system is the description of the company's processes, building on the basis of these processes organization and functional structure of the company, the introduction of the company's management through KPI system. Management, units and performers need to get their own list of indicators in accordance with functions and authority which are carried out.

Indicators of KPI system should be systematically updated after changes in the system of business processes, organizational structure and strategic goals of the company. Each unit should have about 3-5 KPI, but not more than 10, because unit should not have so many key areas, if so, the organizational structure should be reviewed,

understanding of KPI system or revise the strategic goals [12].

KPI system, as well as strategic goals, has an internal subordination of indicators in order to cover liability of employees at all levels of the hierarchy, because all of the company's functioning should be aimed at achieving its strategic objectives.

A key factor in the successful development of the companies and the achievement of its strategic objectives in the competitive environment is to take a strategically based management decisions and their proper execution.

In Ukrainian companies system of balanced indicators is the most commonly used. The advantages of this method are that it includes both strategic and tactical management. The formed key performance indicators are the basis of the employee motivation system. The development of this method begins with the establishment of a organization's strategy, than the main aspects of business are highlighted. Next, key performance indicators for each unit are formed. The system of balanced indicators should include six mandatory elements [13]:

1. Prospects. These components determine the company's strategy, including financial component, customers, internal processes of organization and personnel..

2. Strategichni goals. Characterize the direction of organization development.

3. Pokazniki. Indicator's objective is to measure the company's activity, determine how much the result meets the goal..

4. Target values. Characteristics the result that the organization must achieve in quantitative equivalent..

5. Causal relationship. Connect all goals and indicators of the company, describe the impact of one purpose on others..

6. Strategic initiatives. More specific programs and projects aimed at achieving the company's goals.

Thus, the task of the system of key performance indicators and the system of balanced indicators consists in translating the company's strategy into an integrated set of its performance indicators, defining the main parameters of the measurement and control system. The set of indicators sets the basis for the company's strategy formation and includes quantitative characteristics to inform employees about the key success factors yesterday, today, tomorrow. And the senior management directs the energy, abilities and knowledge of employees to solve the problems of the long-term perspective.

In order to determine whether the indicator is a key indicator of activity, it is necessary to "place" this figure with the Procrustean bed of the company's strategic chart. In other words, the key indicator of logical activity stems from the content of goals and strategic initiatives [13].

The KPI system is needed in companies to understand how key performance indicators relate to goals and strategic initiatives in the long run. Thus, KPI is inextricably linked with the company's strategy. It is a tool for measuring and managing the company's performance.

KPI system is used primarily by employers to assess their employees, it allows them to analyze the situation of the company as a whole and each individual employee at the moment and see how the current state corresponds with the strategic goals of the company.

Each company is interested in achieving the goal, in a positive financial result of the organization. Main resource of the company are employees. That is why every leader of the organization is wondering how to make sure that each employee gives 100%, everyone understand the overall goal of the company and contribute to its achievement by being motivated to the effective and productive work. For this company develops a system of motivation, which are applied to tangible and intangible incentives.

KPI system meets almost all the terms of motivation. This system is based on management by objectives, that is, it provides an understanding of each employee and the company's goals of everybody's place in the overall system. Employees see how their work relates to the activities of other units, and realize the importance of quality performance of their duties. Each person gets a motivational card, independently manages problem-solving process, controls independently at what stage of achieving he is, determines the size of the compensation depending on the results of their work.

Workers immediately get back a formalized relationship of the results of their work. KPI system provides measurement results, calculations and the final rating that allows everyone to see how director estimates their work according to this system.

The condition of a fair remuneration is satisfied because employee in the motivational card see how much weight in his work takes this or that task, how it should be distributed and how the efforts going on payroll.

KPI system is good in that it not only motivates the staff, but also carries out a systematic evaluation of employees. Evaluation of the personnel is systematized, standardized and does not require additional

costs in the implementation. With the help of key performance indicators system, evaluation of personnel is objective and relevant. For effective implementation of the KPI system as a motivational system it is necessary to meet several conditions [14]:

- all calculations should be done automatically;
- information should be relevant and from reliable sources;
- key indicators must be defined in accordance with the duties of the employee and be within his competence;
- the goal should be achievable, plan should be realistic.

At introduction of KPI system, motivation system requires that company executives realized that they need to be fair to its employees, to fulfill the promises and plans not to overstate as the deception and unrealistic goals initially de-motivate employees much more than the absence of remuneration for achieving targets.

Strategic management of the company exactly is preparing for the future, it sets the long-term direction of the company. KPI system - it is a kind of standardized form of personnel management. KPI system gives the head of the means to achieve the goal of increasing the efficiency of labor resources of the organization.

The KPI system aims to ensure the targeting of the entire activity of the enterprise; consideration of the effect on the environment; determining personnel evaluation parameters; identifying the relationships of employees, motivation of the personnel, the formation of an internal environment which favors to the effective work of employees.

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## Chapter 3

# FORMATION AND EFFECTIVE USE THE INNOVATION POTENTIAL OF ECONOMIC ENTITIES

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## POSSIBILITIES OF INFORMATION TECHNOLOGIES IN THE FIELD OF TOURISM

**Problem statement.** The modern world, including our country, is struggling with various problems, generating negative social phenomena. One such phenomenon is unemployment. This indicator is unfavorable in both the economic and social dimensions. At the same time, employers are signaling about the needs for employment of new workers, who are either insufficient in the labor market, or absent totally.

This phenomenon is explained by the fact that, on the one hand, there is a mismatch between demand and supply for specific types of work; on the other hand, the lack of competence and professional experience of graduates and potential employees. For an employer, the adaptation of a new employee to a position is usually an investment, which, for example, does not make sense to undertake in the conditions of high unemployment. The most priority fact is the employment of a competent employee. One of the main reasons for this is the fact that the

labor market resources do not succeed in absorbing the knowledge, skills and competencies necessary for the introduction of new technologies into the production of material products and services.

If we consider tourism services, which formally do not create the industry, but organize, in the process of their production it is difficult to calculate the number of economic entities. However, among them there are organizers of tourism, hotels, boarding houses, restaurants, managers and others. The development of the tourism market is stimulated by three main trends: the growth of popularity and prospects; the discovery of important new tourist sites in different parts of the world; increasing the importance of thematic tourism.

The first trend is clearly focused on new electronic communications technologies. The second and third trends do not indicate such an orientation. Few potential customers of tourism services can afford educational tourism. In this connection, the most favorable form of tourism will be virtual tourism, which requires the use of information technologies, specialists in the field of e-tourism, which includes communication with the client, travel planning and its implementation in the virtual world.

**Analysis of recent research.** The functionality of the use of information technology in tourism is highlighted by many authors in their works. Thus, in the writings of Babaritsky V.K., Malinovskaya O.Y., K. Borkowski i K. Serwata [1], Lyubtseva O., Mal'skaya M.P., Mironova Yu.B., Khudo V.V. the multifaceted influence of information technologies, in particular the Internet, on tourism production and marketing activity in this area is determined. Questions about the role of the Internet in tourism are raised at modern scientific conferences. In the area of restaurant business there are a number of significant developments, among which one can distinguish works by Arkhipova V.V., Kalashnikova O.Yu., Karpenko V.D., Mostova N.O., Nechyuk L.I., Novikova O.V., Pyatnitskaya G.T., Stry V.M. and others. Recently some aspects of innovative development in the area of restaurant industry and evaluation of the efficiency of innovation policy of enterprises of this type of activity were highlighted in the works of Pyatnitskaya G., Grigorenko O., Borisova O. But with all the multifaceted research processes, innovations in the tourism and restaurant business are still attracting the attention of various researchers, which explains the relevance of the topic.

**The purpose of the publication** is to review information technology in the tourism industry and restaurant complex.

**Presenting main material.** The modern industry of restaurant business and tourism in recent years has undergone very significant changes in connection with the introduction of new information technologies. Wanting to raise the prestige of their hotel or boarding house, to ensure the clarity and efficiency of customer service, to control the activities of staff, etc., the hotel manager inevitably comes to the idea of the need to purchase and subsequent introduction of an automated system.

Successful functioning of any firm in the tourist business market is practically impossible without the use of modern information technologies. The specifics of the technology of development and implementation of tourist products require such systems that would provide information on the availability of vehicles and facilities for tourist accommodation in the shortest possible time, would provide rapid reservation and reservation of places, as well as automation of the solution of auxiliary tasks in the providing tourist services (parallel processing of such documents, such as tickets, bills and guides, providing settlement and reference information, etc.). This is achievable with provided the widespread use in tourism of modern computer technology for processing and transmitting information.

The tourism industry is so multifaceted and many-sided that it requires the use of a wide variety of information technologies, starting from the development of specialized software tools that automate the work of a particular travel company or hotel to the use of global computer networks.

Nowadays, one of the most common types of information technology is the Internet, which enables communication and transmit information between users around the world. Nowadays, more and more tourists start to use the possibilities of the Internet, namely: receiving information about countries, operational weather forecast in different countries of the world; Get information on rates and prices in hotels, restaurants and other travel services; independent formation of the tour and the purchase of a tourist tour.

An important role is played by information technology in the implementation of marketing functions. The coordination of marketing efforts, the development of tour programs, as well as pricing influence the improvement of the tourism product. T It makes possible with the help of marketing to promote the tourism product to the market of travel services (for example, the promotion of hotels in Ukraine to the world market may be the marketing company "Top Ukrainian Hotels",

organized by the travel company "Arctur").

The development of the tour program takes into account many factors (travel route, a list of travel companies-partners, the period of service of each enterprise - the provider of services, the list and composition of services provided during the tour, a range of entertainment activities and animation programs, the time of stay of tourists at each point of the route etc.). It is a rather complicated process, and the solution to this problem has become possible thanks to information retrieval systems designed for both tourists and professionals in the tourist business. These systems allow advanced search and booking of tours in-line, as well as search of the electronic atlas of the world, dynamic market tables, etc. The most common systems, their advantages and disadvantages are shown in Table 3.1.

World experience shows that for any travel agency a factor determining the success of its activities in the tourist market is the time of customer service. The winner is the one who has the opportunity to provide the client with a full range of services on-line.

An important impetus for the development of the tourism industry and the promotion of the tourism product to the world market is communication policy and e-business, consisting in the use of information technologies for the implementation of the tourist product, primarily through Internet advertising, as well as the implementation of basic business processes using informational and telecommunication technologies.

Tourist Internet portal - a large site that offers visitor various services in the field of tourism. Internet portals are distributed among many large enterprises and have their advantage primarily in: possibilities of operative accommodation and information search; large-scale, round-the-clock, efficient and very cheap advertising; saving money when using e-mail in the process of interaction with foreign and domestic partners; the ability to receive new information on tours and discounts in time.

But it should be noted that creating own travel portal on the Internet firstly requests necessary attending of all to the requests of tourists, to placing this information on the site and monitoring its constant updating.

In addition to the tourist Internet portal, the following Internet technologies should be noted: Street View, Google Earth, Google Art Project, multimedia presentations - high-quality spherical panoramas (virtual tours); programs for mobile devices: Google Googles, 3D guides, travel translators, Word Traveler, etc.; augmented reality programs [3].

Table 3.1

### Global Distribution Travel Systems

Indexes	Systems			
	1	2	3	4
	<i>Sabre</i>	<i>AMADEUS</i>	<i>Galileo</i>	<i>Worldspan</i>
Number of employees	9000	3654	–	3200
Distribution	More than 59,000 travel agencies	54405 travel agencies in 198 countries	More than 52000 travel agencies in 116 countries	20210 travel agencies 60 countries
Revenues	\$ 2.5 billion	1.6 billion euros	1.6 billion dollars USA	No data available
Number of bookings	467,1 million	393,9 million	345,1 million	No data available
Suppliers	450 airlines 53000 hotels 54 car rental companies	480 airlines 54641 hotels 47 car rental companies	425 airlines 60000 hotels 23 car rental companies 430 tour operators	533 airlines 47000 hotels 45 car rental companies
Advantages	Simplified search for low flight prices; Implementation of a new program on reservation of places on railways, buses and passenger ships	Actively enters the Ukrainian market of tourist services; Provides data storage, calculation and payment collection for all types of services; Provides management of commission payments of booking hotel rooms	Provides access to the tour operator's database and gives agencies the opportunity to search and book hotels, villas, apartments, tours, excursions, organization of transfers in 112 countries of the world	The reservation is carried out mainly on air transport, theaters, excursion bureaux, cultural enterprises; Provides reference information related to tourism; The client can on his own choose the flight, hotel and make their booking
Disadvantages	<p>1. Most of travel agencies provide incomplete information to customers on sites about hotels or boarding houses, and information about the cost of services is often outdated and inaccurate.</p> <p>2. Insufficient staff qualification. The vast majority of tourism workers have a humanitarian education, which causes some difficulties in working with computers and the Internet. Training of employees or recruiting professionals requires additional funding.</p> <p>3. Lacks in the reservation system of hotel rooms. The most common reservation system is when a tourist hires hotel room according to the price, but does not know the hotel's name until arrival. This system is called in different operators in different ways: ROULETTE, TEZ-EXPRESS. Many operators prefer such a system because it allows you to save a budget for a trip and stay in a good hotel, but often the result does not justify the tourist's expectations.</p>			

The Internet has become for the new generation, the digital generation, the main source of tourist information. The tourist site has its own website, but also the fact that the online community uses it to check this information through online forums by posting its photos. We also have a digital image at our disposal around the world, and the leader is undoubtedly Google Inc., which offers two of the most famous products - Google Maps and Google Earth. It is important that the home software is in the free version. These applications, in addition to satellite imagery, are enriched with amateur photos, as well as using webcams with online images [4]. Thus, before leaving the tourist can assess whether the proposal presented in the travel company is true. Most young tourists are preparing for travel using online locators.

Traveling by car, more and more people use GPS receivers. Only 4-5 years ago they were used very little. The development of the GPS receiver market can be compared with the expansion of mobile phones in recent years. Almost all new cars are equipped with GPS receivers. More and more new mobile phones also have an integrated GPS receiver. Another trend is to connect a GPS receiver to a iPad or smartphone. Thus, the functions of individual devices are blurred, and we obtain a multifunctional device that performs the role of a computer, phone, camera, and location device. There are also new types of GPS receivers, called data recorders, useful for walking and cycling. Holux advertises them as devices that can be used during daily trips and holiday trips, as well as in transport, tourism, agriculture and forestry. These receivers not only inform about the current geographical location, but also record the route traveled by the user. For example, the Holux M-241 receiver, equipped with a LED display, allows you to read geographic location information. The receiver has a built-in Bluetooth module that provides a wireless connection to a computer or mobile phone. The receiver weighs only 39 g, and the battery lasts 12 hours. Comfortable work is additionally ensured by the small size of the receiver (32.1 x 30 x 74.5 mm) and low power consumption from AA batteries. For riding a bike, it is recommended to use the Holux GR-245 receiver, which is easily mounted on the steering wheel. These receivers are equipped with software that allows you to synchronize photos taken during the journey with the history of the route and transfer them to the map using Google Earth. The latter was very well received by young people who are passionate about digital photography. Google service allows you to create presentations from your own photo albums. You can not only use the Picasa Web Album application and view photo

collections, but, above all, publish your own. Thus, a creative approach to sightseeing is encouraged. The next step, which allows travelers to shoot up reality - the creation of three-dimensional object models based on their own photos. This is Microsoft's Photosynth service. This system compares the positions and proportions of objects in different images and finds common points (it creates a so-called point cloud from photos). Then he applies the pictures to the three-dimensional model generated in this. The universal acceptance of mobile phones creates the possibility of wider use of these devices, especially for getting information from the Internet. A mobile version of the Zumi website exists throughout the year called ZumiLight, which contains all of the most important features of the original. In addition, with one click you can contact by phone with the found company (hotel, restaurant, etc.). There are also mobile sites for posting. Cities have their own websites, which facilitate travel not only for tourists, but also for employees who come for professional purposes.

One of the most profitable and promising sectors of the world economy is the modern hospitality industry, the most important part of which is the restaurant business. Nowadays, it remains one of the most widespread types of small businesses, so institutions are constantly fighting among themselves for segmentation of the market, for finding new ones and for maintaining the regular consumers of their products and services. The restaurant business is the main factor and the main component of the tourism infrastructure, plays a leading role in the presentation of the domestic tourist product in the world market of tourist services. This sphere of tourist services of the world economy is developing rapidly and in the long term may become the most important sector of tourist activity.

The number of restaurants is increasing in Ukraine every year. This is primarily due to the growing need for food for people and leisure. Stylish interiors and quality tasty food are no longer enough in order to keep regular visitors and attract new ones in a competitive environment. Innovations in the restaurant business come here for help - interesting marketing steps, for which the customers want to come to this restaurant again.

Modern restaurant customer - a person who lives in a digital age and actively uses various gadgets. Therefore, the introduction of new technologies into the restaurant business becomes a vital necessity. The transition to digital technology may initially seem rather costly, but if this step is considered as a necessary investment, act systematically and

according to the plan, then investments will quickly generate profits.

The main objective of this study is to reveal innovative changes that affect the development of enterprises in the restaurant industry and highlight the role of innovation in the restaurant industry.

At present, a large number of different catering establishments are represented in the market of restaurant services: they are institutions of various styles and concepts. Such a large number of offers on the market is the reason for the growth of competition. As a rule, enterprises that strive to improve continuously their activity, using different innovative approaches, are usually in the most winning position. As result it adds to the institution the uniqueness, originality, the ability to meet changing consumer demands and requirements.

The convenience of automation and informatization of processes at the catering company is evident not only from the point of view of "doing business", but also from the standpoint of clients, since information systems allow more efficiently to make calculations with visitors, the order of service, the provision of the proposed menu with all the necessary ingredients.

Technologies are developing and implemented rapidly. This is connected not only with the relief and improvement of the work of the restaurant staff, as well as with the involvement of as many clients as possible, arranging all the necessary conditions and making the customer a permanent guest [2].

Taking into account the above it is possible to explore innovations in the restaurant business. IT technology: Wi-Fi (Wireless Fidelity) - is a modern technology of wireless access to the Internet. Access to the network using Wi-Fi technology is done using special access radios. You can connect to a Wi-Fi network using laptops and mobile devices equipped with special equipment. One of the main advantages of any Wi-Fi network is the ability to access the Internet for all its users. The disadvantages of introducing such innovation include the particular sensitivity to electromagnetic radiation produced by household appliances. Despite world standardization, many devices from different manufacturers have incomplete compatibility with each other.

Electronic menu (iPad) - an interactive e-menu as a communication channel between restaurant and visitors, which allowed the administration to quickly edit lists and add new dishes to it. The advantage of such technology is that it allows you to select wines from the wine list of the restaurant for the price, year, region, bouquet, and then to it - a dish from the local menu; calculate the caloric content of

those or other dishes; at the choice of dishes immediately see the final order check; waiting for an order to play games, read news, wander around the Internet. But in this kind of positivity, guests are forced to place themselves closer to the terminal in turn, the terminal usually selects one seat near the table, it is extremely uncomfortable for the waiter to make an addition to the order at such a terminal, and finally the equipment of each table requires a large amount of costs for this terminal, which determines the negative moments of use such information technology.

The QR code is a matrix code that can hold a huge amount of information in the form of text, numbers, URLs, calendars, charts, and images. The speed of QR code recognition is very high, it can be placed on any media, starting with cash checks and menus and ending with different signboards and even stretch marks. It can be scanned either by a mobile phone or a laptop video camera. In the code you can encode the history of the restaurant, origin, age, authorship of the unique details of the interior and paintings; thanks to the information posted on the QR code about the time of work of the institution and contacts, the number of orders for offices and home will be increased; using the QR-code, the restaurant can notify its clients about promotions, lotteries, drawings, activate all kinds of loyalty programs, organize voting, interactive polls and quickly get restaurant reviews from your customers. But not all techniques are suitable for scanning this code.

The teclan of innovation, the essence of which is due to the fact that next to the workplace of the cook in the kitchen is set the camera. His actions are observed only those visitors who are interested on their monitor on the table. The consumer can see how the dishes are cooked in this institution. Not everybody wants to see the technological process of cooking and fulfilling sanitary and hygiene norms, which characterizes the prevailing lack of innovation.

The system of discounts - an integrated discount system allows you to introduce a flexible system of discounts for each consumer. The system of discounts as a kind of information technology is aimed at increasing demand, strengthening of the positive image of the restaurant business enterprise, increasing the effectiveness of advertising, getting social effect. There are disadvantages using it: the risk of loss of profit, additional costs for an advertising campaign, the possibility of creating a "deficit" of the product, the probability of occurrence of extraordinary situations.

Payment devices located near the tables allow you to pay by credit

card without getting out of place, which definitely reduces payment time; increases the degree of customer satisfaction, but the equipment of each table by such a terminal requires a large amount of expenses.

Biometric information readers identify people according to their unique physical traits and store these identifiers for further verification of the same clients, such a system reduces fraudulent transactions, wages and prices, which is an advantage, but violates the personal space of a person.

Innovative technologies are developing rapidly, conditions are created for the facilitation and improvement of the service of the institution, as well as for the convenience of the consumer of these services, establishments of restaurant industry in their majority are subject to a variety of innovative changes.

**Conclusions.** Concluding from the above we can say: firstly, on the basis of the conducted research, the main directions of improving the efficiency of tourism in the use of information technology can be determined: increasing the efficiency of placement and information research, activating the promotion and marketing of tourism services, improving the quality of service clients, as this is an important condition for the quality of tourist services; secondly, the younger generation, especially students, use new information technology devices during their travels. This often happens only at the planning stage, because some extra devices make it difficult to feel the beauty. On the other hand, it is recommended to take with you devices that provide the highest degree of security in emergency situations (mobile phone, map and, more often, GPS-receiver). Due to the fact that the mobile phone increasingly contains a GPS receiver, the ability of the operator to find the person who is lost or need of assistance and provide this information to emergency services is especially valuable. This feature, although technically simple to implement, has been blocked for a long time; thirdly, in recent years, innovations have substantially changed the catering industry and tourism in general, which will enable tourists of different age categories to travel both in reality and virtually, if for some reason real travel does not add up.

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**DEVELOPMENT OF  
THE HIGH-TECH  
SECTOR OF  
UKRAINIAN  
INDUSTRY: FROM  
INDUSTRIALIZATION  
TO DIGITALIZATION**

Today, neo-industrialization (reindustrialization), informatization, the emergence of new technologies and mobile automated high-tech industries lead to radical changes in the economic systems of developed countries and have a significant impact on the formation and implementation of human capital. New technologies radically change business processes and management models, while modern information ecosystems become the basis for the emergence and growth of new global markets. There is a transition from linear technological chains to multilateral partnerships based on the new principles of international division of labor and network economy. The use of these technologies

opens new opportunities for economic prosperity, social integration and environmental security.

In this context, the issues of studying the problems of the development of high-tech industrial enterprises in the context of the implementation of modernization reforms in Ukraine are actualized. First, all state-level strategic documents state that Ukraine should embark on its path of revival, namely the introduction of advanced technologies and knowledge economy, which will ensure economic growth and competitiveness and increase the welfare and quality of life of the population. Secondly, the production of high-tech products will take its niche in the world market, hence its export will contribute to the development of the domestic economy. That is why it is necessary to improve the methodology for managing the development of high-tech industry in the conditions of modernization and integration processes and the introduction of the results of the fourth industrial revolution, influenced both by internal factors of development and change, and external global and geopolitical challenges.

Industry plays a key role in the creation and dissemination of advanced technologies. This is especially true of its processing ingredient. Direct communication of the manufacturing industry with the consumers of products and other sectors and sectors of the national economy allows you to create jobs, increase aggregate demand, and stimulate the development of regions and countries. Not only does this involve a large number of people in the process of economic development, but also increases labor productivity, average wages and the average income of households, which in turn contributes to reducing poverty. Practice shows that in the economically successful countries industrial policy issues are directly related to innovation issues, therefore it is impossible to divide innovation and industrial policy in general.

Today, the policy in the field of innovation and industry is recognized as a fundamental factor in the development of innovation in the direction of greater inclusiveness. In recent years, we are increasingly talking about a qualitative revival of industrial policy, and an increase in the role of the state in this area. In particular, the United Nations Summit on Sustainable Development, held on September 25-27, 2015 in New York, adopted the Development Agenda for the period after 2015 [1], in which one of the goals of sustainable development - No. 9 calls for "Create a flexible infrastructure, promote inclusive and sustainable industrialization, and encourage innovation," noting that

without technological progress and innovation, the process of industrialization is impossible, and without industrial production, in turn, development is impossible.

Regarding the object of our study, it should be noted that, according to the OECD and Eurostat classifications, the types of production that are constantly in the "high-tech" group are: (1) the production of pharmaceutical products; (2) the production of spacecraft and aircrafts; (3) production of computers; (4) radio-television and communication equipment; (5) medical equipment and optical instruments. The main criteria for distinguishing these types of activities are calculations of the specific weight of direct and indirect capacity for development and research in added value, as well as the proportion of staff with higher education.

Today, in Ukraine deindustrialization process continues: a number of enterprises in separate regions of the country either significantly reduced production, or even completely stopped it. At the same time, agriculture became the forefront of the country's economy, which in recent years has become the most attractive sector for investment. According to various estimates, today the agrarian sector accounts for about 18% of Ukraine's GDP. However, in this direction, at least half of all exports of agrarian and food products account for export of raw materials, and high export indices of Ukraine are provided mainly due to crop production, that is, the raw material component of food exports, while the export of processed industrial products is much lower. In Ukraine, high-tech sectors of the industry are practically not covered by subsidies. Production subsidization took place only in the manufacture of chemicals and chemical products (0.2% of the gross value added generated by them) and the production of machinery and equipment not attributed to other groups (0.7%). With regard to such kind of state support as preferential taxation, in recent years in Ukraine there were about 200 various tax benefits. The most active in this aspect were enterprises producing basic pharmaceuticals (40% of the number of enterprises in the industry), medical, dental instruments and drugs (39%), aircraft and spacecraft (28%), weapons and ammunition production (23%). . In other high-tech industries, the level of coverage of benefits did not exceed 5-6%. This means that most sector enterprises are virtually excluded from the state support system [2].

In order to implement innovations, 170 companies have acquired 832 new technologies, of which 129 are outside Ukraine. Of the total number of technologies, 386 were purchased with equipment, of which

81 were outside Ukraine; 305 - as a result of research and development; 110 - under contracts for the acquisition of rights to patents, licenses for the use of inventions, industrial designs, utility models (36); 10 - for agreements on acquisition of technologies and know-how; 12 - together with the purposeful recruitment of qualified specialists. As a result of innovation activity, 8 enterprises created new technologies, of which 59 were transferred to other enterprises, in particular 2 - outside Ukraine. It should be noted that there is a direct link between the size of the enterprise and its level of innovation, since for the introduction of innovations it is necessary to have a certain number of personnel involved in the implementation of research and development, leading to the introduction of innovations. Accordingly, the highest share of both technologically active and non-technologically active enterprises was among large enterprises (respectively 31.4% and 28.1%) [3].

Regarding types of economic activity, during 2014-2016, the highest share of innovative enterprises was in information and telecommunication enterprises (22.1%), manufacturing (21.9%) and financial and insurance activities (21.7%). At the same time, the share of enterprises with technological innovations above the average in the country was among the enterprises of the processing industry (15.6%) and electricity, gas, steam and conditioned air (12.6%); and with non-technological innovations - among enterprises of financial and insurance activity (18.0%) and information and telecommunications (17.3%).

A significant factor hampering the high-tech manufacturing process in Ukraine is the low level of funding for research and development. Thus, the total financing of scientific research and engineering activities at the expense of budgetary funds reached an unacceptable minimum: about 0.16% of GDP in 2016 and 0.18% of GDP in 2017. At the same time, Ukraine's technological activity is low, as shown by the share of Ukraine in the global high-tech production, which, according to the Science and Engineering Indicators, is 0.1%. At this stage of development of the state, taking into account the world trends in accelerating production on the basis of the latest knowledge in all spheres of public life, national science is perhaps the weakest link with its extremely outdated material and technical base. The scientific and technological potential of domestic science, despite the difficult conditions of development due to low funding and low demand for innovations in the domestic real sector of the economy, continues to "survive", although the number of scientific organizations is decreasing quantitatively, and this number by the end of 2016 has become even

smaller than the number of institutions 1991 Thus, during the year 2016, 972 organizations performed scientific research and development (GDR) in Ukraine (compared with 1,350 in 1991), 46.6% of which belonged to the state sector of the economy, 37.7% to entrepreneurship, 15.7% - higher education. At the same time, the business sector tends to reduce. During 2017, 963 organizations performed scientific research and development in Ukraine, 45.8% of which belonged to the state sector of the economy, 39.0% - entrepreneurship, 15.2% - higher education [3].

On the basis of the data of the State Statistics Service of Ukraine and the results of the analytical research of the high-tech industry sector, modern tendencies of its functioning have been established, among which: the dominance in the structure of manufactured products, classified according to technological paradigms, the third and fourth with a critically small part of the fifth and sixth forms, which indicates the "technological degradation" of the national economy, that causes an ever greater technological gap between Ukraine and leading countries; a decrease in the share of high-tech products from 12.93% in 2011 to 9.56% in 2017, which was largely due to military actions in the East of the country and the loss of a significant part of the enterprises of the processing industry; a critically low proportion of research and development (R&D) expenditures in GDP and investment in low-tech production, which leaves in the future the priority development of raw material-oriented industries with low added value and does not contribute to the formation of demand for high-tech products; a critically low proportion of innovative active enterprises favouring technological reequipment, in contrast to the creation of new high-tech products; acquisition of equipment and technologies from foreign partners that are already morally obsolete and involve the manufacture of products for the domestic market, but not high-tech products oriented to foreign markets; loss of scientific potential, which manifests itself in reducing the number of researchers, in particular, due to low motivation for creative work, a decrease in the proportion of young professionals, the loss of links between generations and the disappearance of scientific schools; the percentage of applications for the receipt of security documents by industrial enterprises is critically low - in 2017 only 3.9%, indicating the actual destruction of the R&D business sector in the form of laboratories, research stations, engineering bureaus, etc.

Another important factor hampering the development of high-tech production in Ukraine is the lack of investment. Today, in the world

market of investment resources, demand far exceeds supply, so Ukraine immediately faces tough competition for investment with different countries that have better chances of attracting a foreign investor. In general, the effectiveness of international investment in today's environment is manifested through the speed of digital change and the high costs of states and companies in research and development in engineering robotics, ICT, informatization, cloud platforms, "large data", nanoscale and microsystem technology, renewable energy sources, mechanisms energy storage, etc. [4].

There is still no solution provided to the problem of unfavorable investment climate in Ukraine, due to instability, the risks of hybrid warfare, inflation, imperfect legislation, unstable tax system, risks of loss or depreciation of capital, bureaucracy, corruption, low level of people's effective demand, etc. Direct foreign investment is not only a long-term "feeding" and a key condition for the modernization of the national economy, but also a significant factor in its economic security. Official statistics also record disappointing results with regard to investing in Ukraine:

(1) a significant reduction in invested foreign direct investment (equity) into the Ukrainian economy in 2017 compared to 2016; (2) in terms of types of economic activity, the share of FDI in "Information and Communication" in 2017 was only 5.5%, in "Professional, scientific and technical activity" - 5.9%; (3) in terms of sources of financing capital investments in the Ukrainian economy, enterprises and organizations account for the largest share of their own funds, which, moreover, is dynamically stable, which does not allow us to talk about the possibilities of economic growth, especially of high-tech one; there is a decrease in the so-low share of foreign investors, in particular from 3% in 2015 to 1.4% in 2017.

In the structure of foreign trade of Ukraine, the largest share of high-tech products falls on machine building, but there is a negative balance of trade balance, as in most other positions of high-tech products. At the same time, in recent years, Ukraine has witnessed rapid development of exports of high-tech services through the development of the Information and Communication Technologies (ICT) sector. Thus, in 2016, the volume of services to the ICT sector amounted to 16.7% of the total exports, and significantly exceeded the share of imports of the same type of service more than double [5]. It is important to note that the greatest impact on the growth of high-tech exports is: the use of adequate corporate models of innovation, the development of support

systems and the stimulation of exports of high-tech products and the strong liberalization of the global market for industrial high-tech goods, which will facilitate the attraction to international trade high-tech goods of new countries, in particular from developing countries [6].

Unfortunately, these instruments have not become widespread in Ukraine. In the absence of a special investment policy in Ukraine, as has already become a tradition, the Government rely on foreign assistance. Thus, the European Union has included Ukraine in its investment plan for the development of the European digital economy. 600-700 billion euros (670-780 billion dollars) Europe must invest in the development of the digital economy. This amount includes investments in Switzerland, Ukraine and the countries of the Western Balkans, which are part of the digital infrastructure. For Ukraine, this amount may amount to 5-6 billion euros [7].

The participation of Ukrainian business entities in the international technology transfer is characterized by a number of problems, among which, first of all, the following can be distinguished: insufficient quality of work on patent protection of the results of innovation activity according to world standards and the proper registration of foreign security documents, very low volumes of domestic high-tech products on markets of the countries of the world and the EU, irrational structure of domestic exports (raw materials are predominant in exports), small volumes of scientific- technical exchange, shortage of technology transfer specialists. Thus, the process of transferring new technologies both in Ukraine and abroad, according to official statistics, remains extremely negative, which is a logical result of the absence of state scientific and technological and innovation policy, and hence the unregulated process of losing the scientific and technological potential in all its components and, as practice shows, this process gains signs of irreversibility.

In the conditions of the loss of the fifth part of the industrial potential for Ukraine, the national concept of re-industrialization based on innovations becomes of particular importance, which envisages an increase of the role of information and communication technologies, an increase in the share of knowledge-intensive industries in the structure of production and exports, and so on. Ukraine retains significant intellectual potential and human capital to build new high-tech production chains. However, the government needs to abandon the practice of constant "cosmetic repair" of a morally obsolete base. The high cost of introducing new technologies into the national economy

should not be seen as a burden for the financial system, but as an incentive to accumulate the necessary funds.

In our opinion, one of the significant factors influencing the timely choice of strategic priorities of scientific, technological and innovation-industrial activity is the absence of constant prognostic work in the country in the field of technological marketing and systematic, scientifically-based foresight research. Taking into account the world technological trends and forecasts for 2020-2030, we will pay attention to the Foresight of the Ukrainian economy (medium-term (2015-2020) and long-term (2020-2030) and see that it involves further ignoring the tendencies of perception of the innovative economy, the development of human capital, the lack of "digitization" of the economy as a key factor in the development of industry, which will continue to lead to labor migration and brain drain, inefficient economy, low competitiveness of all the sectors of the economy. This approach will have only a minor impact on the modernization of the economy, market development innovation, innovative entrepreneurship and general state of technological modernization.

Unfortunately, in Ukraine, so far, the lack of motivation of innovators due to the unformed demand for innovations of domestic enterprises on the one hand, and the lack of a policy for the formation of the domestic market, including the market of domestic innovations on the other hand, are one of the key factors hindering innovation processes. An indicator characterizing the effectiveness of introducing new technologies into production is the use of inventions, utility models and industrial designs, that is, the commercialization of the results of scientific and technological activities and their introduction into economic circulation. However, in recent years there has been a steady decline in the use of intellectual property rights objects (IPROs), which is clearly linked to low inventive activity in the national economy, reduced scientific staff and low rates of scientific and technical work. The reality is that, according to official statistics, in 2018 Ukraine experienced a slight decrease in activity in filing applications for inventions by reducing the activity of national applicants. The activity of foreign applicants increased by 5.5%. The share of foreign applications in the total number of applications for inventions was 46.9% (compared to 43.6% in 2017). [8].

However, among other things, there is a problem with the outflow of human resources in Ukraine. "In the IT industry, as well as in any other, there are approximately 85% of" ordinary "specialists and 15% of" stars

", leading specialists who are the main drivers of business. Mostly, the most often representatives of the second group are deliberately leaving the country, that is, we lose the best, those who led the majority were the basis of business" [9].

At the same time, in the context of the deployment of a new industrial revolution, the composition of high-tech products is changing substantially.

Thus, the concept of the Fourth Industrial Revolution, better known as "Industry 4.0," defines it as a means of increasing the competitiveness of the manufacturing industry through the enhanced integration of "cyber-physics systems" (or CPS) into production processes. In other words, Industry 4.0 is a production equivalent to consumer-oriented "Internet of Things", in which household items, from cars to toasters, will be connected to the Internet. Consequently, the fourth industrial revolution radically changes the economic landscape of the countries of the world, the benefits are already received by most states, which are better prepared for 4.0 and earlier started it. Developed countries and their governments have already mobilized for the Global Industry Industry Contest 4.0. For example, in the period 2011-2014, many countries carried out a huge amount of national-level work done by government agencies, along with business associations, large companies, academics and other stakeholders. In particular, the size of government and intergovernmental programs (EU) is impressive: it goes about billions of dollars in investment in industrial development. Their absence automatically increases the gap between those who do not invest in these directions or are still waiting. Unfortunately, Ukraine belongs to such countries.

However, the state authorities have not yet achieved significant progress in creating an innovative climate in the country: measures to support innovation activity are local in nature and do not allow to break the negative trends of the loss of scientific and technological capacity in industry. For effective coordination of actions, the government needs both a joint strategy and proper institutional and resource support, financial support for the implementation of the initiatives developed and executed in the form of relevant documents. Only close cooperation between the IT industry and the state, the state promotion and stimulation of this sphere development are able to improve the existing situation

It is projected that Ukraine can be at least a regional leader in the field of complex and high-tech engineering services such as:

programming in the field of industrial hi-tech / creating new software products, including on new technologies 4.0; design (electrical, mechanical, electronic, technological, construction, etc.); industrial automation and integrated engineering (including the commissioning of industrial facilities); development and production of complex, small-scale or unique products. For the domestic market, Industry 4.0 can become a catalyst for the growth of industry, as well as the defense industry. A huge challenge for the Industry 4.0 on the domestic market is the involvement the IT sector, as well as science in the digitalization of the Ukrainian industry and the energy sector. Both categories are currently losing out of these processes. The vision for 2030 includes and consolidates this position [10].

The key stakeholders in the process of modernizing the economy in the direction of 4.0 agree and create real-life development programs at the state level. Thanks to them, they can draw the IT sector to the development of industrial sectors - the share of GDP of the IT industry in the Ukrainian economy can grow from 5 to 30%, of which up to 10% falls on industrial sectors. As the experts from the Davos World Economic Forum "Readiness for Future Production" say, focusing on digitalisation is the right and only way to reduce such a tangible gap in international indicators compared to other countries in the world.

On the one hand, the state should become an example of successful innovations for citizens, nonprofit organizations and business, on the other hand, should provide a favorable environment for innovation, which in our opinion is impossible without perceiving the reality of the digital economy through its day to day activities by the system of public administration. An urgent need to develop and test the concept of a basic model of digital competencies and key digital competencies that provide effective interaction between business, education and society in a digital economy and take into account relevant and urgent topics: the main trends and possible scenarios for the development of the higher education system in terms of digitalisation, modern requirements for public administration and the competence of civil servants, which are formed in educational programs, best practices of training public and municipal officials etc.

Consequently, the modernization of the public administration system should be a response to the technological challenge and competition that is being strengthened within the digital economy, and human capital development involves the training of people with the competencies that are necessary in the digital economy and the development of the digital

society.

In this context, the government's commitment to digital transformation as a national priority should be complemented with the implementation of an effective strategy for the development of a high-tech sector aimed at achieving concrete results so that the state can become one of the leaders in the digital transformation and prepare for a technological breakthrough. Significant efforts are needed to streamline the management of this process and develop monitoring and evaluation tools to ensure the effectiveness of the strategy. It is also crucial to develop a mechanism for the active participation of all key stakeholders in the transition to a digital economy and permanent coordination at the state, regional and municipal levels.

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**DIRECTIONS OF DEVELOPMENT AND IMPLEMENTATION OF THE UKRAINIAN EXPORT POTENTIAL**

The export potential of the enterprise as an economic category and an object of analysis got the increased attention of scientists and practitioners in the international business. The experience of highly developed countries and countries that are rapidly developing convinced that the dynamism of the positive development of most national economies largely achieved through an effective export policy, depending on the level of excellence of the processes associated with the formation and using of the export potential of both the state and entities, as well as the selection of methods and tools that can provide a successful course of these processes. Nowadays, agriculture is a main sector of the Ukrainian economy that is why we chose the agrarian enterprises to research the export potential.

The problem of production ramp-up and development of agricultural enterprises export potential is complex and multifaceted. Only the enterprise, which has enough level of financial, raw material, communicational and informational, human and technological-engineering resources can enter the external market. The extent and quality of these resources depend on present financial abilities of the

enterprise to develop. According to the researches, those enterprises, which have a part of foreign funds in their authorized fund or cause foreign investments, are commercially viable.

Experience has shown, that among the subjects of foreign-economic activity, making export of agricultural products, there is only a small part, being agricultural enterprises-direct manufacturers of the products.

Agricultural enterprises are on the first and the lowest stage of the technological chain, which last stage is export of the agricultural products. For the agricultural enterprises the organization and provision of foreign-economic (export) operations is a difficult task. For its solving it is necessary to leave the boundaries of the material-resource, financial or marketing components of a business activity subject economic potential. For instance, the function of an export activity organization can be carried out outside the enterprises [4].

Thus, organization and carrying out of export operations with the agricultural products can become possible upon the condition of the participation of a big number of business subjects, specialized on different kinds of activities. The final export displays the efforts results not only of agricultural manufacturers, but also of processing enterprises and other auxiliary productions. Additional it should be mentioned, that the ways of export stimulation, such as the return of the Value-Added Tax to the exporters, include states into the list of export subjects. Export subsidies make the products export operation to be efficient. Their production cost is a bit higher than the cost in the international market.

Undoubtedly, the further effective development of the agrarian sector enterprises and uprising of its export potential is connected with the increasing of the part of the agricultural products export with a high added value. The modern Ukrainian export is characterized by a meaningful relative weight of raw-material orientation products and a low level of an added value. It leads to exhaustion of a resource base of the country and increases the level of its economy perceptivity to different exogenous factors, as well as to the change of pricing environment [7, p. 57-58].

The diversity of the factors, which influence the export potential of agrarian enterprises of Ukraine, can be classified in different ways. For example, according to the way of influence the factors can be divided into the factors of direct and indirect influence. The factors, which make negative influence on the enterprise operations are the factors direct influence. As a rule, the factors of indirect influence do not influence the

operations of an agrarian enterprise immediately, but they should be taken into account in management decisions. Indirect influence is more difficult than the direct influence. The factors of direct influence include the influence of business rivals and consumers, legal coverage, inflation, information provision, etc. The factors of indirect influence are the following: political stability; the state of the economy; scientific-technical progress; world market; social-cultural factors.

The international experience shows, that the countries with transitive economies can not leave the economic crisis without involving and effective use of foreign investments. Foreign investments, accumulating business, state and mixed capitals, help to form national investment markets, and they are the impulse for creation of internal services and goods markets.

During recent years, we observe increasing of national and foreign investments into agriculture, but the part of investments into this sphere in general volume of foreign investments is still small.

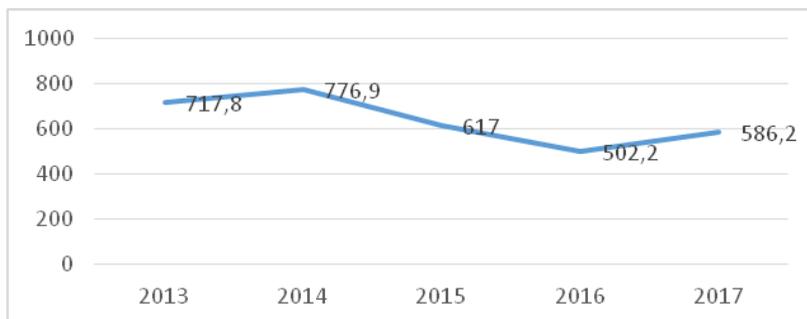
The main sources of the direct foreign investments into the Ukrainian agrarian sector are the European countries. Besides, the volume of investments from China and Persian Gulf countries increases every year. Despite the fact that Ukraine rises in the rating of cleared conditions for making business, there are unused opportunities for further improvement in different directions, for instance in state regulation sphere.

Investors are attracted by a huge potential of the country agriculture, but they still meet great obstacles in the process of investment, in addition to economic downturn and tension in policy, which take place nowadays.

Ukraine has an open and clear legal order of foreign investment, which meets international standards.

Currently, according to the size of investments and capitalization the agrarian sector is a leading industry of the Ukrainian economy. It is also observable in compliance to the statistical data. For instance, in accordance to the data of the Office for National Statistics of Ukraine, as a result of 2017, the sum of the capital investments in the national agrarian sector yielded to 596,2 million USD. This result was 84,0 million dollars more than the result of the corresponding period of the year 2016, but 30,8 less than in 2015 (Figure 3.1). In spite of all economic challenges, large foreign transnational companies, such as Bunge and Cargill, etc. invests money into the sphere of national agriculture. Mostly, they are interested in the development of the sphere

of infrastructure, since without its improvement it is not possible to increase the volumes of production, neither to increase its export [2].



**Figure 3.1 Foreign direct investments, involved into the agrarian sector, million dollars during years 2013-2017**

*Source: Accounted by the author according to the data of the Office for National Statistics of Ukraine [2]*

In agriculture there are different types of enterprises: corporate enterprises, farming enterprises, individual enterprises.

According to the experience of some European countries, the success on the way of transformation of their economies was partially achieved due to the activity of small and middle enterprises, which for 50 % supply gross national product, for 50% they supply export, and 60 % for import of the country.

In the countries of the European Union there are more cleared conditions for manufactures to carry out foreign-economic activities. First of all, it is stipulated by the work of institutions, analytical agencies, which quickly give the information, which can be used by small manufacturers for strategic planning. The system of state support of agriculture through the dotation system functions successfully [3, p. 38].

Nowadays, in spite of a very difficult economic situation in Ukraine, there is a big number of foreign investors, working in the country. There are some, who are interested to invest into our country. For instance, these are small and middle enterprises from such countries as Czech Republic, Poland, India, UAI.

Professor Onysko S.M. states in his work [8, p. 57], that the agrarian enterprises lack their own sources of capital investments. In these

conditions the only way of their compensation should be the investment credits of banking establishments, which have passed the liquidity crisis and have their own corresponding index of capital.

By reason of the state support and limited access to financing, many small and middle business owners are often ready to sell their agrarian business, taking into account its popularity, and they expect having a chance to sell it to foreign investors.

In the nearest future the access to the credit resources for national agricultural manufacturers will also be limited, especially taking into account the financial state of the banking system in Ukraine during the previous three years. By the latest estimates, in Ukraine the part of the bank crediting is less than 20 % of the agrarian sector floating funds. At the same time in developed countries it is 70 %. Interest rate for agricultural enterprises was about 19.8 % in the end of February, 2016. It exceeds average interest rate in economics (16.4 %). Besides, it should be mentioned, that mostly these are short-term credits for current operation needs of the agrarian sector activity (the preparation for sowing with the purchase of fuel, fertilizers, seeds, planting material, forage reserve, etc.), but not long-term ones – for the development and purchase of basic assets, which was allowed by the special treatment of VAT [2].

In the countries of the European Union there acts common agricultural policy. The total volume of support of the agrarian sector in the countries of the European Union during 2015-2017 was almost 60 billion Euros per year, which is about 525 Euro/ha, or 20 % of gross production of an agricultural enterprise. Depending on the country, the state support of the industry is different. For instance, in the Netherlands and Belgium it is 500 Euro/ha, in Poland it is 345 Euro/ha. At the same time, in Ukraine this index is 10-20 Euro/ha (including the assets, which remained under the special treatment of VAT).

Diversification and increase of export of the Ukrainian agricultural production is a real task to be carried out. The output of products with a big part of added value is prospective. According to the analysis, the main export products are grain and oil crops. But in 206-2017 more than 200 Ukrainian enterprises increased the volume of export of poultry and meat products, started exporting eggs, fish, honey, flocks, raw leather, forage for pets, other byproducts, etc. to the countries-members of the EU. These facts prove that Ukrainian manufacturers can be not only the suppliers of raw materials in the world or European markets, but also can find their way in manufacturing of ready-made products.

Table 3.2

### Commodity Composition of Trade in 2017

The code of goods according to Ukrainian Commodity Coding System	Export			
	Million USA dollars	in % before 2016	in % before 2015	in % general volume
Totally	43264,7	119	113,5	100
including				
I. Alive animals; products of animal origin	1108,8	143,1	134,7	2,6
II. products of plant origin	9215,7	113,9	115,6	21,3
III. 15 Fats and oils of animal or plant origin	4605,7	116,2	139,6	10,6
IV. Ready-to-use food products	2826,7	115,4	114,5	6,5
Together groups I-IV according to Ukrainian Commodity Coding System	17756,9	116,2	121,9	41

*Source: Accounted by the author according to the data of the Office for National Statistics of Ukraine [2]*

Researches show that the part of agricultural food products in the commodity composition of Ukrainian exports comprised 41 % in 2017. It is the evidence of a high level of dependence of the national economy on the export of these commodities. Thus, taking into account the performance of export activity, we can make a conclusion, that the agricultural industry is rather prospective.

In the 21<sup>st</sup> century the sustained development of the national agrarian sphere can be supplied only by means of using new high-producing and drought resistant varieties of agricultural plants, application of innovative technologies and modern technical means, which demands remarkable capital investments into the industry [5].

According to estimates of the director of the International Bleyzer Fund O. Ustenko, Ukraine needs annual investments in the amount of 5 billion dollars during 10 years in order to reach a European level of agrarian enterprises development. He mentioned the following high priority measures for investment climate improving: coping with the corruption, creation of regulatory environment and administrative barriers liquidation [9, p. 104-110].

For the volumes of exports to grow, it is necessary to increase the

production of the high-quality agricultural products and search for new sales markets or to increase the share of sales on the present ones.

The prospective sales markets definition and the agrarian enterprises factual export activity on these markets are the important aspects in predicting the export potential of the agrarian enterprises.

Proceeding from the results of the previous researches, it was found that the EU member-countries' markets are the most prospective foreign sales markets for the agricultural products made by the L'viv region's agrarian enterprises.

It is worth noting that the exports to the EU countries had increased in more than two times during five years at the expense of the volumes of the crops exports growth, whereas, on the contrary, the volumes of the livestock breeding exports had decreased by 35%. There are two main reasons concerning the reduction of the livestock breeding products exports: shortage of its production volumes and the veterinary restrictions pertaining to its exports.

The partial removal of unequal trade conditions between the EU and Ukraine, which showed itself after Ukraine, had joined the WTO, is a main advantage of the free trade area for trading with the agricultural products. The removal of unequal conditions is being made real by means of the following:

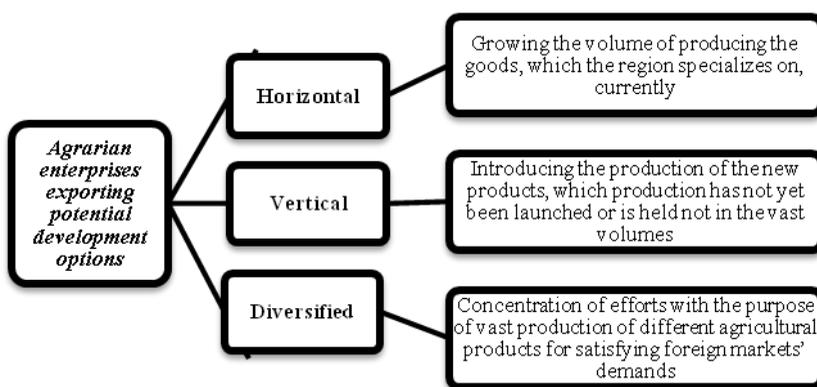
- cancellation of the customs within the frame of the tariff quotas for the agricultural goods;
- cancellation of the export subsidies for the agricultural products to the EU entrepreneurs while exporting to Ukraine;
- granting the Ukrainian party with the right to use extra trade conditions and protective measures [1].

Implementation of zero-rate import duty quotas on the crops exports to the EU countries is a way to augment the exports volume on the crop products market. In spite of that, the Ukrainian agricultural products export expansion onto the EU countries' markets will be hindered, because of the little import tariff quotas volume for customs-free import of the national agricultural products into the EU countries and the insufficiency of the majority of the national agricultural producers, currently, to meet the technical, sanitary, phytosanitary conditions of the products export onto the EU markets.

There is a high possibility of the national meat and meat products, milk, vegetables and fruits producers' competitiveness weakening, as a result of the imports growth from the EU.

Generally, Ukraine and in particular the L'viv region has a vast export potential in the agricultural sector, but they cannot fully implement it. It is explained by the fact that the Ukrainian agricultural producers faced too tough level of competition on the international markets.

Keeping the tendency to the increase of the volume of the agricultural products exports to the EU countries is possible in case of implementation of three types of export-oriented enterprises development, which can provide a sustainable level of the agrarian enterprises exporting potential development within context of the European integration (Figure 3.2).



**Figure 3.2 The agrarian enterprises exporting potential development options within the context of the EU integration**

*Source: developed by Lavriv I.M.*

The given options of the agrarian enterprises exporting potential development are aimed at defining the development vectors as for agrarian enterprises export activity and for their entrepreneurship development in general, as well.

There are opportunities for the agricultural development in Ukraine, nevertheless the main part of agricultural products are being made within the households. Horizontal option of development is aimed at deepening the region's specialization on the output of the products which production already, nowadays, has the necessary resources for. In particular, such crops can be represented by fruits, berries and vegetables, which demand for is high enough on the national as well as foreign markets.

Vertical option of the agrarian enterprises exporting potential development involves the establishment of the new or consolidation of the existing technologically interconnected productions. This option may be implemented by the production of the, so-called niche crops, particularly the garlic and the sweetcorn, whose export quotas are not fulfilled. Currently, the corn export is being carried out for fodder and technical purposes. Changing the orientation onto the sweetcorn production may become a prospective way of the agricultural enterprises export activity development.

As to the garlic, it is worth noting that the demand for it is quite high and stable in the European countries. Today, large-scale production of the garlic is not conducted, that is why, the small and the middle agrarian goods-producers consolidation for the joint garlic planting is a prospective. Such a way of production arrangement will allow to conjoin the harvests into the large consignments for exporting.

The diversified exporting potential development option can be implemented by means of researching the foreign market's needs and consolidating the various types of productions into the common production system. We can include the production of the organic agricultural products to this option. This idea is followed in the works of I. Kostyrko, T. Hrom'yak [6, p. 4-5]. Such diversification of production will allow to conquer a stable share of foreign markets, since organic products are getting more and more popular.

The agrarian sector of the Ukraine's economy has to reach the high level of the agricultural production organization, which would correspond to modern world and European demands and which, at the same time, secures and strengthens one's own identity, for the comprehensive integration into the European area. Particularly, such scholars as N. Zalisko, V. Krupa [10, p. 50-53] highlight that it is necessary to proceed with the researches of the state governance mechanisms in the sphere of implementation of the European guarantying model of the nutrition quality and security in order to develop the Ukraine's Agricultural production complex foreign trade prospects.

Meanwhile, using the accomplishments, which can be gained, as a result of uniting a member-countries regional integrative grouping's agrarian potentials, their agrarian markets and thanks to the solidary responsibility for the final outcome at every stage of the agrarian cooperation and all integration process participants common financial interest, will guaranty the achievement of the best economic result,

which is impossible to reach without integration, or it is economically unreasonable.

There is defined a priority of measures in the process of researching the conditions for the agrarian sector of economy adaptation to the European model of the agricultural development:

1) Conducting an estimate of one's own financial capacities and opportunities of access to the EU structural funds financial resources.

2) Classifying the rural territories types in conciliation to the EU standards.

3) Designing some alternative schemes of the rural development organization; specifying the criteria of rural territories depressiveness; overcoming the deficit of information among the peasants in the sphere of agricultural policy, etc.

Finally, as a result of the conducted prediction of the export potential development, there have been defined the main development options, which must be oriented toward the adaptation to the European market. Meanwhile, the European standards attainment in the functioning of the agrarian sector of economy is possible only in conditions for defining the basic priorities, which will drive the European integration process in conformity with the strengthened agreement between Ukraine and the EU. These are:

1) improvement of the state mechanisms of providing the rural inhabitants with the societal goods as a factor for their welfare growth;

2) the fullest realization of the agricultural formations of all legally-organizational forms;

3) the agricultural products valid national standards harmonization with the European and world requirements;

4) making agrarian production more ecological due to introduction and usage of the environmentally friendly farming methods;

5) bioenergy development based on the national raw materials.

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**MARKETING  
POTENTIAL OF  
MODERN  
ENTERPRISE**

As is known, the market share of an economic entity is determined by competitive advantages created due to marketing potential. When building it should be noted that the essence of modern marketing is described as a complex socio-economic phenomenon that has undergone significant modifications in the course of its transformation – from sales of products to activities aimed at creating and maintaining a system of relationships with customers in the exchange area in order to meet their requirements for goods and services. The state-of-the-art marketing model is based on relationship of trust and cooperation resting on the system of universal human values.

Analysis of modern scientific thought enables to reveal the nature of the “marketing potential” concept as an element of effective management of the competitive capacity of enterprises. Considering marketing potential of industrial enterprises based on two methodological approaches, in particular, the scientific-theoretical one concerning a general idea of the marketing potential essence and the theoretical one, which takes into account the distinctive features of marketing of the industry, we identified the basic elements of its components (Table 3.3).

Summarizing data in Table 3.3 it is to be noted that marketing potential of industrial enterprises built under the influence of a number of features of the industry development:

- forming new materials zones and partner relationships with primary producers for effective development;
- an increasing world demand for products enables to expand their exports but it necessitates harmonization of the domestic standards for products with international and European ones, which will significantly improve quality of industrial products;
- taking into account the influence of political factors that determine redirection of exported products to new external sales markets;
- enhancement of the role of heads and specialist of enterprises and of their competencies.

Analyzing the factors affecting development of marketing potential of industrial enterprises note that some of them pertain to the national level and require vast investments and regulatory changes. Nevertheless, industrial enterprises can independently take first priority steps to resolve the above problems by changing the corporate marketing strategy.

At present, the strategy of modern industrial enterprises can be described as “price–quantity.” It orients towards production and sale at reasonable prices of a significant quantity of standardized products in a broad market using well-proven technologies that make it possible to reduce costs and prices. However, the production-and-sales line of activity complicates achieving marketing objectives and ensuring corporate development because it is just a marketing strategy that is notable for flexibility, elasticity, efficiency and adaptability to markets changes and innovations. With a marketing strategy, staff of an enterprise bears high moral responsibility for manufactured products offered to the consumer.

Table 3.3

**Marketing potential components of industrial enterprise**

Components	Component elements	Saturation of marketing potential components
Marketing staff potential	Marketing department organization	Core marketing competencies; internal marketing development; working experience etc.
	Labor motivation system	Labor motivation system implementation: bonuses; fees; incentives etc
	Staff morale	Classification of employees by hierarchy level within the same information area; personnel development and opportunities in strategic decision-making etc.
Marketing tools potential	Research methods	Market situation analysis; ABC and SWOT analyses; BCG matrix, General Electric-matrix and others; perceptual map; expert judgments and experiment
	Marketing mix management methods	“5 P”; product line stretching; price, communication, and sales policies; distribution channels etc.
	Methods of applying additional tools	Merchandising, brand stores; budgetary instruments; online projects, contests and exhibitions etc
Marketing resources potential	Enterprise management system resources	Marketing strategy development; enterprise goals identification; managerial decision-making speed and correctness
	Information, intellectual and innovation resources	Marketing information; staff knowledge; innovative solution in material and technical
	Products manufacturing and sales system resources	Quality of raw materials and dairy products; quality management system; development of stable partner relationships
Marketing intellectual assets potential	Marketing strategies	Development, coordination, control, evaluation of a marketing strategy intended to expand and develop new sales markets
	Brands and trademarks	Trademark promotion

Source: [author's classification]

Therefore, to rapidly adapt to the contemporary conditions in the market of industrial products, domestic enterprises must take account of cause-and-effect relationship of factors of the internal and external environments, while the effectiveness of adaptation of industrial processing plants to changes in the external environment depends on marketing potential they built.

Competence based on skills, knowledge, and abilities of heads and specialists of enterprises is one of the kinds of marketing opportunities [19]. What is more, these components are the most significant given the specifics of marketing activities of industrial processing plants. Thus, just competencies make it possible to secure competitive advantages by setting a new performance standard for industry.

Difficulties researchers encounter in studying the problem of building competencies are primarily due to uncertainty of the very concept of “core competence” and, accordingly, vagueness of the signs and factors that outline the area of such research. It should be noted that at present there is no generally accepted definition of the concept “core competence” that would cover all aspects.

Etymologically, the term “competence” derives from the Latin word *competentia* and means an area of knowledge, a range of issues in which someone is well versed. As defined by the Great Explanatory Dictionary of Modern Ukrainian, competence, as an economic term, means familiarity with something, terms of reference of some organization, institution, or individual [4].

Economic entities have usually a whole number of competencies, which are not a competitive advantage, since competitors easily learn them. Now, a competitive advantage means a unique and exclusive value by far surpassing that other competitors offer, in particular, partnership, an ability to continually learn and use innovations difficult to imitate [16]. To secure competitive advantages, it is necessary to develop the basic core competence, which generates a competitive advantage, is used in various markets, and difficult to be reproduced by competitors [11].

Many publications most of which discuss the importance of core competencies are dedicated to this economic category. However, there are significant differences in understanding of the very definition and its essence.

The evolution of scientific thought regarding the definition of “core competence” [author’s classification]:

1. Core competencies are skills and abilities providing customers

with fundamental benefits and a set of skills and a technology mix, knowledge accumulated at an organization that become a basis for successful competition.

2. Core competencies are special skills or technologies constituting a unique value to customer.

3. Core competencies are collective knowledge enabling to organize and use other competencies and abilities creating thereby an additional use value.

4. Core competencies are competitively significant activities where an enterprise achieved maximum efficiency.

5. Core competencies are a complex formation that includes cognitive, behavioral and emotional components comprising awareness, psychological knowledge and perceptual abilities of the specialist.

Summarizing the above, note that a core competency represents a specific way to achieve results an enterprise needs with greater efficiency than competitors do.

This economic category is a competitive advantage that influences consumer preferences. An economic entity cannot have many core competencies, in that their wording must be concrete, give a comprehensive picture of its advantages. A limited range of customers or of their groups that are a priority for an enterprise in the long run in order to secure a profit owing to their repeated applications serves as target accounts.

Concurrently with consumer market development and rise in living standards, buyers become more and more exacting as to choice of industrial products. In this situation, it is pretty hard for producers to foresee consumers' response to varied features and characteristics of manufactured products; therefore just knowledge and understanding of their needs mainly underlie core marketing competencies. Moreover, only those industrial enterprises that integrate all efforts to find the best marketing technologies can achieve the highest performance results based on building core marketing competencies.

A core marketing competence serves as a derivative of the ability of an enterprise to generate the highest value to customers and ensure sustainable competitiveness. This hypothesis is based on theory introduced by K. Prahalad and G. Hamel, which sets fundamental requirements for core competencies, which must primarily provide potential access to a wide variety of markets, generate the highest use value making a substantial contribution to the perceived customer benefits of the product, and be difficult enough for competitors to

imitate [9].

At present, the core marketing competence of an industrial enterprise is understood as a generalized description of marketing knowledge, expertise, skills and abilities to adequately use them in order to create the highest value to customers and secure sustainable competitive advantages of the industry players.

During the study we undertook, it was found that the following factors markedly affect the power of loyalty of the industrial products market consumers – industrial products quality, marketing mix differentiation and flexibility, quality of service, attractive communication support programs, and level of staff competence. At the same time, sustainable competitiveness of industrial enterprises has characteristic features, namely high-level marketing competence of marketing staff, great competitive strength of the marketing mix, establishment of unique integration ties in the marketing interaction channel, and the ability to influence interaction behavior of counterparties.

A body of marketing knowledge, abilities and skills, which enable to implement marketing interaction functions ensuring the highest value to customers and a stable competitive position of industrial enterprise, forms a set of such core marketing competencies as knowledge of consumer behavior modeling, skill and experience in forming strategic partnership, ability to ensure marketing compliance with consumer expectations, interactive dialog ability in the marketing interaction channel, high marketing mobility in exploiting new market opportunities, skill and experience in reflexive influence on marketing behavior of counterparties, and ability to differentiate the marketing mix. A high level of development of the core marketing competence manifests itself in close relationship of industrial enterprises with consumers refocusing their interests and potential demand on the enterprise's marketing offer or refocusing utilization of its marketing potential on consumer satisfaction.

Economic literature likens quite often marketing competencies to glue that joins, links together all of the existing lines of economic activity of enterprises. They are also regarded as an engine for new business development. They, rather than market attractiveness, can serve as a basis for learning diversification and market penetration models [10].

The essence of marketing competence is oftentimes associated with marketing expertise Y. Ganaeva hold that marketing expertise is a

special form of social consciousness and means a form of reflection of market commodity-money relations in people's minds, which emerged in the course of practical activities in the roles of sellers and buyers [5]. According to A. Balabanets, marketing expertise is an integrated body of marketing knowledge, abilities, skills and opportunities to generate the highest value to customer that secures sustainable competitive advantages of enterprises [3]. Y. Lohvina believes that marketing expertise means professionalism and consists in knowledge of marketing theory; in the ability to shape and implement a marketing strategy, carry out effective communicative acts promoting competitiveness of enterprises expressed in the capability to meet the interests of the state, society and personality [14]. I. Kravets defines marketing expertise as a component of professional expertise, an integrative quality of personality that includes motivational and cognitive components, which is characterized by maturity of the need and motivation to conduct marketing research, to adopt optimal marketing strategies, to carry out marketing communications; by awareness of knowledge about the specifics of marketing research, marketing strategy, methods and forms of carrying out marketing communications; and by the ability to conduct marketing research, develop a marketing strategy, and carry out marketing communications [12].

In view of the foregoing, marketing expertise of heads of industrial enterprise can be described as specific professional expertise of agents of management activity, which includes a system of knowledge of market-driven economy and marketing; skills and abilities towards development of strategic and tactic planning and operation of enterprises with maximum economic impact; experience in marketing research, expansion of the dairy products range; professionally important qualities (logical thinking, mobility in search for alternative solutions, creative thinking, and sociability); and a positive attitude to their management activity.

Marketing expertise determines corporate culture and creation of internal communications of industrial enterprises. Currently, the existing integration processes in the industrial production subcomplex have led to authoritarian influence of superiors on their subordinates, which manifests itself as:

- making autocratic decisions within the management hierarchy that are not discussed and are subject to unconditional execution;
- excessive centralization of power;
- delegation of powers and responsibilities to executors;

- distrust of subordinates;
- use of psychological influence and enforcement mechanisms (rebukes, threats, strong language, demotion or even dismissal);
- indifference to problems of subordinates.

Such a behavior model only facilitates a growing influence of the superior upon his/her subordinates who are mainly viewed as patients rather than fellow workers. Furthermore, the authoritarian leadership style thwarts development of marketing potential of industrial enterprises. Therefore, using marketing expertise mechanisms of those managing industrial enterprises will act to raise the degree of consciousness of supporting ideas, proposals on the part of employees. In other words, it will help to sell to the consumer a personal contribution of each employee, because staff is the core resource that furthers effective development of enterprises.

**Conclusions.** Consequently, the conducted research gives reason to conclude that marketing potential of industrial enterprises includes such components as potentials of marketing staff, marketing tools, marketing resources, and marketing intellectual assets. It has been established that just competencies make it possible to secure competitive advantages by setting a new performance standard for the industry. Sustainable competitiveness of industrial enterprises should be ensured by such components as regard for characteristic features, high-level marketing competence of marketing staff, great competitive strength of the marketing mix, establishment of unique integration ties in the marketing interaction channel, and the ability to influence interaction behavior of counterparties. An important role in marketing expertise should be assigned to the enterprise manager and staff.

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**ORGANIZATIONAL AND  
ECONOMIC ADAPTATION  
OF NETWORK  
STRUCTURES OF THE  
ENTERPRISE FOR THE  
DYNAMIC EXTERNAL  
ENVIRONMENT**

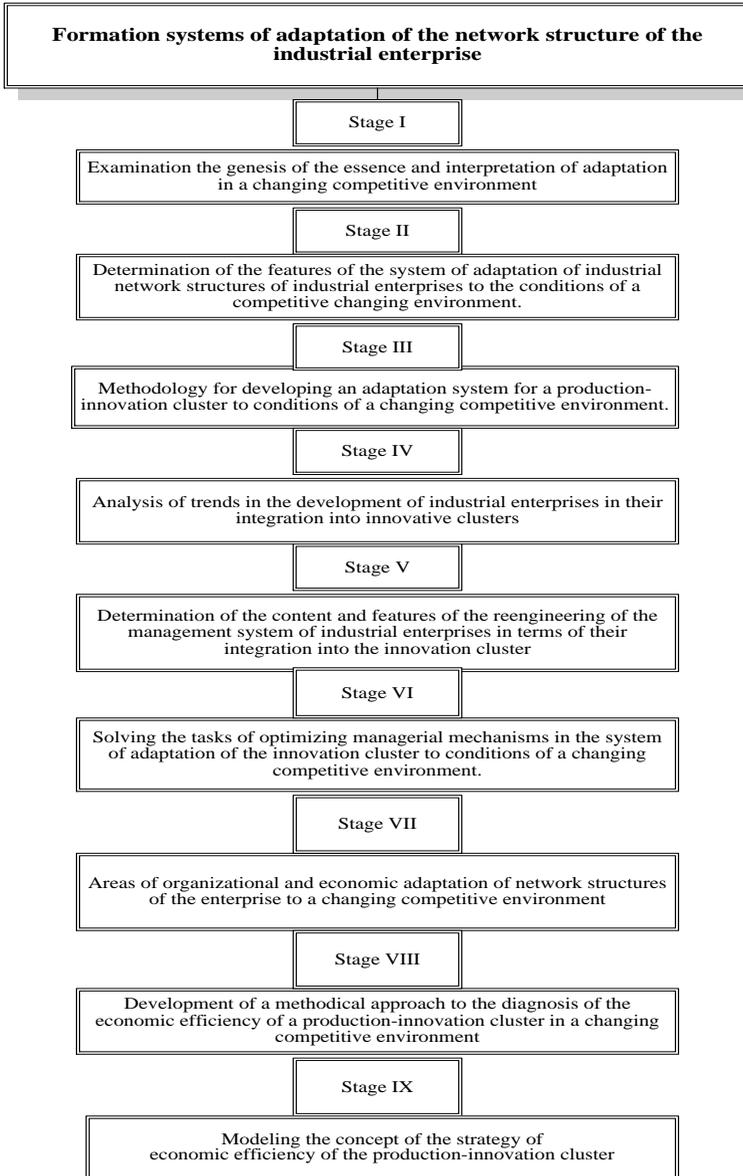
Transformational processes that are constantly occurring in the national innovation environment, changes in the institutional environment and globalization have become the reason for rethinking the essence of the intranet integration as an economic category. Further research needs theoretical and practical problems of the development of innovative systems of a new type. This also applies to the emergence of the industry 4.0, which represents the fourth stage of the scientific and technological revolution and defines a new form of industrial integration and interaction of the subjects of the production process within the framework of the network structure.

Application of adaptation measures domestic enterprises can contribute increase the level of efficiency of their activities. At the moment additional research needs quantitative and qualitative criteria for adaptation of network structures and their efficiency in the activities of enterprises. Thus the high significance of these studies for the theory and practice of strategic development of domestic industry is recognized. Should be noted the problems of increasing the competitiveness of industrial enterprises in terms of effective adaptation of potential within cluster structures are not sufficiently studied.

The proliferation of network formations and the creation of production-innovation clusters, their recognition as an effective form of increasing the competitiveness of individual enterprises and corporate formations of general national importance, the adoption of the European Cluster Memorandum emphasize the relevance of the identified issue.

Therefore question arises of necessity formation of an adaptation system of an effective network structure of an industrial enterprise in a changing environment (Figure 3.3).

The study of the concepts of "adaptation" and "adaptability" was undertaken by many domestic and foreign economists [Acoff R. L.



**Figure 3.3 Proposed methodological approach for industrial's enterprise network structures adaptation system**

(2007), Ansoff I. (1998), Nelson, D. R., Edger, W. N., Brown, K. (2003), Strickland, A. J. J., Thompson A. A. (2012), Yachmenova, V.M. (2019)]. However, each author used these concepts within the specific object and subject of the study.

Morphological analysis and morphological classification are used to determine the difference and identity of the concepts of "adaptation" and "adaptability". On the basis of this was found that if adaptation for the most part is considered by various authors as a process of adaptation, change of parameters, components and the system as a whole, and adaptability is considered as property, ability and characteristics of the system.

The identity of these concepts lies in the fact that each of them is an essential component of survival, the effective functioning of social and economic systems in the new environment, adapting to them and timely response to them. It is determined that the term "adaptability" is a characteristic of network formation, which is necessary to determine the nature and extent of structural changes on global equal. Adaptation is considered as a process necessary to ensure the effective functioning of network formation and its elements in conditions that are oriented towards the globalization of the economy and other global changes in the environment.

On the basis of the research carried out for network formations (including innovative clusters) established in the defined sphere, there are no general views on the essence, patterns and characteristics of adaptation processes.

The strategy of adaptation of the enterprise according to the adaptive cycle is determined, depending on the internal philosophy of the organization on the complex solution of three of its main problems, including entrepreneurial, engineering and administrative problems. Integral strategy is established as the optimal type of strategy for network formation, covering strategies of the protector, analyzer, researcher and reactor. Adaptation strategy is defined as a set of basic guidelines and plans of the management of the company, aimed at adapting to the conditions of the internal and external environment, realization of basic socio-economic goals of a certain enterprise.

Of crucial importance is the stage of determining the competitive advantages of the cluster and its threshold possibilities. Competitive advantages are inherent to the enterprises that create the core of the cluster, unique knowledge and skills. That attracts and motivates future members of the cluster to interact.

Orientation of the strategy of adaptation to the external environment is realized on the basis of the formulation of the mission of the enterprise. It is established that the mission is a motivating factor for the cluster members, which through network communications create a system that performs a significant and unique function in the external environment in long term.

Due to the mission, the components of the competitive advantage of the cluster and requirements for the candidate enterprises are determined. The mission also defines the strategic capabilities (resources and competencies) of the threshold level and their thresholds opportunities.

The mission contains the principle of interaction of the cluster and the external environment as a system of higher level of organization. Interaction in the long run in order to preserve the parameters of the importance and uniqueness of the cluster as an element of the environment is provided on the basis of their agreed development, which determines the need for analysis and forecast of the development of the environment, and then to identify the cluster of its position, taking into account its existing production and innovation potential.

In Ukraine, despite the growth of the total amount of expenses for innovation activity and the positive trend of these costs, their total size is insufficient for possible qualitative introduction of innovation activity. An analysis of the external conditions of production and innovation activity at the macroeconomic level has allowed to reveals a considerable lag of Ukraine from the leading countries of the world. Thus, in 2017-2018, Ukraine's Global Competitiveness Index ranked 81. This situation shows a lack of work in the direction of development and introduction of innovation activities in production and their interaction in the country, due to non-compliance with the developed strategy of innovation development.

Therefore, the investment processes in the industry are at a low level. Chains indicators of industrial capital investment for 2011-2018 show a predominantly negative growth rate. Consequently, the domestic industry demonstrates a largely extensive type of development without changes in basic technologies. Achievement the new level, you need significant investments, but fixed capital investment is shrinking. The main source of financing of industrial enterprises remains their own funds, the volumes of which are also constantly decreasing.

Thus in an effort adherence the principles of sustainable development and innovation economy, domestic enterprises tend to

avoid competitive obstacles, unite into clusters. Changing the organizational structure by combining efforts to produce competitive products at the core of the cluster allows us to effectively use the production and innovation potential of each cluster enterprise member.

Adaptive integration of an industrial enterprise into a production-innovation cluster enhances its competitive advantages and the functioning of logistics systems. Reducing the innovation activity of enterprises reflects, above all, the need to protect against risks that are not innovative changes directly. Indeed, such a dynamics of innovation activity in industry characterizes their low adaptation to the conditions of the competitive environment and the significant influence of factors of the external and internal environment and, therefore, does not contribute to increasing the efficiency of the domestic economy.

So under such conditions, it is necessary to introduce innovative changes as a source of change in the vector of development or functioning in the period of crisis processes. Proposed the estimation of the industrial-innovative potential of a certain industrial enterprise in the following sequence:

An analysis of the structure of production and innovation potential;

Identification of the degree of use of internal production-innovative opportunities of the enterprise;

Level assessments the enterprise's production and innovation activity.

An expert evaluation of the industrial-innovative potential of a certain industrial enterprise was carried out on the components: production, staffing and innovation opportunities. The level of innovation activity of the enterprise is determined with the help of a generalizing indicator – the coefficient of production and innovation activity. The results of the assessment of the state of the elements of the production-innovative potential are the basis for developing a complex strategy for the adaptation of the network structures of a certain enterprise to the conditions of a changing competitive environment.

The flexibility of the innovation cluster which functions in a changing competitive environment is affected by a variety of factors - external in particular. In order to decide what types of products and quality should be produced, at what prices to sell them, what types of after sales services should accompany it, first of all it is necessary to evaluate and analyze the existing level of competitiveness of those types of products that produce a production-innovation cluster; solvency of potential consumers taking into account the capacity of the market of the

product and its segmentation. Therefore, a reasonable choice of above-mentioned performance indicators of the production-innovation cluster will affect its financial condition.

It should be noted that consumers of products pay much attention to its qualitative and price characteristics. In order to ensure a sufficient level of product quality and reduce the cost of its production, the production-innovation cluster should use criteria for choosing innovations that will promote the release of competitive products (innovations).

In a situation when forming a price for a technical product, it is rational to use its dependence on demand and quality of goods. To manage the competitiveness of goods, it is proposed to set up a focal point based on the flexible interconnection between the functional units of the production and innovation cluster. In the presence of a steady tendency to increase demand, the market subsequently reacts to a rise in prices, which causes an increase in supply and at some time there is a balance, that is, the saturation of the market with the product.

At this stage of development of society, the main price directions of the production-innovation cluster are the maximum increase in sales and leadership in quality, which allows you to maintain a leading position in the market. When calculating the price of a product at the enterprise, the method of full production costs is used, and the conditions of demand are not taken into account. The production-innovation cluster, depending on the specific conditions in which it has been located, can use in its activities one of the five possible marketing concepts.

Market situation's changes caused by accelerated scientific and technological progress, demographic fluctuations, lack of natural resources, energy crisis, environmental problems, etc., led to the transformation of the basic concept of marketing into the so-called concept of social and ethical marketing. When using a production-innovation cluster of the concept of social and ethical marketing, the characteristic feature of which is to meet the needs of consumers of products, ultimately increases its profit, which directly depends on the volume of sales.

The competitiveness of products assessment, as reflected in the modern economic literature, mainly takes into account quality and price factors. But in market conditions, there are other factors, which will be taken into account when objectively assessing the level of competitiveness of the machine-building enterprises of the participant of the production-innovation cluster.

Be noted that there are some areas for assessing the competitiveness of products, taking into account its non-price factor, but so far, in the formula of competitiveness of products, it is absent. First of all, the ratio of its results (profit from sales of products) and costs is important for the producer of the product, although in the market conditions the enterprise is oriented on the consumer, who needs to be interested in choosing a particular product.

This, in our opinion, can only be achieved by reducing the operating costs of the company's products, as well as providing the consumer before and after production services, that is precisely the most non-price factors of the competitiveness of products [5].

In the case of practical application four factors of product competitiveness – quality, price, non-price and logistic factors, the assessment of the competitiveness of products in market conditions will be more accurate. In this regard, we are invited to use these factors to assess the competitiveness of products. When all the proposed factors of product competitiveness are taken into account, the objectivity of its assessment in the context of enterprise integration into the production-innovation cluster can be ensured.

Consumer providing before and after sales services, as well as minimizing the cost of goods, increases the competitiveness of products. We are invited to assess the level of competitiveness of industrial products to perform on the basis of group indicators, which are based on the factors of competitiveness: qualitative, price, non-price and logistic. So the model of the indicator of the economic efficiency of an innovation cluster in a changing competitive environment, the calculation of which includes seven stages, is developed [5-7].

At the first stage of the indicated methodological approach, indicators of the non-price factor of product competitiveness are developed: The image of the enterprise; the image of the goods; availability of pre- and post-sale (service) services of the enterprise; Differentiation of production relative to market segments; the company's susceptibility to innovations and the innovative nature of product differentiation (in the ballroom assessment).

With the help of expert assessments, the competitiveness index of non-price products was calculated in relation to the proposed indicators. For the mathematical substantiation of the results of expert evaluations, the coefficient concordation and the Pearson consensus criterion are calculated, the magnitude of which is confirmed by the high degree of agreement of the expert opinions and the significance of the calculated

concordance coefficient.

At the second stage, individual indices of logistic competitiveness of products are calculated: procurement, transport, warehouses and distribution logistics. The complex indicator of logistic competitiveness of the enterprise's products is calculated, which includes certain indices of procurement, transport, warehouse and distribution logistics competitiveness of products.

In the third stage a complex indicator of competitiveness of products is calculated on the example of products of a private company. The high level of the complex indicator of the competitiveness of products is related to the influence of the non-price factor, the use of which in the process of assessing the level of competitiveness of products will increase its accuracy.

The fourth stage evaluates the economic efficiency of the production-innovation cluster activity by means of the coefficient of economic efficiency of the enterprise, which takes into account the influence of factors of the internal and external environment.

At the fifth stage, the cluster's economic efficiency is model: its base value (ratio of results to costs), corrected by the magnitude of the economic efficiency factor, which was obtained in the previous stage.

At the sixth stage alternative variants of strategies for the adaptation of the economic efficiency of the production-innovation cluster are substantiated - in the case of a program for implementing measures to change the level of several or all of the presented factors of economic efficiency. The program of measures to improve the economic efficiency of the activity of production and innovation activity of the clusters can be realized in the next (planned) period.

At the seventh stage, a decision is taken on choosing the options for increasing the economic efficiency of the cluster's production and innovation activity. Consequently, those alternatives for combining the components of the economic efficiency of the cluster's activity that are taking place are selected to consideration the opportunities of a certain enterprise (investment) in the context of optimal use of its network structure.

Adaptation of the network structure of the industrial enterprise under conditions of sustainable development is possible only with the adherence to the mechanism of social adaptation – the adaptation of a person or social group to the social environment.

Thus, the adaptation of the network structure of the industrial enterprise to the conditions of a changing competitive environment in

the context of the dynamic development of industry 4.0 is relevant. The essence of the mechanism of adaptation of the network structure of the industrial enterprise in the convergence of the value of orientation of the enterprise-participant of the innovation cluster and the cluster policy of the whole structure for the release of competitive products and its effective implementation on the foreign market is proved.

The proposed a model for diagnosing the economic efficiency of a production-innovation cluster in a changing competitive environment is constructed, which allows logically correlate concepts that characterize the activity of a machine-building enterprise with elements of its management and forecasting. Consequently certain model corresponds to the concept of forming an adaptation system for the network structure of an industrial enterprise.

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**IMPROVEMENT OF  
SOYBEAN OIL  
PRODUCTION  
TECHNOLOGY**

Oil extraction from oil crops is one of the leading fields of food industry. Extraction method, which allows the highest possible oil yield, is a zero waste technology. However, it is worth mentioning that modern extraction technologies have certain pros and cons. Therefore, none of the existing and known methods of oil extraction can be estimated as the most efficient. Existing methods at different stages of their development are aimed, first and foremost, at meeting consumers' needs, but what proves to be an advantage in one case, may turn out to be a disadvantage in another. Hence, extraction process intensification remains a field of research with a promising future.

Vegetable oils are known to be rich in such acids as linoleic acid (LA), which is an omega-6 fatty acid, and  $\alpha$ -linolenic acid (ALA), which is an omega-3 fatty acid, that are vital to proper health of humans and can only be obtained through their diet, as they are not synthesized in the body. The nutrition value of a particular vegetable oil heavily depends on its content of the aforementioned acids, as well as the ratio. According to medical research carried out in Ukraine the ratio and content of these acids is well below norms of recommended dietary allowance (three times less than suggested) in the average intake of Ukrainians. Primarily, it is due to the lack of variety of oils consumed on a regular basis and a very limited use of blended oils. Sunflower oil, which is known to consist of linoleic acid, has a very low content of

omega-3 acids, while 70% of this kind of oil is manufactured in Ukraine. In contrast, while soybean is grown in Ukraine and the oil derived from it has a more balanced ratio of acids, it is mainly exported as raw material, which, consequently, makes it unavailable to a Ukrainian consumer.

At present, the method of extraction is the only method that fully meets the definition of a zero waste technology. In addition, it is worth taking into account that soybeans are low in oil content, which means that extraction is the most viable option. The objective of the research is the intensification of the process. Within the scope of the project, the investigation of the use of electromagnetic radiation in the process of soybean oil extraction is believed to be auspicious. The application of microwaves will not only allow to boost the efficiency of the process, but also to reduce the size of the equipment involved in it, which is essential for the process to be available for small and mid-size manufacturers with a limited productivity capacity. The use of microwaves is expected to reduce the electricity expenses of an enterprise, while at the same time enhancing the quality of the final product. In the view of the goals that are to be achieved within the scope of the research of the use of microwaves in soybean oil extraction and its eventual practical value we consider it to be topical and promising.

When it comes to key factors that define the technology used for oil production, it can be seen that they are closely connected with the raw material properties. Among these factors the quality of the seed is the most important, which, in its turn, depends on the quality of the seeds for grain crop, growing conditions of the crop in the field, harvest conditions, storage and transportation. Moreover, an adequate, well-organized and rational technology of processing the oil crop is crucial in order to prevent the loss of biologically active and essential to human health components while maintaining oil and pomace yield at the highest possible level.

With the view to investigate the intensification of the process of oil extraction soybean has been chosen as the material.

Soybean oil is extracted from soybean seeds (Glycine), and the analysis of its average content of fatty acids indicates a total content of 51-57% for linoleic acid, 23-29% for oleic acid, 4,5-7,3% for stearic acid, 3-6% for alpha-linolenic acid, 2,5-6,0 for palmitic acid, 0,9-2,5% for arachidonic acid, up to 0,1% for hezadecenoic acid, and 0,1-0,4% for myristic acid. Its compositional analysis demonstrates a total protein content of 24-45%, carbohydrates content of 20-32%, lipid content of

13-37%. It is also known to contain vitamins D<sub>1</sub>, B, E. Another valuable component is lecithin. Its temperature of congelation varies between -15°C to -18°C. Soybean oil is one of the world's most produced cooking oils. In addition it is used as prime material for margarine production. As for its use in cooking, soybean oil can be used in its refined form exclusively. Among other features we could also mention its characteristic taste and smell, and its straw colour.

What makes soybeans particularly valuable is their high content of phospholipids, when compared to other kinds of crop, fluctuating between 1,6-2,2%. Phospholipids possess outstanding properties, as they are able to bolster cell membranes recovery, improve liver function (particularly, detoxification), reduce the amount of insulin needed in diabetes treatment, prevent neurodegeneration and strengthen muscles as well as blood vessels.

Soybean oil is thought to be the most biologically active oil, and human body assimilates 99,7% of the consumed oil. In terms of content, soybean oil approximates to cow milk fat more than any other. Along with essential unsaturated fatty acids, such as linoleic acid (which is able to limit the growth of cancer cells), is rich in lecithin and natural vitamin E (which plays an important role in proper functioning of the gonads) in form of tocopherol. Furthermore, the oil contains vitamin C, calcium salts, sodium, magnesium, and phosphorus. In addition, soybean oil possesses excellent taste characteristics and cooking properties, while improving metabolism and intestinal function. It is believed to have atherosclerosis preventive properties. The multipurpose use of soybean oil has no equal in the whole world.

China is known to be the homeland of the crop, and according to its records, its growing dates back to 5000 BCE. Later it extended to the countries of South and Southeast Asia, while its introduction in Europe was still down the line. It was brought into Europe only in the 18<sup>th</sup> century.

Soybean seeds and its unripe fruit are used for food, and milk; cheese and patisserie are made out of soy flour, which is also an important ingredient in animal feed. The oil is used in margarine and other hydrogenated oil production. Refined oil is excellent for culinary purposes. Soybean seeds are also raw material used in many industries (e.g. synthetic fibers, plastic, glue, varnish, paint, soap production etc.) and are a key material in synthetic and meal replacement products manufacture. Green fodder, hay, herbal flour, grist and press cakes are commonly used in animal feed.

The cultivated soybean *Glycine max* can be subdivided into four most important subspecies, which are *Glycine max* var *chinensis* (Chinese soybean), *Glycine max* var *korajensis* Enk. (Korean soybean), *Glycine max* var *manshurica* Enk. (Manchurian soybean) and *Glycine max* var *indica* Enk (Indian soybean), and hundreds of cultivars are known to exist. According to the latest species classification by Palmer, Haimovitz, Nelson (1996), the genus is made up by 18 perennial (originating from Australia) and annual (originating from Southeast Asia, particularly, China) species, and is divided into two subgenera: *Glycine* WILLD i Soja (MOENCH) FJ HERM. All the cultivars are believed to stem from Southeast Asia.

Soybean oil, depending on the production method applied, can be refined, hydrated and unrefined. Refined oil has the highest cost, since it undergoes a complete refinement process, which in the bottom line provides transparent, neutrally tasting oil with long shelf life, exempt from any undesirable odours.

There are two fundamentally different methods of oil extraction: 1) mechanical oil extraction (i.e. pressing); 2) extraction of oil in the form of a solution in volatile organic solvents, followed by its extraction, in other words, the removal of the latter from the solution.

The most appropriate technology of oilseed processing is, ultimately, defined by physical and mechanical properties of the seed, the components, and the purpose of extraction [1]. Other factors to be considered are the cost of raw material and other materials involved, the amount of yield of the final product and the amount of waste, utilities expense, labour expenditures, shop and factory overheads, capital investments, and the expected quality and prime cost of the final product.

In low oil content soybeans processing direct extraction is applied. At the same time, oil crop in form of raw marc is prepared for the extraction by adjusting its moisture content and the temperature to the optimal value suitable for further grinding on roller thresher. Thus, raw soybean flakes are obtained. In its initial form the oil is contained on external and internal surfaces of disrupted cells in form of thin film. The film can be easily washed off with a solvent in the process of pomace extraction. However, some particles of pomace may still contain intact cells, which will retain oil. The solvent is meant to penetrate into the cells and dissolve the oil. The oil obtained from external and internal surfaces of disrupted cells is a solution, but the oil found within the intact cells exists in the form of a chemically combined substance.

Further extraction tends to be carried out by means of submersion of the obtained material into a volatile solvent or by gradually spraying the material with a solvent.

Despite the invention of most advanced extracting machinery, such as screw-type, ribbon-type, tower-type, basket, rotary, two-level rotary and other extruders, their technical properties are still to be enhanced.

One of the drawbacks of the method that involves submersion and, eventually, screw- and tower-type extractors, is a sparse distribution of micelle (15-20%) in the resulting solution (micellar solution) together with a high content of admixtures, owing to which a complicated filtration system is required and the whole process involves voluminous, space-consuming machinery. On top of that, the probability of washing off the particles of the extracted material increases, while the density of the resulting solution is higher than that of the raw material.

As for the disadvantages of the method that involves gradual spraying (also known as percolation), in which a ribbon-type extractor is used, we could mention a relatively low coefficient of the extractor's geometric volume used (which does not exceed 45%). In addition, while extraction is conducted there is a risk of highly explosive vapor mixtures being derived from solvent inside the machine. Another pitfall is a complex circulation system of the extractor and a significant amount of pumps, as well as a sophisticated kinematic scheme (drive layout).

Inevitably such methods of oil extraction are complex and thus inappropriate for small and mid-size enterprises, as the use of the required equipment involves significant utilities expenses, can only be run by highly qualified personnel, has a high "metal capacity", and the solvents traditionally used are, generally, high explosives.

Another point that indicates the importance of finding new ways of oil extraction is the fact that oil extraction plants report undesirable amounts of effluent, exhaust gas and heat emissions. Accordingly, coming up with a technology that allows to curtail the impact on the environment and enhance the whole process is crucial. A key element in achieving the task is a well-concieved application of modern visions, principles and ways of finding a comprehensive solution of all the aforementioned problems that oil production currently implies. An in-depth research of the extraction process is an important stage in the search of an advanced technology, a process that is to combine the properties that the materials of research are endowed with.

As a rule, modern technology development is triggered by the need to meet new requirements to the product. As we currently witness a

turning point in technology development, becoming quality- rather than quantity-oriented, food industry seems to be the one that is to undergo changes first.

As a consequence, the interest in modern technology development (including extraction technology) has risen, which is evidenced by a significant amount of scientific papers dedicated to these issues [2-3].

From our viewpoint, the best way to intensify the extraction is to improve mass delivery coefficient, which is defined by hydrodynamics of the process, in other words, the speed of the relative movement of the solid phase. It is also known as ambient velocity. As the speed of the extracted material in reference to the particles of the material increases, the molecular mechanism of displacement changes, turning into convection and drastically decreasing the size of boundary diffusion layer. The right combination of hydrodynamic conditions allows to substitute expensive extractants with more affordable ones, eventually, reducing the expenses that material processing (grinding) involves [1].

One of the factors that influences extraction process and is applied in the industry is raw material moisture level adjustment. Moisture effects the way the solvent penetrates into the material and oil diffusion inside it, and excessive moisture has a bad impact on how the solvent works its way through the marc, both the external and internal surfaces of the shells, which makes them swell and reduces porosity, thus caking the material [5].

Provided that moisture level is low, a big amount of small particles is generated in the process of soybean flakes preparation, which later on augments slump in miscella. According to the accepted standard for moisture level in prepressed soybean flakes (for ND-1250 processing) it should be from 8,0% to 9,0% [1].

In this research microwave technology and how it allows to increase extraction process is described. Having mentioned that, the importance of proper material preparation is to be taken into account.

Microwave technology is applicable to both gas and liquid phase in normal and supercritical conditions. For instance, microwave technology for liquid phase takes place when the extraction of (precious oils), food additives (flavours) derived from plants, biphenols from animal tissues, polycyclic aromatic carbohydrates from polyurethane foam (used for air and solid substances (soil, precipitation etc.) quality monitoring) and so on and so forth. Microwaves have also been implemented in extraction of organic substances dissolved in water [4].

In the UK the use of microwave radiation in the process of samples preparation has reduced the processing time from 8-16 hours to 30 minutes, when compared to the traditional Soxhlet extraction, while it also consumed 90% less energy, and, at the same time, the yield rose and the purity of the extract improved. Undoubtedly, the technology has a big advantage as its implementation reduces production costs significantly, and it is also believed to be more environmentally friendly. The method allows to identify more than 100 pollutants from different sources (soil, water, animal tissue etc.).

In France microwave radiation is used for measuring lipid content of meat and dairy.

Thanks to a unique mechanism of energy transfer from substances that absorb microwaves to water it has been decided to use MW technology to analyze water quality (of surface waters, potable water and water contaminated by industrial waste) in Canada [4].

MW radiation has proved its efficacy when used in extraction with liquid CO<sub>2</sub>. According to the data obtained thanks to comparative analysis of productivity indicators of supercritical CO<sub>2</sub> extraction and the extraction involving MW energy has shown that the latter did not require high pressure, which led to a substantial reduction of capital costs traditionally spent on equipment, even though the results of the experiments did not show significant divergence [4].

A group of scientists from Malaysia University of Technology has studied the use of microwave radiation in essential oils extraction (tea tree oil, rosemary oil and other). Ethanol was used as eucalyptol, pinene and terpenoids extractant. The final solution was analysed by means of gas chromatography and electron microscope was used in order to investigate cell morphology. The results of the research stipulate that solute output increased when electromagnetic pulse radiation rose (radiation dose rate at 750 W per 60 seconds). The photos of tea tree leaves before and after extraction were taken, compared and analysed by means of an electron microscope with a view to observing the influence of MW radiation on cells of the material. Compared to initial images, the images made posterior to extraction show less oil-containing cells and notorious leaf deformation [4].

Recent findings in MW extraction of fungicides (substances used to kill parasitic fungi or their spores) from tree-derived materials (in sample preparation for further laboratory analysis) are worth mentioning as well. As the results of the investigation have shown, the longer was the time spent on extraction, the bigger was the yield of the final

product. The conditions of fungicide extraction: power – 90 W, time – 15 minutes. And we find it important to point out that great power may lead to overheating and cause the substance to break down.

The possibility of microwave radiation use in alcoholic drinks production is currently being considered. Oak wood extraction with water at boiling point temperature has demonstrated a concentration indicator of 1,5%, which exceeded ordinary electric heating 5 times.

In the light of all the aforementioned facts, it seems reasonable to come to a conclusion that the application of microwave radiation in plant-derived material extraction is less time-consuming when compared to other known methods, while the final product yield and quality indicators are higher and energy costs are lower. A comparative table of extraction processes characteristics is given below.

*Table 3.4*

**Comparative table of extraction methods**

Parameter	Soxhlet	Ultrasound	Microwave field processes	CO <sub>2</sub>
Sample weight, g	5,0-10,0	5,0-30,0	0,50-1,0	1,00-10,00
Solvent	Varies depending on the substance considered		Hexane/Ethanol	CO <sub>2</sub>
Solvent volume, ml	>300,0	300,0	10,0 – 20,0	5,0 – 25,0
Reservoir volume, ml	500,0 – 1000,0	500,0	<100,0	5,0 – 25,0
Temperature, °C	Boiling point	Room temperature	40, 70, 100	50, 200
Time	16 h	30 min	30-45 sec	30-60 min
Pressure	101,325 kPa (1 atm)	101,325 kPa (1 atm)	101,325 – 506,625 kPa	15,2-65,9 MPa
Relative energy consumption	1,0	0,05	0,05	0,25

The data was obtained after plant-derived material samples for laboratory analysis had been prepared. To sum up, when MW radiation is used high pressure is not necessary. The processes in microwave field have a selective extraction capacity, and their use does not require significant capital investment. Furthermore, microwave extraction does not require prior material drying. However, it is crucial to indicate

parameters of microwave field with high precision, and for this reason the design of the generator has to be elaborated in a way that will allow easy control over parameters. [4]. In view of the aforementioned facts we have come to a conclusion that conducting a research in microwave application to soybean oil extraction process is necessary.

A scientific hypothesis previously stipulated in a research aimed at elaborating an innovative product – oil with a high content of tocopherols – has been corroborated. The product was obtained as a result of microwave radiation processing of a barodiffusion flow of capillary-porous plant material. Diminution of diffusional resistance in soybean extraction has been proved experimentally, and this has allowed to broaden scientific hypothesis about the intensification of the process by means of barodiffusion flow influenced by microwave radiation.

Numerous methods and test benches for calculating mass transfer (rendition) coefficient, diffusion coefficient, extraction kinetics that considers the influence of a range of factors, including temperature, microwave radiation, as well as MW field power, time decomposition, water to grain ratio, type of solvent have been developed.

A semi-empirical mathematical model of oil extraction (in capillary-porous material structure) describing the process technology has been obtained.

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## Chapter 4

### **FINANCIAL ENSURING OF MANAGEMENT INNOVATIVE DEVELOPMENT OF ECONOMIC ENTITIES**

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**CREATING CORPORATE  
CULTURE AT MACHINE-  
BUILDING ENTERPRISES  
OF UKRAINE AS ONE OF  
THE ASPECTS OF  
IMPLEMENTING THE  
STRATEGY**

When a strategy in machine-building enterprises is chosen, it must be transformed into actions to achieve the planned results. The process of implementing a strategy requires specific management skills. Market conditions determine the choice of strategy, and its implementation is determined by the specifics of the enterprise and management features, as well as the organization of business processes. Without quality management, successful implementation of the strategy, the atmosphere of cooperation and support, proper allocation of resources, developed competitive opportunities, corporate-wide support for the strategy and detailed information about the key activities of the engineering enterprise are impossible. Implementing the strategy at machine-building enterprises requires the manager to initiate necessary changes in the organization, motivate employees, develop key competencies and organizational capabilities, continuously improve business processes, create a corporate culture, and achieve organizational goals.

It takes more time and effort to implement the strategy than to develop it, because it involves a lot of managerial and organizational tasks and the participation of numerous executives, creates new tasks and their solutions, causes resistance that needs to be overcome.

The main task of the manager at the machine-building enterprise is to transform the strategic plan into concrete actions, as well as to

achieve the set goals.

The created new strategy does not have to be supported by the company's employees; the presence of support does not mean readiness to participate in the implementation of the strategy. One desire for the implementation of new strategic initiatives of corporate management is not enough; informing a subordinate about new goals does not encourage them to step up their activities. At the machine-building enterprise, there will always be managers and ordinary employees who are skeptical about the new strategy, who find it against the interests of the enterprise, doomed to failure, or see it as a threat to their own career. Each employee of the enterprise in his own way perceives a new strategy and may not understand what is required of him or his department. The existing relations, inertia of behavior, customary organizational methods are hindering the implementation of the new strategy, especially if a limited circle of people were involved in its development, and many hundreds of performers. To address this issue, top management representatives should take the responsibility to tell about the goals of the new strategy and methods for its implementation, overcome doubts and disagreements, arouse enthusiasm, ensure consistency, and enlist the support of stakeholders. At a machine-building enterprise, depending on the perception of a new strategy by the team and the changes it causes, implementation can take from several months to several years.

Experience shows that it is not enterprises that implement the strategy, but people. In this situation, the implementation of the strategy involves the transformation of the strategy into a plan of specific actions and then into results. Strategy development is carried out by managers and some senior managers. The head of the engineering enterprise and the heads of the structural units are responsible for the successful implementation of the strategy, but the entire enterprise takes part in the implementation, and each manager must decide for himself what he and his department will contribute to this process.

In his section, each manager is responsible for the implementation of the strategy, and each employee participates in the implementation of the strategy in his workplace.

A successful implementation of the strategy requires a clear and convincing management rationale for the need for change. Therefore, the implementation of the strategy becomes the business of each employee of the enterprise, regardless of his position. It is considered successful to manage the process of implementing a strategy if an

enterprise reaches the intended strategic and financial indicators and fulfills a long-term strategic plan.

It is impossible to quantify the implementation of the strategy. It is impossible to develop common recommendations, actions that ensure the success of one enterprise, which are completely unacceptable to others. Much depends on the conditions of a particular enterprise, on the experience and flexibility of management.

Managing the implementation of the strategy of a machine-building enterprise is an art, not a science.

Implementation largely depends on the specific situation of the enterprise, so the basic provisions are unchanged for all enterprises and in all circumstances. The main tasks at the implementation stage of the strategy include:

- formation of an enterprise that has the necessary competencies, capabilities and resource base.

Distribution of resources along strategically significant links in the value chain.

- Development of policies and procedures to support the strategy.

- Search and implement advanced methodologies and policies for continuous improvement.

- Creation of conditions for workers to effectively perform strategic tasks through the introduction of information, communication, operating and electronic systems.

Developing a system of incentives and rewards for achieving goals and good implementation of the strategy

- Organization of corporate culture and environment, stimulating the implementation of the strategy.

- Creating a system of internal leadership to improve implementation.

Such management tasks constantly arise during the implementation of the strategy and determine strategic priorities, as shown in Figure 4.1. Ultimately, one or two of these tasks become decisive, depending on which deficiencies in the resource base need to be corrected, which competences to acquire, which actions and with what urgency to carry out.

The person responsible for implementing the strategy when developing an action plan should determine what changes or improvements are required for the successful implementation of the strategy. At machine-building enterprises, experienced managers quickly determine what their enterprises lack to successfully accomplish

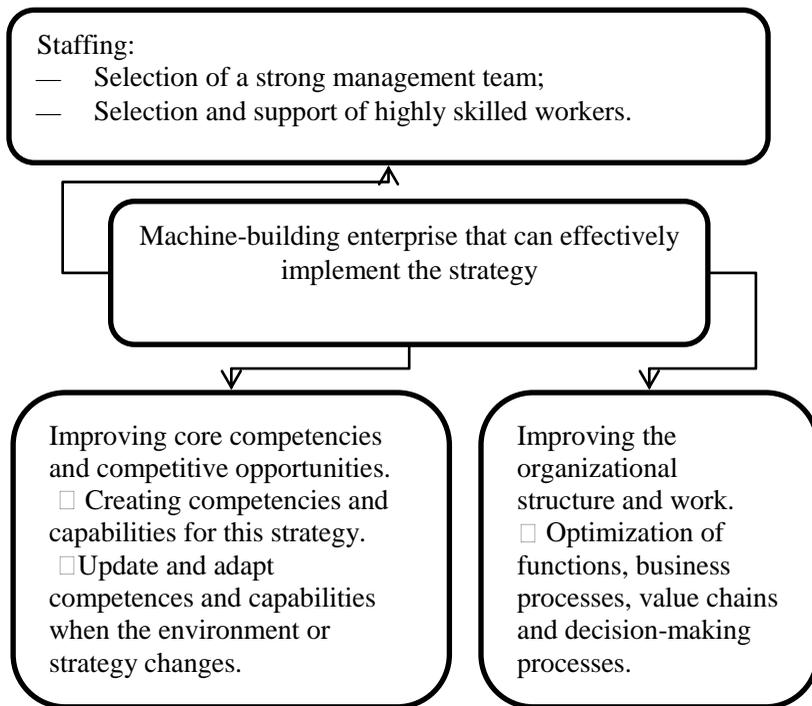
their plans, and creatively approach the development of measures to overcome organizational and resource deficiencies.

The quality of leadership is a decisive factor in the successful implementation of the strategy. To ensure the result, the style of leadership may be different. Such decisions can be made individually or collectively, the manager can personally go into all the details or just direct the overall process, choose a fast pace (many initiatives on different fronts) or not rush (gradual progress on a long-term basis).

The head of the company and top managers have the main role in the implementation of corporate and business strategies, which in their work rely on middle and lower level management, and they, in turn, ensure that subordinates constantly improve the quality of strategically significant activities and fight for achieving the goals. Determine the effectiveness of the implementation of the strategy of organizational skills of middle and lower level managers; the role of these managers is hard to overestimate.

According to the experience of large enterprises with geographically dispersed units, the task of top management is to explain the goals and objectives of the strategy, the overall coordination of activities and the personal management of the most important processes to employees. Based on this, the larger the enterprise, the greater the overall success depends on the operational and line managers, whose efforts ensure the implementation of strategies at the lower levels of the enterprise. In small enterprises, the implementation officer works directly with line managers and employees, personally directing their activities and making decisions. In this regard, regardless of the size of the enterprises, management must clearly understand what it wants to achieve and what it needs to do. The management of a machine-building enterprise must possess all the full information and understand what is happening in the enterprise and in the industry as a whole.

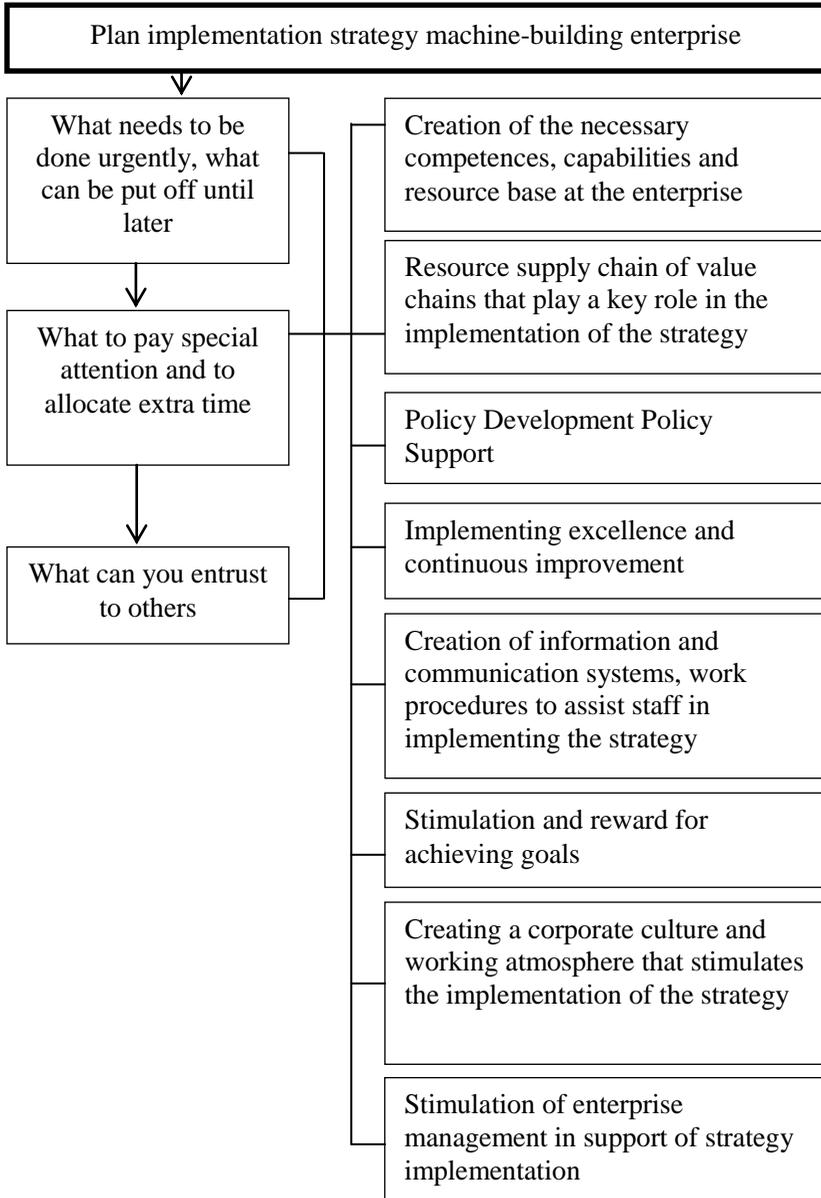
Not only the effective implementation of the strategy depends on a high level of competitiveness, but also the competence of the staff and an effective internal organization, the creation of which is the first and main task at the implementation stage of the strategy of the engineering enterprise. The data in Figure 4.2 show that an effective organization involves work in three areas: staffing, improvement of key competencies and competitive opportunities, improvement of the organizational structure and work activities.



**Figure 4.1 The main managerial components of the implementation of the strategy in machine-building enterprises (created by the author on the basis of [1], p. 350)**

It is impossible to count on success if the company does not have experienced managers and a sufficient number of employees with the necessary knowledge and intellectual capital.

Managers of an engineering company responsible for the implementation of the strategy should determine the specifics of management and find a suitable specialist for each management position. At the enterprise there are situations when there is a sufficiently active team of managers, sometimes it is necessary to attract new personnel, both from the enterprise itself and from outside. Inviting new managers to a company is usually used in conditions of overcoming a crisis or rapid growth, or when there is a shortage of own personnel. One of the first steps in the implementation of the strategy is the creation of a strong management team with a good combination of personal qualities and a complex of skills and abilities.



**Figure 4.2 Constituent arguments for an effective machine-building enterprise (created by the author on the basis of [1], p.351)**

An important role is played in the selection of top managers of their personal qualities, experience, knowledge, values, beliefs, leadership style; Equally important is psychological compatibility. It is extremely difficult to carry out serious work in the enterprise until top management is fully staffed.

For effective implementation of the strategy is not enough good management team, we need at least good employees, and in all departments and at all levels, to provide human resources and knowledge base.

At the enterprise, talented, qualified, experienced specialists are not only a resource that allows you to effectively implement a strategy, but also a source of competitive advantage.

Intellectual capital is a significant resource. Its main task is to staff the staff with gifted and energetic employees who quickly implement new ideas and create a favorable atmosphere in the company. The most important resource of the enterprise is intellectual capital, and not tangible assets in the form of machines and equipment. Therefore, engineering companies are looking for new approaches to the selection, training and retention of talented workers aged 20 to 30 years. They need to assign high salaries, a variety of bonuses and rewards. Much attention should also be paid to creating a working environment in which hard work is combined with pleasure from work, interesting tasks and satisfaction from creative activity. But unfortunately at the machine-building enterprises of Ukraine, not all managers pay due attention to this situation.

At the present stage in many industries, especially in the Internet-economy, there has been a shift from capital investment in production capacity to investment in the development of intellectual capital.

In modern conditions, many enterprises have developed special techniques for developing a knowledge base and increasing intellectual capital.

- Only specialists with suitable skills, energy, initiative, personal opinion, desire to learn and able to fit into the working atmosphere and culture of the enterprise are recruited.

- Enterprises train workers according to special programs and not only in the first years of their work at the enterprise, but throughout their careers.

- Employees are offered interesting and challenging tasks that allow them to fully unleash their creative potential.

- Work rotation is widely used – employees are transferred to new

positions in order to acquire new skills, to participate in the work of other divisions, including in other regions. Professional development through the rotation of work is considered by many enterprises as an important element of an employee's career.

□ Enterprises encourage creativity and innovative thinking, the desire to improve working procedures and change the usual ways. Advanced companies are trying to create a working environment in which ideas and proposals are generated by employees, rather than being introduced from above. Workers should feel that their opinion is interesting and appreciated. □ Management tries to create a friendly and creative atmosphere, so that the enterprise becomes a "home" for employees.

□ Wishing to retain highly qualified promising workers, enterprises increase salaries, pay additional remuneration, introduce bonuses with company shares, and offer to purchase company shares on favorable terms. Average workers are encouraged to improve performance, lazy people are fired.

When implementing a strategy, it is necessary to create and strengthen competitive opportunities and key competencies that provide an enterprise with a competitive advantage in one or several links in the value chain.

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**BANKING FINANCING  
OF SOCIAL BUSINESS  
COMPETITIVE  
ADVANTAGES IN  
UKRAINE**

Social responsibility is one of the most important manifestations of innovative business in the context of sustainable human development. Therefore, in order to increase national business social responsibility to a high competitive level, it is urgent to implement appropriate financial policies and strategies. At the same time, it will contribute to supporting the national priorities of sustainable human development, which is able to increase the level of social investment in the context of business activity of business entities in order to solve urgent social issues.

However, the social responsible business in Ukraine still hasn't become the usual practice in the context of business competitive advantages both at the national and international levels.

Therefore, in order to support the intensification of the financial mechanisms for ensuring sustainable human development in Ukraine, it is important to use the models and mechanism of mutually beneficial cooperation of legal entities at the national level. In particular, the attention is to be paid to the cooperation between social responsible business and banks.

The above mentioned problems are considered as the topic of Ukrainian and foreign researches due to their actualization. The scientific discussions are conducted to activate social and economic development due to the financial sources diversification in the context of sustainable human development within modern society. In particular, the main issues on knowledge economy, sustainable human development and its financing are represented within the researches of famous foreign scientists, including F. Hayek, J. Schumpeter, F. Machlup, D. Bell, M. Porter, M. Castells, A. Lewis, A. Saint, G. Lutcher, K. Griffin, J. Knight and others. In addition, the human development and social responsible business concepts (G. Becker, J. Minzer, T. Schultz, W. Sharp and others) concern the questions on fundamental aspects of attracting

investment for sustainable human development purpose [1-9].

The above-mentioned issues are also highlighted within the Ukrainian scientists researches, including the scientific works of O. Amosha, L. Antonyuk, T. Vasilieva, S. Leonov, M. Dyba, V. Zymovets, L. Kostyrko, M. Krupka, E. Libanova, I. Liutyj, T. Mayorova, S. Onyshko, E. Polischuk, O Tereshchenko, L. Fedulova, A. Chukhno and others.

The current research aims to analyze the available practice of social responsible banking in Ukraine, to discover the potential of social responsible business competitiveness increase due to the appropriate issues banking financing in the context of sustainable human development.

The banking activity within developed economies is often considered as social responsible. Thus, both banks and business entities are social investors, which act socially responsible along with their main commercial activity. Finally, the banking market is developed due to the systematic intensification of competition within the financial service providers both on the national and international levels. As the result of above mentioned tendencies of competitiveness increase, the banking establishments are forced to look for alternative ways that provide a long-term and loyal attitude from customers, employees, and other interested parties within modern society. The traditionally profit-oriented banking business is transformed into the socially responsible one.

Due to the international survey of top 202 bank executives conducted by the Economist Intelligence Unit analysts, nearly 69 % of top managers paid attention to the fact that social investment had a significant impact not only on the performance of the company's current activities, but also on promising performance indicators within the following 5 -10 years [10].

The potential of social investment development within the banking sector is also increasing in the context of the current tendencies of sustainable human development in Ukraine. Thus, in accordance with

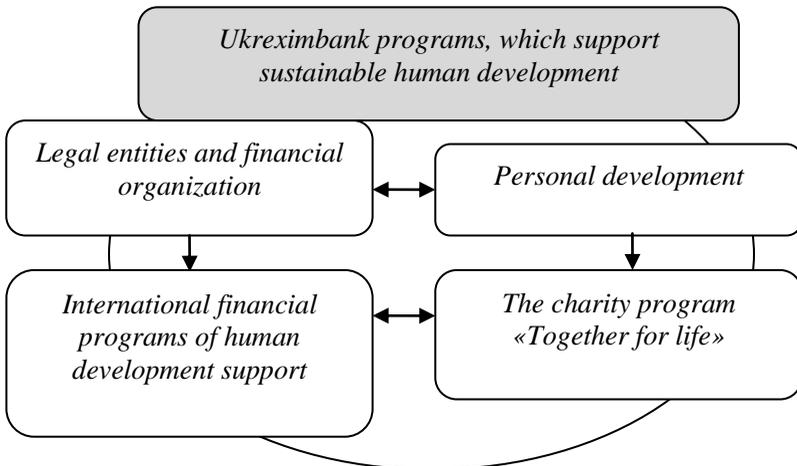
According to the NBU analytical reports as of the beginning of 2018, Ukrainian banks are divided into three groups, depending on the form of their ownership. In order to substantiate the potential of banking development as social investors, our research aims to analyze the possibilities of Ukrainian banks to ensure sustainable human development. The expert estimation is considered as a sample analyze that includes representatives of each of the above mentioned groups of banks with experience and potential to participate in sustainable human

development support.

It is considered that Ukrainian state-owned banks, for the most part, have the potential to implement social investment policies, taking into account relevant state-level priorities and opportunities for cooperation with international organizations, foreign business entities and financial institutions. For instance, the charity foundation “Support is easy” is founded on the basis of Ukrainian PrivatBank since 2011.

The activity of above mentioned foundation concerns a wide range of areas. It is remarkable that the social investments of PrivatBank are distributed throughout our country, covering the priorities of human development that need to be sustainable nowadays [11].

The Ukreximbank implements social investment programs within two main areas (Figure 4.3).

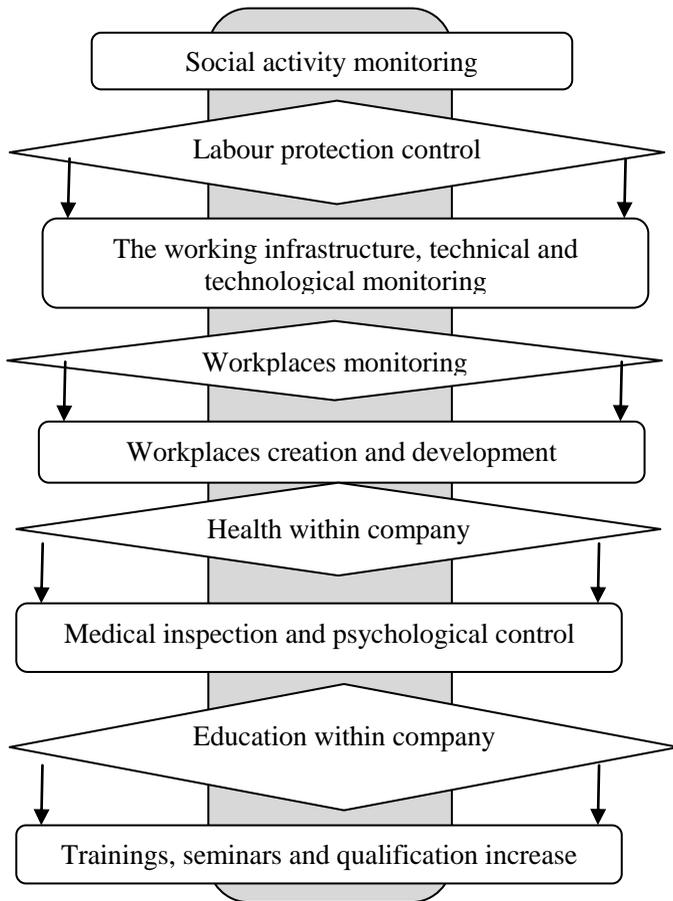


**Figure 4.3 The directions of social investment financing, provided by Ukreximbank**

*Source: compared by author on the basis of [12; 13]*

In particular, the social investments of Ukreximbank are based on the support of innovative, socially-oriented and energy-efficient activities of Ukrainian legal entities and financial organizations, concerning cooperation of the bank with international organizations.

In the context of choosing the future beneficiary of banking products, Ukreximbank (legal entity) within the framework of cooperation programs with international organizations is obliged to verify beneficiary compliance with a number of criteria (Figure 4.4).



**Figure 4.4 Social criteria of beneficiaries of international partnership products in Ukreximbank**

*Source: compared by author on the basis of [13]*

The socially-oriented Ukreximbank projects are implemented within the programs of international cooperation with the World Bank and the European Investment Bank and create total value of nearly 400 million Euros for each project. Such type of cooperation is rather promising due to the existing positive experience of Ukreximbank as a national agent of international organizations and plans of international organizations to double the amount of money allocated for projects implementation. The possibilities to strengthen the institutional principles of project

implementation and increase the efficiency of using the loan, the effect of multiplication of the attracted resources are considered as the basis for further activities.

The social effect of the international partnership projects implementation by Ukreximbank is characterized with improved labor infrastructure and technologies. Thereby, the financial resources of international organizations create the possibility to staff qualification and potential productivity improvement.

In addition, Ukreximbank implements the charity program "Together for Life", which aims to protect the individuals. As of the beginning of 2018 the total charitable program budget is 8 682 053 UAH since the beginning of the program. In particular, the Children's Department of the National Cancer Institute, the National Institute of Cardiovascular Surgery named after M.Sc. MM Amosova, Institute of Neurosurgery A.P. Romodanov, National Children's Specialized Hospital "Okhmatdit", Regional Children's Medical Establishments of Ukraine are concerned as the current program beneficiaries [14]. The bank has the experience and potential to participate in the financial support of human development.

Thus, the social-oriented banking development in Ukraine is connected with international financial support, including the human development support within the fund activity. For instance, the Western NIS Enterprise Fund (WNISEF) implements social investment programs in cooperation with Ukrainian Oshchadbank [15].

Oshchadbank acts as a partner of the WNISEF in order to promote the solution of the actual social problems in Ukraine. Social Investment Program provides the innovative lending mechanism for social business financing, based on commercial partner banks functions. The main program goal is to support private business and individuals-entrepreneurs, whose activities are aimed at achieving positive social and environmental impacts in Ukraine. The above mentioned activities concern the establishment of an affordable lending mechanism in cooperation with banking institutions, training and consulting services, coaching and mentoring.

The purpose of such a program is to enable business representatives to solve social and environmental problems through financial investments and business practices. The approach of the social investment program is based on providing low interest loans for the needs of sustainable social enterprises, advisory services and their support within business plans implementing and realization [15].

The WNISEF program has provided credits for the sum of more than 10 million Euros as of the beginning of 2018.

The target WNISEF program aims to provide credit to the business entities, which activities are connected with the following goals:

1) Employment of vulnerable groups representatives. The primary condition is that company employs more than 50% of employees representing vulnerable groups, and most of the profits are reinvested in the company's development to create new jobs.

2) Employment of vulnerable groups representatives. The enterprise employs fewer than 50% of employees representing vulnerable groups, and at least 10 % of their profits are directed towards social goals.

3) A minimum of 20 % of the profit is directed towards the social purpose.

Thus, a social enterprise that plans to participate within the program should meet a set of established criteria. Moreover, the concessional financing is approved in accordance with a measure of particular conditions (Table 4.1).

*Table 4.1*

**The social responsible business financing criteria (WNISEF program in partnership with Oshchadbank)**

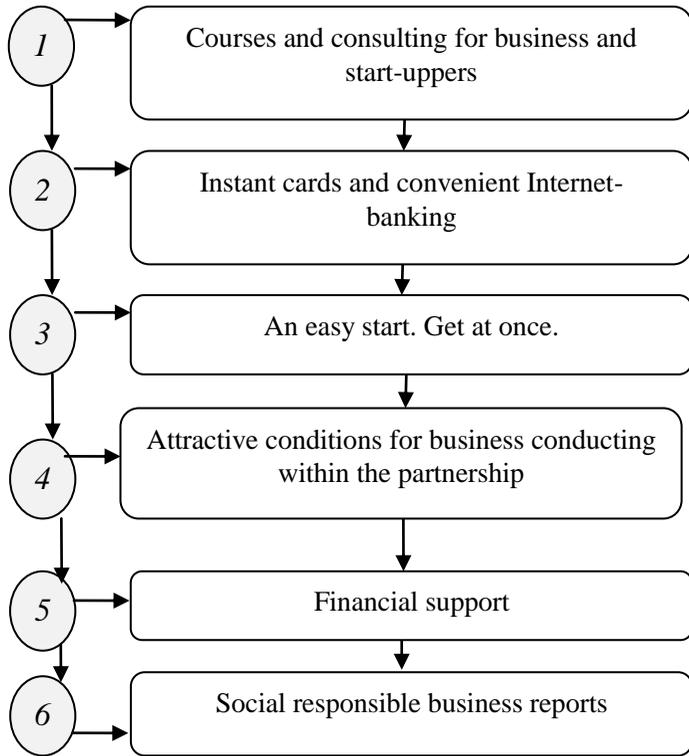
No.	Criteria	Criteria description
1	Credit currency	UAH
2	Credit sum	from 10 to 100 thousand USD
3	Credit term	till three years
4	Interest rate	5 % yearly
5	Mortgage (in case of need)	WNISEF deposit, vehicles, fixed assets, working capital

*Source: compared by author on the basis of [16]*

The program peculiarity concerns the fact that those social enterprises, which have already received funding, are required to report quarterly to the fund on solving their social issues.

In addition, in order to activate trends and provide background for human development sustainability in Ukraine, Oshchadbank has created a program “Buduj svoje” (create your own), which is designed to provide assistance to small businesses entities to provide both socially-oriented and successful further activity.

The program is quite diversified and multi-stage. In order to develop the bank's potential in terms of sustainable human development ensuring, it proposes some improvements to the current algorithm of program implementation (Figure 4.5).



**Figure 4.5 “Buduj svoje” (create your own): detailed algorithm of program implementation**

*Source: compared by author on the basis of [17]*

The project “Buduj svoje” (create your own) aims at realizing dynamic and progressive goals. Therefore, there is a potential for further expansion of its potential for the purposes of sustainable human development in Ukraine.

Thus, Ukrainian banking business has the potential to become an important participant within the process of social investment in Ukraine. At the same time, in the context of sustainable human development, attention should be paid to the progressive experience of existed social responsible banks and potential directions of their further development. The potential of expanding the range of social investments of banking entities in Ukraine is to develop existing directions of their activities that are related to the priorities of the socially-oriented business and the

specifics of their implementation at the national level.

Such kind of activities provides social investments to business entities, which are able to accumulate resources to meet social priorities, and formulate social investment strategies.

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**DEVELOPMENT  
OF THE  
TEACHING  
METHODS OF  
ECONOMIC  
ANALYSIS OF  
FACTORING  
BUSINESS  
EFFICIENCY IN  
RISK CONDITIONS**

Business entities always need additional working capital to develop their own economic and innovation activities. Nowadays it has become possible to attract additional working capital not only through getting loans from banking institutions but also through factoring. Factoring is an innovative tool for working capital management.

The efficiency and expediency of factoring are conditioned by the peculiarities of the business entity functioning. Therefore, the most topical and interesting direction of factoring research is an analysis of the effectiveness of its application.

The issues of the analysis of factoring operations, factoring efficiency and factoring business risk assessment were raised in the researches of such scholars as L. Zayema (2010), K. Yelufimova (2009), L. Kozhyna (2008), M. Lavryk (2005) and others. However, the issue of organizational and methodological support for an analysis of the factoring efficiency in the conditions of the influence of internal risks of factoring business, in particular, to meet the information needs of the risk management system of factoring companies, remains unexplored.

Efficiency (effectiveness) of factoring operations is central in the process of studying the role and importance of factoring as a means of managing the current economic activity of enterprises. Naturally, the participants in factoring transactions must compare the costs associated with participation in factoring transactions and the income received from participation in factoring.

The purpose of the analysis of the efficiency of factoring operations under risk conditions is a comparison of losses due to the factoring business risks with an income received from the provision of factoring services, as well as a determination of the economic feasibility of a factoring transaction in a high probability of risk implementation.

The tasks of the analysis of the efficiency of factoring operations in risk conditions are the following:

- an analysis of the dynamics, composition, structure, and turnover of accounts receivable;
- a diagnostics of the nature of the financial difficulties of a buyer;
- identification of risk factors of factoring business and determination of their parametric estimates;
- a search for alternative methods of risk management for a factoring company.

The objects of analysis are accounts receivable (an assignment of the monetary claim right), the number of factoring agreements, the revenues from the implementation of factoring transactions (commission remuneration), the costs of managing the risks of the factoring company, the internal risks themselves, and the probability of their occurrence.

The sources of information for estimating the factoring risks are the following: documentation (internal documents of the factoring transactions participants – financial and managerial reports, business contracts, regulatory documents; external documents – legislative acts, documents of specialized firms that explore the factoring market); results obtained by observation; data on external and internal interconnections of the factoring operations participants.

Besides, we highlight specific information support for the analysis of the efficiency of factoring business based on the internal risks of the factoring companies activities such as a data from financial reports, as well as internal managerial reports, separate documents and terms of factoring agreements. Such sources should include the Report on internal risks of factoring business, the Report on factoring operations in risk conditions, the information supplement to the Notes to the Annual

Financial Statements ("Calculations on factoring operations", "Risk management of factoring business"), other internal reports in this direction, as well as documentary support for risk assessment of factoring business – risk passport of factoring transaction, risk panel of factoring business, scale of estimation of probable consequences of risk factors of a factoring company and initial scale of probability of occurrence of internal risks of a factoring company.

The last component of the analysis of the efficiency of factoring business based on internal risks of factoring companies' activity is the definition of the features of the analytical stage, which involves the development of a conceptual basis for its implementation.

In order to solve the above mentioned problem, it was developed a conceptual framework for analyzing the efficiency of factoring business based on the internal risks of factoring companies' activity (Figure 4.6), which involves the use of the expert estimation method of factoring risks and allows to determine the losses from factoring services conducted, thereby identifying the expediency of such operations (separately and in aggregate). This approach to assessing the efficiency of factoring services (activities in general) takes into account the system of parametric estimates of internal risks of factoring companies, identifies alternatives to minimize risk.

The first stage of the analysis defined by the conceptual basis is a data collection on the factoring company's activities in the part of the existing factoring portfolio, which provides in the second stage a data generalization on the factoring company's activities and in the third stage a formation of the information base for the analysis.

The adequacy of the information base in the first three stages is determined by an analyst-employee, who can also adjust and expand the range of information sources (for example, planned and actual calculations of factoring services, factoring agreements and additions to them, specifications, collateral agreements, internal regulations on limiting and taking risks factoring business, internal accounting reporting, etc.).

The fourth stage, in accordance with the proposed conceptual framework of the analysis, involves analyzing the dynamics, composition, and structure of accounts receivable, while simultaneously examining the guarantees provided for the factor financing.

At this stage, it is carried out the calculation of the following indicators:

1. Data collection on a factoring company's activities		2. Data generalization on a factoring company's activities		3. Information base for analysis		
<i>4. Analysis of the dynamics, composition and structure of accounts receivable</i>						
4.3. Determination of structural indicators and identifying doubtful and uncollectible accounts receivable		4.2. Monitoring of the existing regulatory framework for accounting and analytical support for the management of accounts receivable			4.1. Deviation rates (absolute and relative)	
<i>5. Diagnostics of the nature of the financial difficulties of a buyer</i>						
5.1. Determination of the limiting amount of an assignment of the monetary claim right		5.2. Setting the maturity of accounts receivable and their collection			5.3. Estimation of the probability of the monetary claim payment	
5.3.2. Risk identification (probability more than 50%)				5.3.1. Payment of the monetary claim will take place in full (probability less than 50%)		
<i>6. Risk identification</i>						
Credit risk	Liquidity risk (untimely payment)	Risk of incomplete payment	Fraud risk	Risk of non-fulfillment by a supplier of the factoring contract terms	Risk of non-fulfillment by a supplier of the supply contract terms	Personnel risk (technical)
<i>7. Setting the parameters of an impact of the identified risks</i>						
0,20	0,05	0,10	0,25	0,15	0,15	0,10
<i>8. Choosing the risk management methods</i>						
8.2. Acceptance of the factoring risks						
8.1. Failure to accept the risk by a factor		8.2.1. Estimation of the efficiency of factoring operations (factoring, factoring business) taking into account parameters of an impact of the identified risks				8.2.2. Risk taking without taking into account the parameters of an impact of
		$T_i = \frac{\sum_{i=1}^n (K_i - K_{i/6}) \cdot 365 \cdot 100}{\sum_{i=1}^n F_i}$				

	$\bar{D}_{\phi_i} = T_i + T_i \cdot \sum_{j=1}^m k_j^{(i)}$ $k_j^{(i)} = \frac{a_{ij}}{A_i} \cdot P^{(i)}(R_j),$ $A_i = \sum_{j=1}^m a_{ij}, i = \overline{1, N},$ $P^{(i)}(R_j) = \frac{\sum_{s=1}^k P_s^{(i)}(R_j)}{k}$	the identified risks
	8.2.1.1. Insurance	

**Notes:**  $T_i$  – an average yield of a factoring operation in cooperation with the  $i$ -th factorant;  $K_i$  – a commission reward received by a factor in cooperation with the  $i$ -th factorant at each repayment of financing;  $F_i$  – a value of the money claim of the  $i$ -th factorant;  $\bar{D}_{\phi_i}$  – an average return of a factoring company in cooperation with the  $i$ -th factorant and taking into account the risks;  $k_j^{(i)}$  – a coefficient of the  $j$ -th risk for factoring company in cooperation with the  $i$ -th factorant;  $A_i$  – total losses of a factoring company in case of occurrence of all  $R_j$  risks for the  $i$ -th factorant;  $a_{ij}$  ( $i = 1, N, j = 1, m$ ) – losses of a factoring company from the  $R_j$  risk occurrence for the  $i$ -th factorant;  $P^{(i)}(R_j)$  – a probability of the  $j$ -th risk occurrence in collaboration with the  $i$ -th factorant;  $P_s^{(i)}(R_j)$  – a probability of the  $j$ -th risk occurrence for the  $i$ -th factor, assessed by the  $S$ -th expert ( $i = 1, N, j = 1, m, s = 1, k$ ).

**Figure 4.6 The conceptual basis of an analysis of the efficiency of factoring business based on internal risks of factoring companies' activity**

- deviation of accounts receivable for factoring transactions (absolute and relative indicators);
- monitoring the existing regulatory framework for accounting and analytical support for managing accounts receivable for factoring transactions;
- definition of indicators of the structure of accounts receivable, including by the terms of its formation (up to 30, from 31 to 60, over 60 calendar days) and the identification of doubtful and uncollectible accounts receivable.

At the fifth stage, it is carried out the diagnostics of the nature of the financial difficulties of a buyer (a debtor). The diagnostics of financial challenges of a buyer include the following: determination of the

limiting amount of an assignment of the monetary claim right (financing limit); setting the maturity of accounts receivable and their collection; estimation of the probability of the monetary claim payment by a debtor.

If the probability of a risk is less than 50%, it is planned that the payment of the monetary claim will occur in full or, at the very least, in a partial amount; otherwise, if the probability of an internal risk occurrence in the factoring transaction is more than 50%, the analyst must identify the risk according to the factoring agreement on the basis of the risk factor of a factoring transaction.

The sixth stage is the identification of internal risks in terms of: credit risk, liquidity risk (untimely payment), risk of incomplete payment, fraud risk, risk of non-fulfillment by a supplier of the factoring agreement terms, risk of non-fulfillment by a supplier of the supply contract terms, personnel risk based on the passport of the risk factoring transaction or the panel of internal risks of factoring business.

The seventh stage involves setting the parameters of the impact of identified risks by obtaining data from the risk passport of the factoring transaction and/or the panel of internal risks of the factoring business, wherein the obtained data is being brought to parametric values by means of a conversion scale for the probability of occurrence of the consequences of the risk.

The final stage of the analysis involves choosing the method of risk management.

By the results of setting the parameters of the impact of identified risks, the factor takes the following variants of managerial decisions:

- 1) at high risk (critical risk area) factor decides to refuse to accept a risk;
- 2) at low risk (zero risk zone) the factor assumes the risk without taking into account the parameters of the impact of identified risks;
- 3) at an insignificant and permissible risk, the factor takes into account the efficiency of the factoring transaction taking into account the parameters of identified risks.

The assessment of the operation (factoring, factoring business) taking into account the parameters of the impact of identified risks involves the use of the expert assessment of factoring risk, which requires the availability of reliable accounting information and the implementation of appropriate analytical procedures. First of all, it is necessary to formulate the criteria for risk assessment correctly and develop appropriate methods.

When using the expert assessment method, let us consider the identification of risks and their impact on the factoring agreement on the part of a factoring company.

To determine the losses of a factor in cooperation with the  $i$ -th client company from the  $R_j$  risk, we introduce the concept of  $a_{ij}$  a factoring agreement that determines the level of risk impact on the result of the factoring agreement. Thus, the matrix of factor losses in cooperation with the  $i$ -th client from the influence of  $R_j$  risk becomes the following:

<i>Client</i> \ <i>Risk</i>	$R_1$	$R_2$	...	$R_m$	$\Sigma$
$1$	$2$	$3$	$4$	$5$	$6$
Company I	$a_{11}$	$a_{12}$	...	$a_{1m}$	$A_1$
Company II	$a_{21}$	$a_{22}$	...	$a_{2m}$	$A_2$
...	...	...	...	...	...
Company N	$a_{N1}$	$a_{N2}$	...	$a_{Nm}$	$A_N$

Notes:

$a_{ij}$  ( $i = \overline{1, N}$ ,  $j = \overline{1, m}$ ) – losses of a factoring company from the  $R_j$  risk occurrence for the  $i$ -th factorant.

The total costs of a factor in cooperation with the  $i$ -th factorant in the occurrence of all risks, we propose to calculate as follows:

$$A_i = \sum_{j=1}^m a_{ij}, \quad i = \overline{1, N} \quad (4.1)$$

where:  $A_i$  – total losses of the factoring company in case of occurrence of all  $R_j$  risks for the  $i$ -th factor.

The coefficient of the  $j$ -th risk for a factoring company in cooperation with the  $i$ -th factorant will be determined as follows:

$$k_j^{(i)} = \frac{a_{ij}}{A_i} \cdot P^{(i)}(R_j), \quad (4.2)$$

where:  $k_j^{(i)}$  – a coefficient of the  $j$ -th risk for a factoring company in cooperation with the  $i$ -th factorant;

$P^{(i)}(R_j)$  – a probability of the j-th risk occurrence in collaboration with the i-th factorant.

According to the value of the coefficient we can rank the risk zone when factoring company carries out a factoring operation.

The probability of the j-th risk occurrence in collaboration with the i-th factorant we determine as an average value of all expert assessments for the risk under consideration:

$$P^{(i)}(R_j) = \frac{\sum_{s=1}^k P_s^{(i)}(R_j)}{k}, \quad (4.3)$$

At the same time, the expert group includes  $k$  experts. Each expert evaluates the probability of the  $R_j$  risk for the i-th client company. That is, for each j-th risk we consider the following vector:

$$\left( P_1^{(i)}(R_j), P_2^{(i)}(R_j), \dots, P_k^{(i)}(R_j) \right), \quad (4.4)$$

where:  $P_s^{(i)}(R_j)$  expresses the probability of an occurrence of the j-th risk for the i-th client company (factorant), which is evaluated by the S-th expert ( $i = \overline{1, N}$ ,  $j = \overline{1, m}$ ,  $s = \overline{1, k}$ ).

The calculation of an average return on factoring operation in collaboration with the i-th factorant looks like this:

$$T_i = \frac{\sum_{l=n} (K_i - K_{i/6}) \cdot 365 \cdot 100}{\sum_{l=n} (F_i)}, \quad (4.5)$$

where:  $T_i$  – an average return on factoring operation in collaboration with the i-th factorant;

$K_i$  – a commission reward received by a factor in cooperation with the i-th factorant at each repayment of financing;

$F_i$  – a value of the money claim of the i-th factorant.

Taking into account the coefficient of the j-th risk for a factoring company in cooperation with the i-th factorant, let us determine the average return of the factoring company in collaboration with the i-th factorant and taking into account the risks:

$$\mathcal{D}_{\phi i} = T_i + T_i \bullet \sum_{j=1}^m k_j^{(i)}, \quad (4.6)$$

where:  $\mathcal{D}_{\phi i}$  – an average return of a factoring company in cooperation with the  $i$ -th factorant and taking into account the risks.

The developed conceptual basis of economic analysis enables to determine the efficiency of factoring business taking into account internal risks of the factoring company's activities.

Thus, we can conclude that the risk analysis is its quantitative assessment, which provides a further choice of risk management methods and minimization (neutralization) of its negative consequences. Information used in the analysis of the risks of factoring business comes from different sources: retrospective data, results of experimental studies, expert assessment, accounting data, etc. Risk analysis involves identifying threats and risks, determining the feasibility of realized and future factoring operations, factoring business as a whole.

In the conditions of an uncertain and volatile external and internal environment, it is necessary to develop and apply a risk identification and calculation methodology for optimal and effective risk management in factoring companies.

Nowadays factoring companies use techniques that are taken and adapted from the banking environment. They are designed to test the ability to lend money to potential customers. That is, the methods do not take into account the specific risks inherent in the factoring operations.

It was improved the methods of analysis of the efficiency of factoring business, there were substantiated the indicators of its evaluation, general and in-depth blocks of analytical indicators were specified, it was developed a system of parametric estimates of internal risks of the factoring company activities, it was proposed an integrated factoring efficiency index, which helps to monitor risks, timely control of deviations of their values and the choice of optimal methods of managing both the risks of factoring business, and their probable negative consequences.

The application of these proposals by factoring companies will increase the efficiency of managing the risks of their activities by adopting optimal management decisions and ensuring the profitability of factoring business.

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**INVESTMENT  
STABILITY AS A  
BASIS FINANCIAL  
SUPPORT OF  
INNOVATIVE  
DEVELOPMENT OF  
ENTERPRISES**

The article reveals the role of investment stability in providing financial support for the investment development of an enterprise. Comprehensive globalization and socio-political upheavals nowadays dramatically changed the conditions and factors of the economic development of transnational corporations, and significantly influenced the direction of the movement of international capital. The global instability of the investment market conditions stimulates the search for ways to effectively regulate investment flows, which is extremely important for Ukraine. That's why Ukrainian's economy is dependent on external financial and investment borrowings. However, some branches of enterprises' economical activity have disproportions in receipt of investment capital. Therefore, the purpose of the research is to develop recommendations for achieving investment stability in a globalized economy.

At the present stage of development of society, when entering a new “Digital Age”, investment in innovations is of great importance. Innovative development is recognized as the most promising by creating a highly efficient digital economy in the vast majority of countries of the

world. Many countries have already achieved great success. However, Ukraine over the past two decades has not yet been able to stand out for any special achievements in the field of innovation. The innovation process in Ukraine is in its infancy and requires new approaches to financing. Research and development costs are current and capital expenditures (public and private) for creative activities that are carried out systematically to increase knowledge, including the knowledge of humanity, culture and society, and the use of knowledge for new applications. R & D covers basic and applied research and experimental development. We give the proportion of the cost of R & D in Ukraine's GDP [4] for 2006-2017 (Table 4.2).

*Table 4.2*

**The dynamics of the volume weight of R & D expenditures  
in GDP in Ukraine for 2006-2017**

Year	Volume weight, %	Deviation, %
2006	0,9	-
2007	0,9	-10,10
2008	0,8	- 0,79
2009	0,9	1,18
2010	0,8	-2,68
2011	0,7	-11,48
2012	0,8	1,88
2013	0,8	1,34
2014	0,7	-14,63
2015	0,6	-5,47
2016	0,5	-21,30
2017	0,4	-7,30

Thus, the data in Table 4.2 demonstrate a tendency to reduce funding for R & D, which adversely affects the development of innovative activity in Ukraine. Compare the amount of funding for research and development in Ukraine and European countries. We give the amount of funding for research and development in Germany [1] for 12 years (Table 4.3).

Thus, in Germany for 12 years, an increase in R & D funding has been observed, as well as its size is much larger than in Ukraine. Now, consider financing R & D in France [3] for 12 years (Table 4.4).

The dynamics of statistical data (Table 4.4) shows a slight decrease in R & D expenditures in France, but in general, R & D funding in France is higher than in Ukraine.

Table 4.3

**The dynamics of the volume weight of R & D expenditures  
in GDP in Germany for 2005-2016**

Year	Volume weight, %	Deviation, %
2005	2,4	-
2006	2,5	1,38
2007	2,4	-0,40
2008	2,6	6,16
2009	2,7	4,98
2010	2,7	-0,47
2011	2,8	3,02
2012	2,9	2,59
2013	2,8	-1,64
2014	2,9	1,84
2015	2,9	1,53
2016	2,9	0,77

Table 4.4

**The dynamics of the volume weight of R & D expenditures  
in GDP in France for 2005-2016**

Year	Volume weight, %	Deviation, %
2005	2,1	-
2006	2,1	-0,03
2007	2,0	-1,29
2008	2,1	1,81
2009	2,2	7,32
2010	2,2	-1,51
2011	2,2	0,60
2012	2,2	1,62
2013	2,2	0,45
2014	2,3	1,74
2015	2,3	-0,39
2016	2,2	-0,84

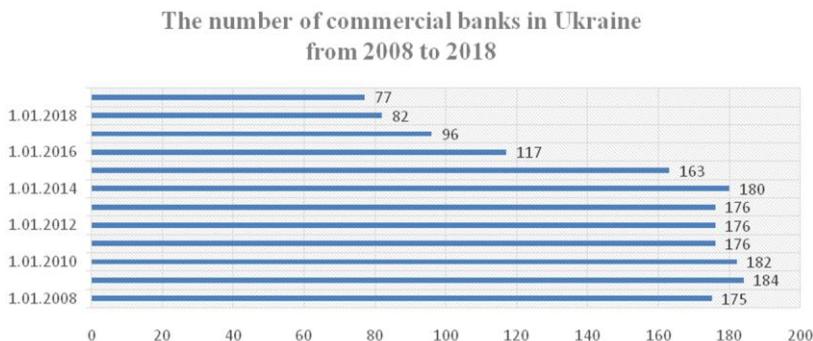
On a company basis, the top five R&D spenders today are mostly technology multinational companies. Rank Company R&D Spending (last 12 months): 1. Amazon \$17,4 billion; 2. Volkswagen \$15,1 billion; 3. Alphabet \$14,5 billion; 4. Intel \$12,8 billion; 5. Samsung \$12,8 billion [3].

The country's economic success depends on the qualitative

implementation of the functions of its financial system: the distribution, regulatory, control and stimulating [8]. So, effective allocation and redistribution of funds is one of the key criteria for such a phenomenon as – investment stability.

An important role in it is played by the stability of the banking system (BS), which should be understood as a complex characteristic of the state of the BS in which its functional purpose is effectively realized, and also the ability to maintain balance and restore the state after external shocks or increase of imbalances, any deviations from safe parameters caused by crisis phenomena (economic downturn, financial crisis, transformation of economy, etc.). BS stability is characterized by reliability, balance and proportionality of the functioning of its structural elements, the ability to maintain a stable equilibrium and reliability for a long time [10].

Banking institutions traditionally play a leading role in the distribution and redistribution of financial resources in virtually all countries of the world. However, the current situation in the banking sector is characterized by minimal bank lending activity and low deposit rates. Today, lending is carried out at high interest rates and on unfavorable terms. The rates on deposits in the Ukrainian hryvnas are gradually decreasing, and in the currency – they are minimal. High competition between banks remains only in the segment of settlement services of individuals and legal entities. It does not give grounds for changing these tendencies and the system of distrust of the population due to the devaluation of the national currency and the mass liquidation of banking institutions (Figure 4.7).

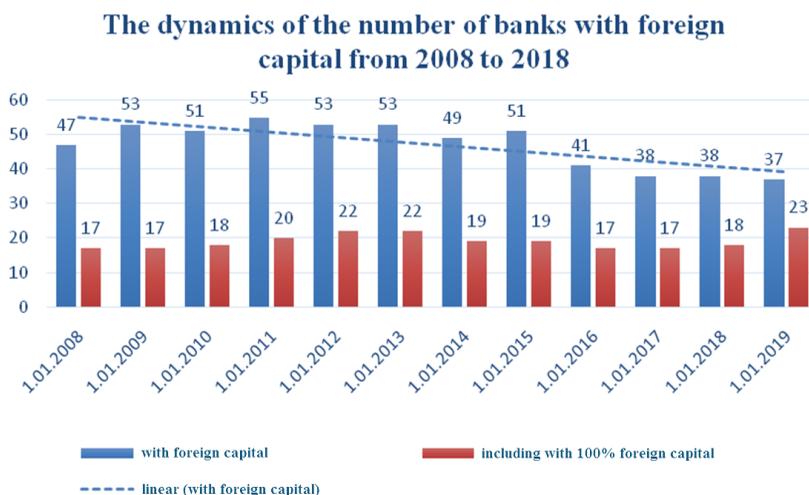


**Figure 4.7 The number of commercial banks in Ukraine  
from 2008 to 2018**

So, according to the Figure 4.7, the number of banks in 10 years decreased by almost 2,5 times. Moreover, the main reduction occurred over the past five years [9]. Thus, it can be argued that the systemic crisis of the banking system of Ukraine has come about, and as a result, the effective implementation of the distribution function is not effective.

I'd like to mention the experts' opinion [10], that the stability of the banking system occurs when there are no bank failures in the national banking system; or as a situation where the national banking system is sustainable and profitable and fully complies with national law, as well as with the risk management principles established by the Basel Committee on Banking Supervision.

In turn, this leads to a reduction of investor confidence throughout the country, which is one of the crucial criteria for investment stability. Thus, foreign investment in the banking system decreased, in line with the decrease in the number of commercial banks with foreign capital (Figure 4.8).



**Figure 4.8 The dynamics of the number of banks with foreign capital from 2008 to 2018**

According to the Figure 4.8, it can be argued that a high correlation of investment stability with the stability of the banking system. In this case, the BS is stable under the following conditions:

- 1) ensuring efficient allocation and redistribution of financial resources;
- 2) allows for the valuation, quotation, distribution and prevention of financial risks;
- 3) provides a stable exchange rate of the national currency.
- 4) providing commercial banks with compliance with the relevant norms of the National Bank of Ukraine.

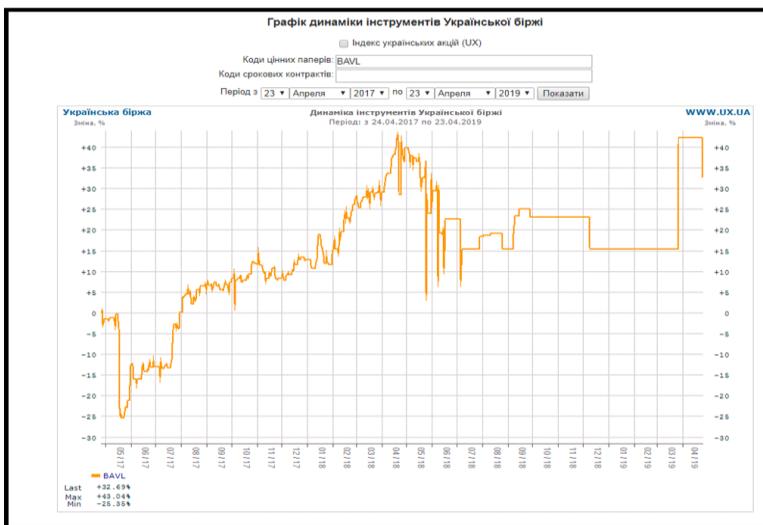
Since the banking system is a dynamic system, its stability is considered, first of all, from the point of view of compliance with the specific state it must achieve after certain changes, transformations or upheavals. That is why the stability of the BS is a factor in ensuring the stability of the financial system in general and investment stability in particular.

The dynamism of the value of commercial banks, which is determined by the quotations of the shares of the institution, plays a role in ensuring stability. Thus, for a long time, the "blue chips" of the domestic securities market were shares of banks: Aval and Ukrsofs. These shares were included in the index of the Ukrainian Exchange, and they played the role of an indicator of the state of the country's eco-labels. At the current time, the shares of Ukrsofs Bank were withdrawn from the basket, according to the decision of the Index Committee of the Exchange. In addition to the Bank Aval's shares, they are still included in the index, so we consider it expedient to investigate their dynamics (Figure 4.9) [5].

I'd like to stress the importance of evident (Figure 4.9) that during the last two years the value of shares has decreased significantly, and from 2018 the trade in shares has been discontinued.

Thus, it becomes clear that, besides the banking system, the investment market is significantly influenced by the securities market. In most developed countries, the banking system becomes the first victim of crisis phenomena. After banks cease to perform the function of redistribution of financial resources, leadership in this is provided to securities.

The domestic stock market has a number of obvious problems: the underdeveloped legislative framework and infrastructure, and, most importantly, insufficient high liquidity. Despite this, he took his place in redistributing financial resources precisely thanks to the introduction of financial innovations, the key of which is Internet trading. The official announcement of the launch of online trading is March 26, 2009.



**Figure 4.9 Illustration of the chart of instruments of the Ukrainian stock exchange**

This technology enabled the private sector to be effectively attracted, with the peak share of private investors in the securities market accounting for almost 45%. Then the technology began to spread among stock exchanges and brokers. To date, the leadership among the exchanges has been divided between “Ukrainian Exchange”, Stock Exchange “PFTS” and “Perspective”. For private investors, competition among stock exchanges has been reduced to a variety of financial instruments offered by the level of liquidity, etc. So an important stage in the development of the securities market was the launch of derivatives on the Ukrainian stock exchange, namely the futures on the Ukrainian Exchange Index, and the futures option. That competition among brokers, besides the usual service and tariffs, was reduced to the software by which the investor carried out operations with financial instruments - the brokerage trading system.

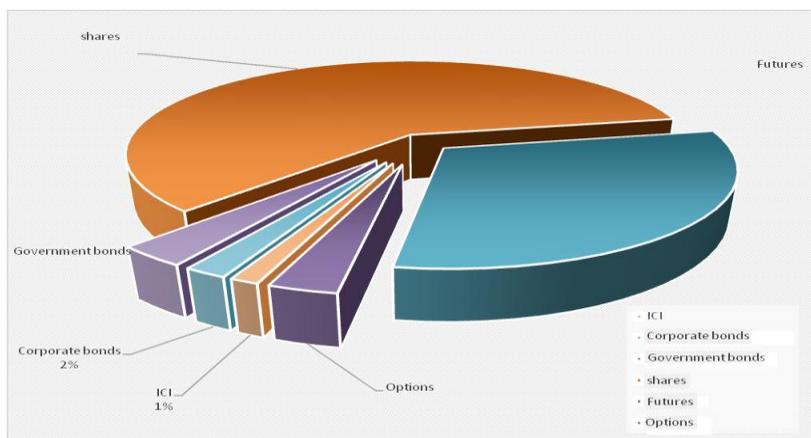
It is important to note that the stability of the securities market is achieved primarily through the provision of high liquidity of financial instruments [6]. Of course, the most liquid ones are derivatives. Thus, the stock market of any of the modern economies can't be considered to be stable functioning without the presence of derivative financial instruments on it. The development of brokerage trading systems is an

incentive for the development of derivatives. Market derivatives markets through hedging operations play an important role in managing financial risks and are actively used for these purposes in global derivatives markets.

It is considered that the Ukrainian derivative market significantly differs from derivative markets in developed economies. These differences are manifested both in the volumes of trades, in the structure of financial instruments that are traded on the market, and in the organizational forms of bidding. On the quantitative side, the volume of the market of derivatives of securities in Ukraine is much less than abroad.

In contrast to the structure of global derivatives markets [10], where there is a tendency to preferential treatment of forward contracts. In Ukraine, the derivatives market is a fairly young segment of the financial market and is represented by futures contracts, options and option certificates. The largest share in the derivatives trading market belongs to futures contracts.

According to Public Joint Stock Company “Ukrainian Exchange” [11], futures contracts on currency pairs are currently in circulation USD- UAH, USD-EUR, gold and the Index of Ukrainian shares for six months. The largest volume of trading is occupied by futures contracts on a currency pair of the USD-EUR, which is explained by high predictability of the rates of these currencies and, consequently, the low risk of such term contracts. Gold contracts are also popular.



**Figure 4.10 Structure of trades on «Ukrainian Exchange»**

To sum up of the analysis, it can be argued that there is a wide range of tools for working with securities. However, the lack of liquidity does not allow attracting investment, especially foreign ones. As a result, the domestic securities market does not allow to effectively implement the function of redistribution of financial resources.

According to the results of the research [11], it is established that the qualitative functioning of the banking system and the securities market is the key to effective redistribution of financial resources, and, above all, investment attraction. The stable work of these elements of the financial system is an indispensable criterion for ensuring investment stability, along with socially oriented economic entities and the economic image of the country.

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**FORECASTING THE  
FINANCIAL ENSURING OF  
DEVELOPMENT THE  
INSURANCE COMPANY ON  
THE BASIS OF COST  
CONCEPT MANAGEMENT  
BY THE INSURER**

Today in Ukraine has developed not a very stable economic situation. One of the effective tools for solving socio-economic problems can be insurance. In modern conditions the Ukrainian insurance market is trying to actively development: expanding the insurance portfolios of insurance companies due to the introduction of new insurance products, increasing level coverage of insurance protection of the population, and increasing requirements for the management the activities of insurance companies.

The development of the general insurance market, above all, depends from the qualitative development of each individual insurance company as its constituent element. In turn, the development of an insurance company is possible only in the presence of financial ensuring. That is why the question is very relevant of research the possibilities of forming financial potential of development the insurance companies, factors that influencing on its size and planning of volumes financial ensuring for effective development of the insurer.

Scientists Baranova V.G. [1] and Nenno I. M. [1; 2, p. 26-30], dealing with issues of research the financial ensuring development of the insurance companies themselves, distinguished the following stages of its formation:

1. Formation of assets – identification of needs for certain types of assets and the establishment of their amount in general, optimization of the structure of negotiable and non-current assets.

2. Formation the structure of capital – definition of total requirements in financial capital for formation of assets, study of alternative variants for attracting financial resources and sources of funding; optimization of the ratio between equity capital, funds raised as a result of sale the insurance products, and involved in joint stock or bank capital. At the same time, the balance of these components reflects

the ratio of profitability and risk borne by the insurance organization.

3. Investment management – definition the directions and nature of investment activity the economic entities (in what industry and what investments: direct or portfolio, the risk of investing); assessment of investment attractiveness of individual projects, formation of an investment portfolio and expediency operational management. Of course, depending on the complexity and limitations in economic policy the insurer's investment portfolio can range from the simplest, based on which the deposit component, to the most complex ones, with a wide range of securities in the event of effective functioning of the financial market.

4. Management of own financial resources – definition of needs in their own financial resources, increasing the size of net profits and its capitalization. Moreover, the key step is to calculate the required amount of financial resources.

5. Financial risk management – definition of types risks, specific to operational and investment activities of the insurer; assessment of such risks; selection of appropriate risk management methods; monitoring of regulation the financial risks.

6. Managing attraction of borrowed funds – definition the requirements for borrowed funds, optimal ratio of short-term and long-term borrowings as the main task in the insurer's of liabilities managing, the choice of optimal sources of funding and forms of borrowing.

7. Creation of financial ensuring for development. The system of financial ensuring for development of the insurer is considered purposeful activity on accumulation of free financial resources through the use of financial instruments in order to form a financial potential of development. It should be noted that free financial resources are financial resources that are not related to insurance liabilities.

Effective performance of each of these items will ensure the formation of sufficient financial ensuring for the current activities of the insurance company and its development. At the same time, it should be noted that formation of financial insuring for the development of the insurer is possible only after ensuring the unconditional fulfillment of their obligations to policyholders.

An adequate level of financial ensuring for the fulfillment of obligations is determined by the size of the formed insurance reserves. In Ukraine, the required amount of insurance reserves is regulated by Art. 31 of the Law of Ukraine "On Insurance".

We also note that the necessary condition for the formation of

financial ensuring of development is the observance of the proper level of solvency and financial stability, which are also regulated and controlled by state supervisory authorities. An adequate level of these indicators provides a certain stability of the insurance company on the financial market and the resistance to fluctuations in its activities and the influence of external factors.

Thus, financial insuring for development of an insurance company is a peculiar planning the amount of financial resources necessary for realization of programs and projects for expanding activities, sources and methods their formation and spending. Formation of the financial fund development is based on the definition of the goals and objectives of the insurer: strategic and operational. Strategic goals development are aimed at improving the competitive advantage and gaining a larger market share in the long run, while operating – to fulfill the current obligations to ensure the adequacy of the insurer's own funds.

The financial potential management of an insurer's development is primarily due to the optimization of its components: increasing of equity and insurance reserves, reducing the amount of insurance payments and general costs, observing capital adequacy ratios and diversifying reserves, actively using reinsurance and improving the investment policy of the insurance company.

As a general criterion for the effectiveness of management the insurer may accept the indicator of capitalization, or the market value of the insurance company, and as a partial criterion – the financial result of activity the insurance company subject to compliance with regulatory requirements for financial stability [3, p. 262].

The cost of an insurance company is extremely important for business owners and investors. Estimating value of business – a purposeful orderly process of determine the cost of the object in cash, taking into account the factors of influence on it at a specific time in a specific market environment. It is the assessment of market cost the company allows the seller and buyer to enter into deals, based on the justification of cost business [4, p. 74].

The basic concept of an insurance company management based on cost-based approach of remains the conceptual basis system corporate finance: the cost of an insurance company is determined by the cash flows that its can generate in the future. The flows are discounted at the rate of return, which takes into account the aggregate risks of the company's assets and the risks of its financing.

An important element in assessing the total cost of an insurance

company is the definition of cost capital that is at its disposal. To calculate the cost capital used formula the weighted average capital cost (WACC – Weighted Average Capital Cost). There are a large number of interpretations the formula for calculating this indicator. In our opinion, the most appropriate is to use the formula proposed by scientists Govorushko T.A., Stetsyuk V.M. and Tolstenko O.Yu [5, p.23]:

$$WACC = E_{eq} \frac{E}{TC} + (1-T)E_{bc} \frac{BC}{TC} \quad (4.7)$$

where: *WACC* – weighted average capital cost;

*E<sub>eq</sub>* – expected cost of equity;

*E<sub>bc</sub>* – expected rate of the cost of borrowed and borrowed capital;

*TC* – total capital;

*E* – equity;

*BC* – amount of borrowed and borrowed capital;

*T* – tax rate on profit.

The indicator of weighted average capital cost is most often used as a discount rate when assessing the cost of an insurance company using the method of discounting cash flows.

The calculation of weighted average capital cost of the insurer was made on example of the leading national insurance company PJSC “IG “TAS” for 2017. PJSC “IG “TAS” has been operating in the Ukrainian market since 1998 and is a part of a powerful investment-financial group, which also includes various financial, trading and industrial structures. Today, the insurance company is among the top ten insurance market leaders in Ukraine, maintaining consistently high financial results, improving the methods business practices and improving the quality of its services.

The results of calculations are presented in the Table 4.5.

Based on the research of Shevchuk O.O., definition of the cost of insurance reserves for determining WACC can be used coefficient of adequacy of insurance reserves as the ratio of insurance payments to the amount of formed insurance reserves [7, p. 126].

According to the calculations, the average weighted value capital cost of PJSC “IG “TAS” for 2017 is 0.32%. This indicator will continue to be used as a discount rate when assessing the cost of an insurance company.

Table 4.5

**Weighted average capital cost of PJSC “IG “TAS” for 2017**

Indicator	2017
1. Equity, thousand UAH	450208,06
1.1. Share of equity in liabilities at the balance sheet, %	38,80
1.2. The amount of net profit paid to the owners of the company in the process of its distribution, thousand UAH	–
2. Net insurance reserves, thousand UAH	661799,93
2.1. Net insurance reserves, %	56,11
2.2. Share of net insurance reserves in the liability balance, %	57,04
3. Short-term bank loan, thousand UAH	–
3.1. Percentage rate, %	22
3.2. Profit tax rate, %	18
3.3. Share of bank credit in the balance of liabilities, %	–
3.4. Cost of short-term bank loan, %	–
4. Current payables, thousand UAH	48198,68
4.1. Cost of accounts payable, %	–
4.2. Share of current payables, %	4,15
5. Weighted average capital cost (WACC), %	0,32

The next step is to calculate cash flows in the projected (5 years) and post-projected periods. To do this, we will use the table processor Microsoft Excel, using which, based on the output data Table 4.6, we build the regression equation of the mathematical model (4.8) and the regression equation for each of the parameters model.

Table 4.6

**Output data for the forecast of future cash flows of PJSC “IG “TAS”, thousand UAH**

Period (year)	X <sub>1</sub> – receipt of insurance premiums	X <sub>2</sub> – payment of insurance contracts	X <sub>3</sub> – income from investment activity	Y – free cash flow
2012	382651	-194362	202962	49069
2013	410010	-174925	594269	20163
2014	426105	-176621	53774	-66109
2015	607382	-212435	250363	37782
2016	763237	-262224	172674	114728
2017	1023863	-371337	85107	134406

The equation of regression a mathematical model (4.8):

$$Y = -190201,79 + 0,01 X_1 - 0,89 X_2 + 0,12 X_3 \quad (4.8)$$

Regression equation for each of the model parameters:

$$y_1 = 127058 * X_1 + 157506$$

$$y_2 = -33788 * X_2 - 113726$$

$$y_3 = -47356 * X_3 + 392272$$

Output data must be taken as long time as possible, so that the reliability of the build mathematical model is most accurate.

The determination coefficient for the initial data in our case is 0.75 – this means that the results of regression modeling are satisfactory and can be used in the study of real processes.

Next, based on the equations found calculate the predictive values of each of the parameters of the model and cash flows, in Table 4.7 for PJSC “IG “TAS” on 5 years.

*Table 4.7*

**Point forecast of parameters of the model of future cash flows of PJSC “IG “TAS”, thousand UAH**

Period (year)	X <sub>1</sub> – receipt of insurance premiums	X <sub>2</sub> – payment of insurance contracts	X <sub>3</sub> – income from investment activity	Y – free cash flow
2018'	1046910	-350242	60777	137052
2019'	1173968	-384030	13421	162398
2020'	1301025	-417819	-33935	187744
2021'	1428083	-451607	-81292	213090
2022'	1555141	-485395	-128648	238436

Based on the calculated projected values of free cash flows calculated above, will make a valuation cost of PJSC “IG “TAS” by the method of discounting cash flows, which is defined as the sum of the total discounted free cash flow, discounted residual value of the company and its surplus assets minus liabilities of the insurer by date of evaluation. Estimated indicators cost of PJSC “IG “TAS” by the method of discounting cash flows are presented in Table 4.8.

Table 4.8

**Estimation cost PJSC “IG “TAS” by the method of discounting cash flows**

Indicator	2017	2018'	2019'	2020'	2021'	2022'	2022'+
Free cash flow, thousand UAH	134406	137052	162398	187744	213090	238436	238436
Residual value of the insurer, thousand UAH	x	x	x	x	x	x	86593
Discount rate, %	0,32	0,32	0,32	0,32	0,32	0,32	0,32
Coefficient discount		0,9968	0,9936	0,9904	0,9872	0,984	0,9808
Present value of free cash flows and residual value of the insurer, thousand UAH		136613,4	161358,7	185941,7	210362,5	234621	84930,4
Total present value of cash flows, thousand UAH							1013827,6
Surplus assets, thousand UAH							0
Amount of liabilities at the valuation date, thousand UAH							45863
Market value of the insurance company by the method of discounting cash flows., thousand UAH							967964,6

According to the results of calculations the market cost of PJSC “IG “TAS” by the method of discounting cash flows is 967 964.6 thousand UAH. The estimated forecast indicator cost of PJSC “IG “TAS” is quite high, which positively affects the overall image of the insurance company, ensures its steady position on the insurance market of Ukraine. It also attracts interest in potential investors and clients and increases the level of trust among its insurers.

Assessing cost of insurance companies can pursue different goals. The results of the calculations cost provide the opportunity to determine the prices at which, for example, the company sold may or make valuation (overestimation or underestimation) of shares the company.

However, it is more important and more difficult to build an effective system management aimed at increasing the cost. Solution to this problem is actual, since the realization of the cost concept management of an insurance company has several advantages over a system oriented to increase profits. The cost management system provides openness of information from the most important plan indicators of the insurance company and bringing them to the executors. Such an approach provides for increased transparency in its activities [68, pp. 93-94].

The management system of an insurance company is aimed at increasing its market cost, first of all, most satisfies the interests of owners (shareholders). After all, for shareholders more important is not the fact receiving of profit, namely the ability of organization to constantly create added cost of capital (constant increase in the cost of the insurer).

The main directions of increase the cost of an insurance company are:

- effective financial activity;
- relations with clients;
- organization and improvement of business processes;
- improvement and development of insurer's insurance activity.

In order to increase the cost of an insurance company, first of all it is necessary to clearly identify the strategic goals of the insurer development. In accordance with them determine the system of indicators for the proposed areas of increasing the cost of the insurer, which will reflect achievement of set goals. The use of precisely these directions of increase in the cost of an insurance company in the strategic planning of its development has the advantage that they can include both financial and non-financial indicators.

The management of activity an insurance company aimed at increasing its market cost can provide a number of positive effects and qualitative changes. The continuous growth of cost the insurer will help strengthen its financial stability, reliability, competitive position on the market, increase investment attractiveness and ensure the development of the company.

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**DEVELOPMENT OF  
INNOVATIONAL  
POTENTIAL OF  
REGIONAL  
ECONOMY**

In the conditions of European integration processes, innovation activity becomes of particular importance, as the basis for its implementation is the innovative potential, as a specific multicomponent resource. The competitiveness of the region and the country as a whole depends on the effective use of the existing innovative potential.

In the context of globalization and European integration processes, the regions of Ukraine are faced with the challenge of intensive development of new methods and techniques of management, the use of innovative mechanisms and tools for stimulating the socioeconomic development of territories that have proven themselves positively in

world practice. These conditions predetermine the need to find innovative approaches to the formation of new effective regional development strategies. Effective solution of socioeconomic problems is impossible without the formation and use of innovative potential of regional development.

The purpose of this study is to identify the main factors that have a restraining influence on the development of innovative potential, outline the perspective directions of practical use of scientific and technological and technological potential of the region.

The theoretical and practical basis for studying the role of innovations in economic development and increasing the competitiveness of the national economy is the analysis of scientific works by such foreign and Ukrainians scientists: I. Alekseev, B. Burkinsky, A. Dagaev, P. Drucker, B. Yonson, J. M. Keynes, O. Kuzmin, A. Kucherova, K. Marx, A. Marshall, M. Porter, K. Prahlada, E. Rainerta, P. Rappina, A. Sadekova, J. Sachs, P. Samuelson, B. Scott, M. Tugan-Baranovsky, I. Fischer, G. Hamel, V. Hartmann, H. Chesbrou, M. Chumachenko, A. Spitthofa, K. Stallman, J. Schumpeter, V. Alexandrova, O. Amosha, L. Antonyuk, Y. Wish, I. Belkin, V. Geyets, S. Kireeva, L. Osetsky, V. Savchuk, S. Sokolenko, O. Fedirko, O. Shnipko, M. Krupki, M. Chumachenko and others.

Innovation potential is the amount of economic resources that a society can use for its development at any given moment. These resources are distributed among the three main sectors (segments, directions) of the system: scientific, technical, educational, investment. As a result of this division are formed: the scientific and technical potential (segment or complex), educational potential (segment or complex), investment potential (segment or complex). The set of named segments and forms the innovation potential of the system.

According to M.Krupki, for the development of the economy, according to the innovative model, it is necessary to create a favorable financial and credit environment [1, p. 31]. V. Fedorenko notes that for the complex development of the Ukrainian economy it is necessary to attract capital into science and innovative activity of the region [2, p. 75].

L. Fedulova determines the problems that hold back the rapid innovational development [3, p. 7].

The formation of a regional innovation market is possible under the conditions of intensification of innovation entrepreneurship, the formation of innovation infrastructure, the participation of venture

capital, the development of innovative business insurance, and the availability of legislative protection of intellectual property protection. Ukrainian regions are divided into three main groups according to their quantitative and qualitative parameters (economic, natural resource, scientific and technical potential, level of socio-economic development): regions of large industrial agglomerations with high concentration of production and population (Dnipropetrovsk, Zaporizhzhya); industrially developed regions with a concentration of production in regional centers and large cities (Kyiv region and Kyiv, Kharkiv, Odessa, Lviv, Poltava); regions with local industry – character (most of the western regions). Innovations are known to exist in various forms: new types of technologies, new products, new production processes, managerial and organizational innovations. Usually, an innovation is understood as a system consisting of three main phases: the generation of ideas and knowledge; their sharing and distribution among consumers; the application of these knowledge and ideas to improve the product [4, p. 217.].

Innovation potential of the region is the basis for fundamental and applied scientific research, design and technological works that contribute to the solution of scientific, scientific, technical, socio-economic and environmental problems at the state, regional and sectoral levels. At the regional level, innovation processes determine the level of development and the nature of economic development of the country and regions. Therefore, an in-depth study of the possibilities of using innovations as a means of economic development, ensuring state regulation and supporting innovation processes, substantiating and adopting the correct strategy for achieving the goal, the way of its implementation and financial support, becomes important. Institutional structures of the regional level in our country are in the stage of becoming. On the one hand, regional authorities have received additional powers and economic opportunities in the context of innovation development. On the other hand, in the process of formation of regional authorities and self-government an imbalance of power was created, contradictions between them intensified [5]. In addition to the general institutional causes of the inadequate innovation activity of the regions, the weakness of regional governance should be emphasized, due to the duplication of functions of local authorities and self-government bodies, the use of both parties of outdated management techniques, the absence of real economic, financial and institutional levers and incentives for influencing the innovation process. The second

institutional problem is the imperfection of legislation regarding the protection of intellectual property rights. In addition, venture business, cluster innovation systems and pilot projects are in the early stages of its development [6, p. 451]. Local authorities have great opportunities to stimulate regional interests, one of whose areas is small business, since the more profitable enterprises in the region will be, the more taxes will flow to the revenue side of the budget. Regional regulation of the innovation market is aimed at promoting the most comprehensive realization of innovative resources of the region through the system of functions of regional authorities [7, p. 421]: accumulation of free funds due to – optimization of budget management, its planning and implementation, support of the structural balance of the revenue and expenditure parts of the budget; promotion of cooperation and interaction – various public institutions in the implementation of innovations: banks, entrepreneurship, research institutes, universities, etc.; organization of constantly functioning scientific and technical salons, fair, exhibition complexes with stands of new developments of scientific institutions, new products of enterprises, business plans of innovative offers; coordination of innovation activities in the region through the formation of its own innovation strategy for the development of each region of the oblast level, and within the oblast – the administrative district, the city; development and use of the system – obligatory deductions of the part of profits of extractive industries, which use the resources of the region, to create a fund of ecological innovations; stimulation of innovation by means of placement in the technological parks or enterprises of business incubators of state orders from the regional administration; initiating the creation of regional – innovative structures by local authorities, providing them with legal, consulting, business services, assistance in finding partners, concluding agreements under the guarantees of regional authorities, protecting the interests of scientific organizations while temporarily providing equipment and premises for rent; implementation of personnel provision of innovations through trainings, seminars; regulation of innovation entrepreneurship – through various kinds of regional preferences (tax privileges, targeted subsidies, exemptions from local payments, credit guarantees). Creation of innovative structures should fit into the strategy of regional progress organically and become an instrument for increasing the economic and social indicators of the region's economy by restoring the activities of large enterprises that determine the development of the region. Consequently, despite the high

intellectual and personnel potential in applied and fundamental science, the indicators of the rate and quality of innovation processes in the national economy remain extremely low. Among the factors of the negative situation in the field of innovations it should be especially noted: the lack of a single well thought-out system of state support for the development of innovation processes at the regional level; undeveloped effective legislative framework; insufficiency and inefficiency of financing education and science and innovation business; lack of budget financing and lack of venture; lack of effective innovation infrastructure, lack of mechanisms for stimulating investment processes in the field of high technologies. The introduction of innovations decreases – equipment aging is increasing. That is, as a result, the qualitative characteristics of the main productive assets deteriorate, the productivity of labor decreases, the labor intensity and material consumption of the product increases. Most enterprises have resource-intensive technologies and inefficient and worn-out equipment, which does not allow them to engage in competitive struggle in market conditions. A peculiar cluster circle is visible: on the one hand, enterprises that need investments need to invest considerable money in order to analyze their work, to develop the necessary documents for any investor (offer, business plan, financial analysis, audit, etc.). On the other hand, the investor can not make a decision on financing the enterprise without having an innovative (investment) project, an analysis of the company's work. Only companies that are at risk at risk can solve the problem. They can make well-grounded decisions based on sound calculations. A solution to these problems can be a complex innovation-investment program of development of the region, which would provide for the interconnection of technical and technological re-equipment of enterprises with solving problems of the country's economy as a whole. It is this approach that allows a comprehensive analysis of the economic situation in the region to consider the problem of innovation from different points of view: technological, environmental, economic, social, demographic, cultural, educational, etc., and also allows to balance the resource and production potential of districts and cities. The development of such an integrated program of development of the territory will enable the accumulation of innovative resources from internal and external sources. There is a question of introducing a rigid order of using resources only for its intended purpose – for the development and implementation of relevant investment programs and projects within the timeframe stipulated by business plans, with the

projected return on investment and the ongoing operating costs of each entrepreneur. There is only one way of structural transformation of the economy – a clear system of organization and management of investment and innovation processes. The formation of this system begins with scientific research, technological and economic substantiation, designing on the basis of the selection of promising competitive technologies, while simultaneously providing projects with the appropriate financial and material resources and timely putting them into operation. The introduction of an integrated approach to the development of innovation and investment programs will ensure a balanced economic, ecological and socio-cultural development of the region, find ways to solve the most acute and significant problems [2, p. 75].

However, the restoration of productive capacity is negatively affected by the lack of a legislative basis for innovation policy. One of the main conditions of the mechanism for implementing the priorities of scientific and technological and innovation development is the existence of a clear legislative framework. In Ukraine, in the process of market transformation of the economic system, the legislative preconditions for the transition to an innovative development model have been created. However, current laws are characterized by weak and fragmentary interconnections, and sometimes contradictory in certain provisions. This is the reason for the fact that today a lot of processes related to the transition to an innovative model of development, are mainly spontaneous and fraudulent. Therefore, further work is needed to create and implement, at all levels of economic management, an interdependent and clear system of laws that provide effective economic leverage and incentives for business entities at all stages of innovation and investment activity. In the implementation of the innovation strategy of the development of regions of Ukraine, their scientific potential plays an important role. The peculiarity of the modern stage of development of the regions of Ukraine is the transformation of the scientific potential in accordance with market transformations of the whole system of socioeconomic relations and its adaptation to market conditions, as well as with objective changes taking place on a global scale as a result of the transition to the creation of a post-industrial society. Studies show that along with the deepening of the differentiation of socio-economic development of the regions, there is an increase in the uneven distribution and development of scientific potential, which is considered as the basis for ensuring their competitiveness, an important component

of regional innovation systems.

Implementation of state innovation policy at the regional level is aimed at structural adjustment of the region's economy, which ensures their socioeconomic development, increases the innovative activity of enterprises and increases investment attractiveness. When constructing a technopark, it is necessary to take into account the features of a particular region, its basic conditions for the technopark to function successfully in its territory.

Formation of a regional innovation policy that would be able to ensure the implementation of the above tasks should be based on the following basic principles [5]:

- System approach to the formation of regional innovation policy.
- Creation of a regional innovation infrastructure taking into account the specifics of the territories, with subsequent integration into a single system.
- Coherence of medium-term priority directions of innovation activity at the regional and national levels (in accordance with the Law of Ukraine "On Priority Areas of Innovation Activity in Ukraine").
- Concentration of resources in priority areas with a clear definition of funding sources.

Analyzing the experience of world practice in implementing innovation policy, one can conclude that the provision of innovative development of regions should be carried out at the following main stages [5]:

- formation and legislative support of the state policy of supporting the innovative development of the regions;
- formation of an effective regional innovation infrastructure;
- development of programs of innovative development of specific regions taking into account the priority directions of innovative activity of the regional level;
- realization of programs of innovative development of regions with current correction.

Technological park can realize both the entire innovation process, and its separate stages. At the same time, it only reveals promising developments and, in the process of their commercialization, provides scientists, innovators, inventors with financial, legal, logistical, advisory and information support. The Technopark should not engage in mass production, but merely bring the idea to the stage of creating a prototype of a new product or the development of a new technology.

A comprehensive solution to these problems would solve the

problem of completing the structural reform of the economy, provide protection of investors' property rights, which is a key element of the favorable investment climate of any state and an indispensable prerequisite for the realization of its innovative potential. The direct influence on the innovation activity of the regions of Ukraine is caused by factors such as the total amount of expenditures on innovation activities, internal running costs for scientific and scientific and technical work, the number of organizations performing scientific and scientific and technical work, the number of specialists employed in the scientific and scientific and technical sphere, including higher qualification, the number of higher educational institutions of the I-IV levels of accreditation. Important for the regional level is the availability of appropriate innovation infrastructure through which financial, informational, consulting, marketing and other types of support of innovative processes are carried out.

As the research shows, the vast majority of regions are deprived of their own funds to finance innovation. The solution lies in the area of reform of interstate relations on the basis of fiscal decentralization, providing greater autonomy to regional self-government. Such a reform should be aimed at increasing regional budget revenues by redistributing financial resources and strengthening the fiscal authority of the regional government. Decentralization will increase the responsibility of the regional authorities, and will allow more efficient ways to increase financial resources for regional innovation by attracting external financial sources. Financial instruments such as grants, loans, equity and indirect support are the basic elements of the regional financial value chain (analogue of the global value chain). Each regional innovation project or company that implements it requires a specific solution that depends on the individual's growing needs and the appropriate stage of innovation. The main thing - both for the public and private sectors in the process of securing the financial resources of innovation development - is to coordinate their activities in such a way that the various elements of this chain are interdependent and effectively interact.

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**INNOVATIVE STRATEGY FOR  
DEVELOPMENT OF ECONOMIC  
ENTITIES AS A FACTOR OF THEIR  
COMPETITIVE ADVANTAGES**

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**COMPONENTS OF  
THE ECONOMIC  
ENTITIES  
POTENTIAL BY  
TYPES OF  
ECONOMIC  
ACTIVITIES IN THE  
SYSTEM OF SOCIO-  
ECONOMIC  
DEVELOPMENT OF  
REGIONS**

It is known that the profitable activity of economic entities allows not only to pay wages and dividends in time, but also to invest in their own development and pay taxes in proper time, which, in turn, ensures the creation of a favorable investment and innovation climate, the timely implementation of state social programs. Taking this into account, the components assessment of the economic entities potential has a call to ensure the most efficient use of resources, their stable operation, ensuring upward development, protection from external and internal threats. In conditions of harsh competition, it is advisable for the business owner not only to carry out strategic positioning of the goods and the enterprise itself, but also to develop tactical actions on the basis of a detailed analysis of the enterprise's potential. The analysis of the

economic entities potential consists of the assessment of potential components and covers a large amount of qualitative and quantitative indicators. Based on the analysis of the potential components, the person interested in its assessment can coordinate their actions to eliminate the negative factors of influence on the activities of the business entity or will push for the stronger factor development.

It is known, that in post-conflict environment operation, enterprises are exposed to a number of external and internal factors that hinder their dynamic development or threaten the achievement of particular goals. These aspects are of particular importance in modern economic conditions. The development of domestic enterprises analysis over the past decade shows that the activities of more than one third of them are unprofitable, this affects the state of the national economy and carries significant threats. During 2010–2018 the total number of loss-making enterprises in Ukraine increased from 32.5 to 41.0 %. The situation is even worse in various economic activities, where the number of unprofitable enterprises increased by 8–15% during this period.

It is worth to note that entrepreneurship is the basic factor of financial stabilization and capitalization of the national economy, as it contributes to the development of the real economy, increasing in production, industrial, scientific and technical potential of the state. The development level of entrepreneurship determines the level, quality and direction of economic development of the country, so it is important to systematically analyze the dynamics and characteristics of the development of entrepreneurship for timely response and adequate decision-making, which will activate and intensify the development of the national economy. Analyzing the level of entrepreneurship development and its role in the national economy, it is necessary to study such activities beyond the spheres, as well as types of economic activity, since the economy of any country is a single system of business entities of interrelated economic activities and spheres of production.

The state is interested in carrying out a comprehensive assessment of economic entities potential to understand the strengths of economic activity and the possibility of building a rational strategy for the development of certain sectors of the Ukraine's economy. The creation of development strategies is based not on the general analysis of the existing sectors of the economy, but on the assessment of the potential of economic entities by type of economic activity, will allow to achieve an increase in the level of gross domestic product, to establish new economic relations with foreign countries and to develop effective

domestic economic policy.

From the perspective of theoretical innovations and achievements of introduction of innovative economy modern models by the leading states, the question of definition and assessment of various level economic systems potential and economic entity potential becomes aggravated. There are different approaches to the content-structural consideration of the potential. In particular, there are economic potential, economic, scientific and technical, intellectual, industrial, personnel, innovative, etc. Under the influence of integration trends and innovative theories of development, more attention is paid to the content and structure of the innovative potential of economic entities [5].

For a clear understanding of the problem and a reasonable solution of the question, it is necessary, firstly, to clarify the understanding of the terminology of the subject of research itself. Therefore, it is advisable to consider and define such concepts as "potential", "economic potential", "innovative potential", it will correspond to the purpose and content of the study.

There are many definitions of potential. The term "potential" comes from the Latin word "potentia", i.e. power, which means source, possibility [8].

In our opinion, the concept of "potential" includes resource opportunities, uncertain reserves, the entire elemental composition of the means of production, creative energy and other components that are able to create new products, services or to carry out development and self-development during its use.

However, the concept of "potential" can be considered in three aspects:

- 1) as accumulated capabilities, power;
- 2) as resources discovering hidden opportunities;
- 3) "potential" is appropriate to consider, depending on development objectives.

According to K. Marx, the means of labor, objects of labor and workforce as production factors and elements of a new product creation are the opportunities that determine the potential, that is, to further transforming the opportunities that have arisen into reality, they must be connected [9].

Developing this idea, the author introduces into the theoretical concept of potential not only its structural components of the resource base, but also the possible effect of their internal interaction (synergy). He proves that the potential is also a category of comparative value,

since the potential of any object (economy) is determined not only by itself, but among the same objects.

The author's opinion is confirmed by the conclusions of other scientists. For example, M. Ivanov claims the efficiency of economic development to be the achieved level of resource use, which almost always does not coincide with the potential characteristics of the production facility [4], that is, in his argument, "potential" is always used partially, and therefore, it is not a clearly fixed value. This definitely is logical and therefore it is difficult to disagree with.

To confirm the above mentioned, in the modern dictionary of the Macmillan economic theory the following definition of the potential volume of production is given as maximum possible volume of production of the firm, industry area, sector of the economy as a whole, due to the availability of factors of production [12]. The concept of "the maximum possible volume of production", taken separately, also does not answer either the quantitative or the qualitative side of the content of the concept of "potential", because under different conditions of influence, "the maximum possible volume of production" cannot be fixed or stable.

A large number of scientific papers that deal with the definition of "potential" term, devoted to the disclosure of the concept of "economic potential". The analysis of these publications reveals differences in the definition of this concept. The study identified four different approaches to the description and definition of the term, which allow a better understanding of the concept of "economic potential".

The first approach is based on the economic potential awareness as the aggregate capabilities of the economic complex sectors. Economic potential is the aggregate capabilities of society, that form and maximally satisfy the needs for goods and services on the basis of optimal use of resources that are available in the conditions of specific socio-economic relations [8]. This approach emphasizes the production function of the economic complex.

The second approach is based on the definition of economic potential as a set of resources. Thus, when considering the term "potential" and its characteristics, the concepts of "resources" and "opportunities" have different interpretations. The first concept is considered closer to the understanding of potential as capital, and the second – as implementation mechanisms, i.e. "driving forces".

L. I. Lopatnikov [10] understands the economic potential as "the generalized ability of the economic system to produce products, to solve

various problems of economic and social development". From this statement it can be understood that this ability of the economic system is determined by the state, infrastructure, availability of reserves of natural resources and other elements of national wealth, socio-cultural level, scientific and technical level of production and level of science.

Ye. P. Horbunov [3] has another point of view on the definition of the term "potential", uniting the concept of "economic power" and "economic potential". Unfortunately, these generalizing definitions do not reveal the essence and structure of potential, but they outline the limits of the term's application in economic development. These are forces, resources, reserves, opportunities that are real and appropriate to involve in the economic process.

This approach is based on the definition of potential in terms of its relationship and the ability to create synergies effect as a result of the rational interaction of the production system "employee – management". In this interpretation, the economic potential is not a constant. It depends on the profound quantitative and qualitative changes taking place in society as a whole.

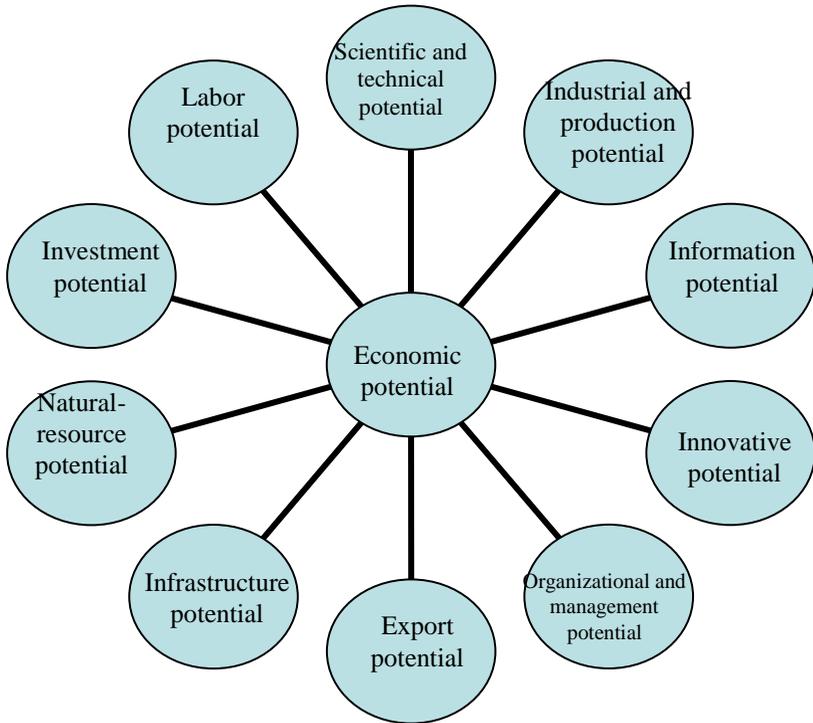
Economic potential is usually measured by index of the produced volume of national income. But, in our opinion, the physical volume of national income reflects more productive rather than economic potential, determined by the growth of social utility, that is, the ability of the economic system to meet social needs.

Thus, economic potential, as a definition, is often used to evaluate macro-level systems, providing them with the characteristics of the resource base, capacity and utility. From the point of view of economic relations and reproduction processes, this approach is logical. But at the regional level, it may be considered more appropriate to use the concept of capacity as a driver of growth and development.

Recently, in connection with the informatization and intellectualization of social production, information and knowledge have become an independent factor of production, a source of social wealth, and hence the basic structural element of economic potential. Modern economic thought is characterized by a distancing from the exceptional importance of individual factors of production, especially since the ratio of the economic value of individual factors of social production does not remain unchanged. For economic entities, the export potential – the ability to produce products that are competitive on world markets and export it in sufficient volumes at world prices – has also become important.

If the meaning of the most integrated parts makes economic potential (and this is quite logical), its structure can be represented, as shown in Figure 5.1.

According to Figure 5.1, it is clear that innovation potential (IP) is a component of economic potential. Therefore, the study of innovative potential, firstly, is unquestionably linked to all components of economic potential, and secondly, it is based on the interaction between the whole "family of potentials".



**Figure 5.1 Components of economic potential**

From the potential as a sum of components perspective, firstly, one can distinguish a number of its features, namely: economic, personnel, intellectual, natural resource, scientific and technical, production, information, infrastructural, innovational – and consider it as a dynamic system, which is characterized by inequality and fuzzy certainty of

structural elements and functional properties. Secondly, in the understanding of potential, the main importance is the focus on resources, but in their wide range: economic, intellectual, infrastructure etc. The resource component is important, since it is not the only one in the structural model of capacity. Another part of it is opportunities, that is, existing, not yet used opportunities. Thirdly, potential should be considered as a productive force for development, that is, the ability and capacity to achieve socio-economic development, in particular through the mechanism of enhancing interregional relations.

The variety of the potential characteristics does not allow to formulate its definition. In widespread use – in economic science and practice, it is increasingly consolidating its main characteristics, although the very dynamics of real changes in society require a revision of the principles, as for the concept of "potential".

In widespread use in economic science and practice, it is increasingly consolidating its main characteristics, although the very dynamics of real changes in society require a revision of the principles, as for the concept of "potential".

Despite this, we share the view that "important moment is in different possibilities of using the potential, i.e. the fact is that the only existing potential of various control systems can be used with different efficiency (ECE). The ability to use resources is also an integral part of the potential itself – this part of the resource is placed by us "inside" the structure of the potential» [2].

To understand the "potential" of economic entities by type of economic activity, we consider the types of economic activity of the country separately.

One of the most important conditions for the development of national statistics adapted to the conditions of a globalized economy is the creation and implementation of a modern system of national statistical classifications harmonized with international ones. The introduction of statistical classifications makes it possible to raise the statistical analysis of the state of the national economy to a qualitatively new level and to forecast on its development, the study of cross-sectoral problems. Statistical classifications should be based on fundamental methodological foundations to ensure the information unity and integrity of the collected statistical information, the possibility of integration into the process of international information exchange, which is a prerequisite for entry into the community of developed countries. The system of statistical classifications is not static and therefore, despite

changes in the world economy and society, there is a need to revise the central statistical classifications. Statistical classifications are reviewed at least once every 5 to 10 years [6].

The Standard Industrial Classification (hereinafter referred to as the SIC) establishes the basis for the preparation and dissemination of statistical information on economic activities. The basic principle of SIC is to bring together enterprises that produce similar goods or services or use such processes to create goods or services (i.e. raw materials, production processes, methods or technologies) into groups [6].

The main purpose of SIC is to identify and code the main and secondary types of economic activities of legal entities, separate divisions of legal entities, individual entrepreneurs [6].

The main type of economic activity is a defining feature in the formation and stratification of aggregates of statistical units for state statistical observations. The institutions of state statistics calculate the main type of economic activity on the basis of the data of state statistical observations in accordance with the statistical methodology for the results of the activities of enterprises for the year [6].

Thus, with regard to economic entities, "potential" should be understood as a system in structure of which all the components create a mechanism for the development of the economy as a whole.

The economic potential of Ukraine can be described as stable. Still it is a shaky stability. Today, existing enterprises that operate on the territory of Ukraine cannot be an "engine" for the state to enter the leading place on the world stage, as in addition to insufficient financial support, there is no proper level of infrastructure development. A new innovation policy can change the situation for better, in the understanding that innovative development will be the most influential push to the development of the country in all aspects: economic, social, cultural and political. The transition to innovative development is based on stimulating the use of research results, intellectual activity, development of knowledge-intensive industries and priority areas of economic reform [5].

In order to implement the above given elements of the new economic policy, it is necessary to activate and stimulate the existing scientific, technical and intellectual potential. The use of intellectual potential is on the agenda of the development of all post-soviet states. The existing problems of "brain flow", stolen ideas, exploratory research without further development of the project and its implementation, invitations from foreign companies to domestic young scientists, postgraduates and

students for work and study suggests that in Ukraine there is a capable potential, but the conditions for its development, operation and deployment are insufficiently formed.

Ukraine is a potentially rich country. But over the years of independence, a number of issues related to the development of the country have accumulated that need to be solved.

The impulse for engaging in innovation activity is:

- market model development;
- maintaining the competitiveness of enterprises and companies;
- change in consumers` demand and desires;
- diversification, development and modernization of new or existing technologies.

Therewith we note that innovation activity is controversial, it combines two motivational series: the motivation of the business process and in many ways the opposite motivation of scientific research [1].

Currently there are a lot of methods of assessing the potential of economic entities that are based on various mathematical, graphical and analytical models, matrix, logical and linguistic methods etc. The analysis of literature showed that depending on the basic evaluation criteria among the existing concepts one can identify resource, comparative and initial one, while among the methods of evaluation one should identify: expert, grade, analogy method, factor analysis, methods of mathematical programming.

All existing methods of capacity assessment have their positive and negative sides, which accordingly affect the quality of the final result. However, none of them takes into account the cyclical development of economic entities, which, in our opinion, is quite important aspect in the evaluation process.

The potential of business entities is a complex, dynamic, integrated, interrelated and synergistic set of all types of its available and prospective resources and opportunities used to achieve tactical and strategic development goals of business entities at various stages of their life cycle.

Basic methods of assessing the potential of economic entities and their components [5]:

- expert;
- grade;
- rating;
- comparative analysis;

- analogy method;
- factor analysis;
- methods of mathematical programming.

Groups of methods for assessing the economic potential of an industrial enterprise [5]:

- methods of indirect assessment (indirect assessment of the potential of the enterprise is carried out using the actual values of indicators that characterize the results of its work);

- methods of direct assessment (direct assessment of the economic potential of the enterprise is an assessment of the capabilities of the enterprise in the future).

The authors propose algorithm for determining capacity.

The basis for the development of a new approach and applied algorithms for assessing the potential are the following positions [5]:

1. The Ukraine`s development requires more attention from institutions and practices, and not so much from the point of view of existing imbalances in the regional structure and the characteristics of individual regions, but rather from of interregional interactions activation. The care of special zones, priority territories, industries or activities, of course, does not lose its importance, but the real systemic success in the development of the country depends on the effective interaction of policy and the one at the interregional level.

2. To maintain and activate such interaction between economic entities, it is necessary to significantly improve the informational base of communication links in the scientific and educational sphere, interregional production flows and during the implementation of mutual projects and programs.

In modern statistical reporting this informational direction is presented in a very limited data and characteristics version. From this point of view, it is advisable to introduce the components of expert evaluation and logic of analysis of auxiliary characteristics of interaction (secondary features) into the practice of modeling, evaluation of innovative potential and effect of regional interactions.

3. Since the current practice of assessing the potential of economic entities has accumulated a significant amount of effective information and evaluation experience (mainly through taxonomic calculations, that is, the construction of private indicators to a single integral), these developments are logical to take as a basis, and new calculation schemes, which used indicators of interregional relations, in particular, the mechanism for adjusting the previously obtained assessments and

models of ranking of business entities on a scale, which reflects their innovation.

4. The assessments quality largely depends on the information available, its completeness and reliability, as well as on the correct choice of mathematical and computing tools. Therefore, the economic content of the relevant modelling apparatus includes the choice of adequate types and models, capable of reflecting the essential characteristic of the phenomenon or process investigated.

For Ukraine in the transition period, it is important to choose a direction of development based not only on state support, but also on the actions of the regions themselves. There are significant problems on this direction, namely: the loyalty of local markets, political regionalization, the gap between the socio-economic level of development of economic entities, imperfect fiscal and transfer policy. It is also known that the solution to these problems is affected by the lack of time and resources, still there are enough opportunities for this in Ukraine.

Due to its location and area, Ukraine has a significant potential, which is currently not in use. Therefore, the grounds for internal economic integration and for a breakthrough into the world economic space should be considered as a development strategy aimed at enhancing international relations with the participation of regions and interregional cooperation of the country's regions.

This strategy should solve the problems of qualitative analysis based on reliable information, the formation of the foundations of a new concept of regional self-development, increasing the responsibility of the regions for the state of their domestic markets and ensure their own competitiveness. The specific of the tasks of inter-regional interactions is the most important.

As global trends in Ukraine manifest themselves with a low level of efficiency, there is only one way out – to find own way and own development method. First of all, one needs to focus on the competitiveness of the regions, which depends on a new stage of reforms and transformations in the economy. The new stage of reforms provides two basic directions – information and organizational work.

Regional statistics on innovative development reproduce the crisis phenomena in the economy, but it practically does not give an idea of the state of interregional relations. Thus, the study attempts to combine statistical data characterizing the innovative component of development and expert assessments that reflect interregional cooperation in the assessment of innovative potential. For this purpose, the task of using

mathematical methods that can derive generalized results is set.

Combining such components as the availability of an information base, a significant and structural content of development potential and logic (in connection with this, in fact, the innovation potential is estimated) from a large number of mathematical methods, it is necessary to focus on the method of taxonomic analysis of the generalizing indicator of the development level [13]. This method is more and more successfully used in the economy of innovative type.

To solve the main task of the investigation, that is, to assess the potential of economic entities, it is advisable to apply a multidimensional analysis of socio-economic systems.

To calculate blocks in multidimensional analysis of socio-economic systems it is logical to use a special economic package Statgraphics Plus V5.1 International Professional.

It is known that economic objects have a complex, branched and heterogeneous structure, and consequently, a set of features. Therefore, the first step of data processing is to check the array of indicators for their uniformity, while using the method of cluster analysis.

The use of cluster analysis in the economy gives positive results if one has to deal with a significant number of objects. It allows to achieve structural stratification of the characteristics of objects into groups, taking into account the main features of similarity. The study uses hierarchical cluster analysis, which has advantages in the case of calculations of large sets of indicators.

V. S. Ponomarenko and L. M. Malarets [14] believe that the basic idea of hierarchical algorithms is the following: in the first step, each the object is considered to be a separate cluster; the next step combines the two nearest objects to form a new cluster, and then repeats this procedure until all objects are combined into one or more base clusters.

The results of the hierarchical procedure can be summarized in the form of a dendrogram, which shows the numbers of combined objects and the degree of similarity ( $S_{ij}$ ), by which these objects were combined. Objects are grouped to clusters according to the degree of similarity between them [5, 7, 11].

The opposite concept to the degree of similarity is the distance between objects ( $d_{ij}$ ). The similarity measure (0-100%) is useful at the final stage for better interpretation of the results. The dendrogram is usually obtained by the level of similarity  $S = (50 - 60)\%$ .

For admission procedure of distance between the clusters, the principle (method) of Ward was used, according to it two clusters are the nearest, if in case of their unification increase in total variance minimizes [5, 7, 11]. The calculation of the function is given in the form of the average group sum of squares, or the sum of squares of deviations (SSD), and is calculated by the formula [14]:

$$CKB = x_j^2 - \frac{\left(\sum_j x_j\right)^2}{n}, \quad (5.1)$$

where:  $x_j$  – sign value of the  $j$ -th object.

In the operational data analysis, it is desirable to carry out rejection of signs by the variation coefficient up to 5%.

Taking into account the specifics of regional problems, the standardization is used according to the formula [5, 7, 11]:

$$z_i = \frac{x_i}{a_i}, \quad (5.2)$$

where:  $a_i$  – is a defined (economically reasonable) reference value of the value of this characteristic (if this value is known).

In the similar studies the problem of the classification (by signs) stability requires to be solved. The result of the classification in the reduced space is safer than in the multidimensional. A small number of parameters is easier susceptible for meaningful perception and further analysis than a large number of ones.

In case of reducing the space to dimension 1–3, the data becomes visually observable and visibility is useful in all respects: reducing the number of features leads to simplification of computational classification procedures. To reduce the space of signs, it is firstly advisable to use factor analysis, which, based on objectively existing dependencies between indicators of signs, allows to perform part of the reduction of the space of signs [14].

The next stage of the algorithm for solving the problems of research

is choosing object metrics (Euclidean distance). In order to achieve this, any object in the totality is described by a point  $m$  and its degree of similarity is defined as the distance to each of the other objects in the population.

Euclidean distance is calculated as follows:

$$d_{ij} = \sqrt{\sum_{k=1}^m (z_{ik} - z_{jk})^2}, \quad i, j = \overline{1, n}, \quad k = \overline{1, m}, \quad (5.3)$$

where:  $d_{ij}$  – the distance between  $i$ -th and  $j$ -th objects;

$w_k$  – weighting factors of  $k$ -th indicator;

$z_{ki}$  – the value of  $k$ -th indicator accordingly for  $i$ -th object for standardized values;

$z_{kj}$  – the value of  $k$ -th indicator accordingly for  $j$ -th object for standardized values.

The distance between objects is mostly defined as a potential function:

$$S_{ij} = \frac{100}{1 + d_{ij}^2} \quad \text{або} \quad S_{ij} = \frac{100}{1 + \frac{1}{2}d_{ij}^2}. \quad (5.4)$$

It is needed to note, that when  $d_{ij} = 0$  we obtain  $S_{ij} = 100$ , and when  $d_{ij} \rightarrow \infty - S_{ij} \rightarrow 0$ .

Using cluster analysis in the study, we distribute 27 regions of Ukraine for four clusters in order to find a standard for selected features in each cluster separately.

The formation of the standard in each cluster is conducted based on the principle of establishment, in the study the maximum standards for each group was set.

The selection of mathematical methods for the construction of generalizing indicators is based on the list of mathematical and practical problems formed in the economy. When determining the taxonomic

indicator of the development level (V. Plut) [13] one solves computational problems.

The problems of calculating the values in the calculation of the taxonomic index consist of calculating the values of  $a$  and  $b$ . Value  $a$  – is the number of standard deviations in fractions of  $b$ , which can be equal to 2, if the distribution of the characteristic is symmetric, or 3 – in general case. Usually  $a$  accept as equal to 3. Undoubtedly, if the task requires to achieve a certain accuracy, all indicators should be diagnosed on symmetry [14].

The procedure of the evaluation process, that was considered, reflects the implementation of the taxonomic method in the formation of the integral index. Prior to this, various methods of forming a standard are acceptable. When using the Minimax criterion in the formation of the standard with the use of normative values (planned or expert) one can compare objects to each other.

In the economic problems solution at the level of regions of comparative analysis application regarding the standard is legitimate as all data on all indicators were estimated on a uniform set of indicators.

According to the data obtained, the conclusion is made – the identified leaders of economic entities by types of economic activity in the system of socio-economic development of the regions.

### **Conclusion**

In the paper attention is paid to theoretical models of development, which includes global trends in the development of technological transformations, updated economic mechanisms and strategies for achieving competitive advantages in the market environment that is possible bringing to life when increasing the capacity of economic entities. All of this is naturally focused on the needs of society, the state and individual interests of the subjects of production and the market.

Experience in the development and implementation of Strategies for socio-economic development of the regions indicates a huge number of different approaches to their implementation, both in the theoretical and conceptual framework and practically. Various methods and tools are used to achieve the strategic objective planned. Still it often happens that the method used is not suitable for solving a specific problem and achieving the results planned, as it does not cover the complex (system) as a whole, but individual projects that are mostly unrelated to each other.

The article also reflects the approach to the assessment process of the economic entities potential. The usage of the economic entities potential

assessments by types of economic activity in the management practice of innovative development of regions is introduced, this contributes to the reform, strategic planning and innovative design of regional development, the creation of a data bank, the formation of regional policy.

To achieve consistency in the regional development management, it is necessary for local authorities to use a unified management technology that combines the modelling processes, design and management of the region's potential. In this sense, an understanding of the economic entities potential in its three values for the region is also propose, namely: the starting base of the region`s state, the resource potential of the region development, the assessment of the conditions for the formation of the regional development management system.

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**MARKETING STRATEGY OF  
ECOLOGIZATION AS THE  
MAIN DIRECTION IN THE  
INNOVATIVE ACTIVITY OF  
AGRARIAN ENTERPRISES IN  
UKRAINE**

World trends of globalization, rapid technical and technological growth in production, increase in development rates of national markets and as a consequence, strengthening of the competitive struggle set new tasks to business entities. One of the most important elements for solving those tasks is the application of the marketing tools, among which the special attention should be paid to the development of the marketing strategies, hence these strategies determine the main directions of activity and they are aimed at achieving the set marketing goals (Balanovska T.I., 2015).

The objective need for creating a marketing strategy in the agrarian enterprise is connected with the actual need for establishing a stable

market of produce, provision of population with high-quality food products and efficient functioning of the agrarian business sector (Semenyuk S., 2015). Therefore, the issue of forming and implementation of both general and marketing production strategies of agrarian enterprises is crucial.

Nowadays the agrarian sector of Ukraine contains a large number of controversies. It concerns the social-economic condition, difficulties of predicting the results of the economic activity for the prospect, which is caused by a significant level of uncertainty in the sphere, process of Ukrainian integration into the world market. All the mentioned above requires reconsideration of the whole system of business activity in the agricultural formations and development of new strategies for the development of innovations in the sphere.

The output of domestic agricultural products on the European market today acquires a new socio-economic content, and it is necessary to change the priorities in the system of agrarian relations. That is why today there is a process of reconsidering the role of economic and environmental priorities and the obvious advantage is given to the environmentally safe development of the agrarian production. The priority place in the agrarian system should be taken by the environmental quality criterion at the national level, and the need for ecologization the agrarian production. It is beyond any doubt and requires an immediate search for radical ways for its global implementation.

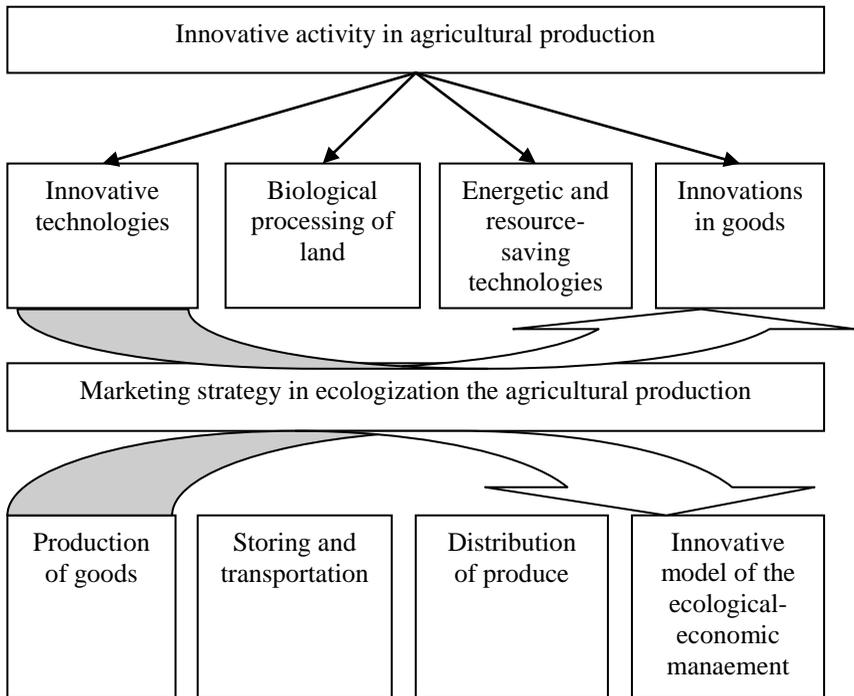
The main way to overcome the environmental crisis that has developed in the agrarian sector of the country is to integrate the interests of the environment and economy in agricultural production. At the same time it is necessary to take into account on the one hand the close correlation of the natural use of agro-systems, the state of the environment and the resource potential of the country, and on the other hand the prospects for the development of the national economy (Volyk N.H., 2006).

The objective need for forming the marketing strategy of production of agrarian enterprises is connected with the actual need for creating the stable market of production, provision of the population with the food and efficient functioning of the agrarian sector of the economy. It contains the grounding of the concept of life cycle of the produce, which determines the development of the distribution amounts and profit from distribution, suggests measures of strategy and tactics of marketing from the moment of appearance of the goods at the market till its disappearance from the market, provides the management on the range

of goods and assortment of the goods of the enterprise, planning of the new goods, including the creation of the trademark, packaging, distribution system, service and so on.

The ecological component in agribusiness implies the scientifically grounded complex of interconnected agro-technical, ameliorative, soil-protecting and organizational-economic measures aimed at efficient use of soil, climatic resources, biological potential of plants with the purpose of receiving stable harvests of agricultural crops under the conditions of increased soil fertility and compliance with ecological environmental safety and the grown produce (Minkova O.H., 2016).

At that the output factor in selecting the ecological-economic direction in management of the innovative activity remains the transition of Ukraine to the model of innovative and ecologically balanced development and formation of the marketing strategy (Figure 5.2).



**Figure 5.2 Model of the marketing strategy in the innovative and ecologically balanced development of the agrarian enterprises**

*Source: developed by the author*

In our opinion the base of the marketing strategy should be the innovative component. The strategic approach to production of the agrarian enterprises turns innovation nowadays into the activity and the public factor of the extreme importance.

The innovative component of the marketing strategy includes the application of the progressive, modern scientific-technical achievements, which could help overcome critical phenomena, stabilize and grow the economy and increase the level of competitiveness at agrarian enterprises.

According to the authors, the main innovative direction of the marketing strategy in the agrarian production is ecologization of the agrarian production, which will provide the base for the marketing strategy.

We believe that the marketing strategy of ecologization the production is the strategy of the innovative development, which is based on the rational use of natural resources and marketing potential which makes possible with the help of the extended recovery not only increase the efficacy and ecological safety of the produce, but also provide the powerful capacities for the steady development of agrarian enterprises under the conditions of not stable economic environment.

It is necessary to completely rebuild the character and structure of conducting the production activity of agrarian enterprises considering ecological and economic criteria and requirements. Due to that fact, the brand new concept of developing the national agricultural production is needed, moreover it requires the formation of the ideal ecologically safe technical-technological potential and balanced resource production base.

The authors are certain that the radical way of solving the problem in ecological safety of technologies of growing agricultural crops and ecological purity of the produce should be the transition to the organic production as an alternative to the model of the business activity.

As a result, the production activity of the agrarian enterprises should be transformed into the brand new economical-technological background, structural reformation of the production should be made considering ecological factors, legal, requirements and regulations, which is a mandatory condition for overcoming the ecological crisis in the country.

The marketing strategy of ecologization the agrarian production can significantly help in solving the set tasks for it is focused on creating the powerful competitive domestic agricultural sector, capable of providing the growth of production with the high-quality produce and provide the

food security for the population of the country without the negative influence on the environment.

While implementing the main tasks of ecologization, it is possible to significantly decrease the technological pressure on the environment, improve its condition, which will help Ukraine to undertake all international obligations on environmental protection and gradually achieve European norms and regulations in amounts of the boundary level of the negative impact on the environment.

Moreover, it is essential to create the organizational preconditions for implementing the ecologically-focused strategies of marketing. The efficient application of the ecological marketing at the agrarian enterprises in combination with other instruments can provide the implementation of the agrarian policy. Therefore, at the macro-level the ecological marketing in the agriculture can play an important role as an instrument of the agrarian policy (Yashyna I.M., 2016).

For agrarian enterprises, it is possible to determine the main ways of improving the distribution policy while using alternative marketing strategies, which will help achieve the following tasks:

- satisfaction of the solvent demand from customers – restoration of the long-term relations with suppliers and formation of the personal client's base;

- widening the borders of the distribution market, entering new markets and as a result – increase in the number of the loyal customers and increase in the amount of distribution;

- optimal loading of the production capacities;

- achieving the mission of the enterprise and increase in the financial and communicative durability;

- provision of the survival of the enterprise in the long-term prospect and a result – increase in competitiveness and competitive stability of an enterprise and its produce;

- maintenance of the positive image of an enterprise at the market and increase in its communal recognition and as a result – formation of the enterprise's goodwill;

- guaranty of the most efficient management over the production stocks of the enterprise;

- organization of the rational implementation of the orders, supply and loading of the ready produce and as a result – decrease in the economic losses and time.

The innovative marketing strategy should differ not only in the scientific-technical innovations, but also should have the complete

calculation: what costs are needed for distribution and what profits are expected. The marketing strategy of ecologization the enterprise implies the combination and cooperation in the spheres of the complex of innovative technologies, directed at the economic growth of the sphere, environmental protection as interdependent and inter-complementary elements of the strategic development of the agrarian enterprises, which would provide the population with the high quality of the produce.

In the author's opinion, for the agrarian production while using the marketing strategy of greening the complex 8P can be universal, which would include the basic components 4P, and additional People, Process, Physical Evidence along with Environment and Perceptual psychology.

The ecological marketing is in principal different from other innovative marketing concepts since it is focused on obtaining the ecological result from the implementation of the set of instruments, at the level of satisfying the customer's needs and profitable activity of enterprises (Prokopenko O.V., 2002).

Ecologically focused complex of marketing in the agrarian business includes formation of the price-creating methods, development of the market infrastructure, optimization of losses on the production of the organic produce under the conditions of the government's support for agro-producers, spread of the distribution and promotion channels of the organic produce, make it more affordable for customers both in price and location terms. Provision of the balance between the economic and environment-protecting interests is one of the targets for implementing the ecological marketing the agrarian production.

The domestic market of the organic produce develops under the influence of the international trends, which are crucial in the sector. Constant increase in the number of the certified companies-producers of the organic produce takes place with the involvement of the international companies, which on the one hand regulates the processes and controls them, on the other hand it promotes the formation of the steady demand for the organic produce by advertising and promoting it.

According to the data of the statistical organizations in the world and international companies which specialize in the production of the organic produce, this type of the agrarian business is highly profitable, which is confirmed by the demand in the highly developed countries, where customers are ready to pay extra for the ecological and organic in nature foods (Zaychuk T.O., 2009).

Ecological advantages are possible by not breaking the ecological balance and not harming the environment, it can solve the problem of

providing people with the high-quality foods.

The contemporary trends on developing the market of the organic produce in Ukraine are under the influence of the world or global trends.

The complex of the ecological marketing is formed under the influence of certain external and internal factors (Table 5.1).

*Table 5.1*

**Internal and external factors of influencing the complex of the ecological marketing**

External factors	Internal factors
<ul style="list-style-type: none"> <li>- legal limitations and regulations;</li> <li>- demands of the national and international standards;</li> <li>- efficiency of the costs;</li> <li>- ecologically focused requirements of the public;</li> <li>- ecological awareness of the society;</li> <li>- competitiveness of the not ecological produce;</li> <li>- increase in demand for the agricultural produce at the domestic market;</li> <li>- influence of the international society.</li> </ul>	<ul style="list-style-type: none"> <li>- level of competitiveness of the agrarian enterprises;</li> <li>- degree of consideration and ability of the agrarian enterprises to resolve ecological-economic problems;</li> <li>- degree of the environmental friendliness of the used raw materials;</li> <li>- degree of the destructive influence on the environment of a certain enterprise;</li> <li>- target setting from managers, directed at resolving the ecological problems;</li> <li>- image of the enterprise from the point of the ecological outlook.</li> </ul>

*Source: developed by the author*

The provided groups of factors should be considered while forming the possible multiple directions of developing agrarian enterprises on production of the ecologically safe produce.

For today in Ukraine the market of ecologically safe agrarian produce functions insufficiently effective and it is connected with the set of reasons: imperfection in the legal base, problems with the price formation, dynamic changes in the competitive environment, imperfect infrastructure and absence of the clear understanding from agro-producers of the shift toward the production of the organic produce (Melnyk P.P., 2014).

Hence, the selection of the marketing structure means first of all, the selection of measures by which the enterprise will resolve the set tasks. This selection is complicated by the multiple variants of different

strategies, as well as features of the marketing development, state programs in the area, and the level of the legislative framework.

It is essential to realize the advantages of the strategically-focused enterprises:

- to set to minimum the influence of the negative changes as well as the factors of «the uncertain future»;

- there is a chance to consider the objective (internal and external) factors;

- an enterprise has become more manageable, since if there is a system of strategic plans, there is a chance to compare the achieved results with the set goals, specialized in the form of the plan tasks, clearly set strategic purposes of an enterprise;

- there is a chance to establish the system of stimulating the development of the flexibility and adaptation of the enterprise to changes;

- provision of the implementation of the strategic plans based on the corresponding system of regulation, control and analysis in case of dynamic changes in the environment;

- development of the resource potential and the system of external connections provide a possibility to achieve future aims;

- there is a more efficient distribution process of resources and their concentrations for achieving the set goals;

- there is a chance to predict the possible risks of the enterprise's activity.

Thus the efficient choice and grounding of the marketing strategy of distribution of the organic produce is based on the main elements of the marketing complex, which are capable of providing the profitability and the development of the agrarian enterprise in the long-term prospective and promote the satisfaction of the customers' needs and increase the level of the customers' loyalty to the enterprise.

The process of implementing the marketing strategy of ecologization the agrarian production takes place owing to the ecological-economic mechanism of management, which is based on the measures that in the author's opinion will change the format of relations between the production and the environment toward rational use, restoration of the agro-systems.

Thus, the marketing strategy of ecologization the agricultural production as a strategy of the innovative development is capable of solving the problem of the economic growth, increase in the competitiveness of the agrarian sector, provide a high level of life,

national security, environmental protection and a high technical level of the agrarian production in Ukraine. However it is worth stating that we consider not only one-time application of the innovations for achieving the immediate benefits, but also the continual carefully planned strategic innovative development, which forms the methods and measures of managing innovations, which will provide the connection of innovation and technologies with the general aims, turning the intensive implementation of the innovative processes into the factor of the economic growth in the sector.

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**DEVELOPMENT  
STRATEGY OF  
ECOTURISM  
ENTERPRISES AS A  
FACTOR OF INCREASING  
THEIR  
COMPETITIVENESS**

At the present stage, the sphere of tourism in Ukraine is an intensively developing branch of the country economy: the popularity of tourism as an active recreation is growing, its geography is constantly expanding, new directions and types of tourism are being created. Taking into account the current financial situation in the global market, it is advisable to predict the dynamic development of the domestic sector of the economy. In this regard, the demand for all types of recreation in Ukraine will increase. One of the most popular is ecotourism, where, ecotourism enterprises are some of the most important segments of the tourism sector. According to experts opinion, ecotourism enterprises will receive priority development in the near future, taking into account their focus on the rational use of natural, historical and cultural objects; forming of the ecological outlook of the population, which will allow to avoid many of the negative effects of mass tourism. Besides, the experience of foreign countries shows that ecotourism enterprises contribute to social and economic development as a whole.

The scientific developments of domestic and foreign scientists are devoted to the problems and prospects of development of ecotourism enterprises both in Ukraine and in the world. T.V. Bochkareva examines the modern concept of ecotourism, assesses the possibilities of applying the experience gained in the conditions of small cities of Ukraine. In turn, A.S. Kuskov defines the main goals and criteria with which ecological tourism must conform, the diversity of its directions. V.V. Khrabovchenko explores the prerequisites for the birth and history of the

development of ecotourism enterprises, the concept of sustainable development of modern tourism.

Problems of development of ecotourism enterprises are reflected in the publications of domestic and foreign scientists; however, the possibility of the impact of ecotourism enterprises on the socio-economic sphere of Ukraine is not fully disclosed and necessitates further research on this issue.

The main objective of the proposed research is to determine the degree of socio-economic impact of the development of ecotourism enterprises on modern society and the formation of a strategy for the development of ecotourism enterprises, increasing their competitiveness.

Ecotourism is a nature-oriented type of tourism, which is a journey to places with a relatively unharmed habitat, in order to get a notion of the cultural, ethnographic and natural features of the area, without disturbing the integrity of the ecosystem by the traveler, which is carried out in accordance with the principles of environmental sustainability, while making the protection of natural resources beneficial to local residents [1]. Distinctive features of ecological tourism lie in the fact that it can prevent a negative impact on nature and force enterprises in the field of ecotourism to promote nature conservation and the socio-economic development of Ukraine as a whole.

The process of ecotourism involves the local population, which is interested in using natural resources based on entrepreneurship. The economic essence of enterprises in the field of tourism must necessarily have the features of «environmental friendliness», without disturbing the natural balance. All types of enterprises in the field of tourism, in fact, should contain environmental and cultural components, have general educational goals and educational orientation.

Modern economists and researchers have identified five main criteria for compliance with the activities of ecological tourism enterprises:

- orientation to nature, the use of mainly natural resources;
- minimization of damage;
- focus on environmental education, education and the formation of relations of equal partnership with nature;
- focus on the preservation of the local socio-cultural sphere;
- economic efficiency from the standpoint of sustainable development of eco-tourism regions.

Ecotourism is usually understood as an active and informative recreation of people visiting ecologically clean places, natural reservations, national parks and reserves, and balneological institutions [2].

A necessary component of ecotourism enterprises is government support and regulation of the development of the tourism business. According to Decree No. 168-r of the Cabinet of Ministers of Ukraine dated March 16, 2017, the government approved the Strategy for the development of tourism and resorts for the period up to 2026. The document was developed in order to create conditions for the accelerated development of the tourism sector (including ecotourism) and resorts, turning it into a highly efficient industry integrated into the world market. The introduction of the Strategy is assumed in the main areas:

- ensuring the safety of tourists and the protection of their legitimate rights and interests;
- the implementation of EU legislation in the field of tourism;
- ensuring the integrated development of territories, including the creation of favorable conditions for attracting investment in the development of tourism infrastructure;
- improving the system of professional training of tourism specialists;
- the formation and promotion of a positive image of Ukraine as an attractive country for tourism [3].

The implementation of the strategy is assumed at the expense of state, local budgets and other sources that do not contradict the legislation, and the amount of funding will be determined annually, taking into account specific objectives and real possibilities.

The main purpose of state regulation is to protect the environment. Tourism business is associated with the use of natural recreational tourism resources in the form of medical and recreational areas, lands, forests, water resources, nature reserves, national parks, resorts, etc. Since, according to the law, natural resources are state-owned, in a mixed market economy their use in tourism is based on rental relations.

For the formation of a positive image of enterprises in the territories of ecotourism, it is necessary to have a set of factors of effective functioning: a sufficient degree of economic development, the formation and development of infrastructures, services, transport, environmental component, the presence of recreational resources and the overall investment attractiveness. A positive image of the territory is necessary to attract private capital into the country – some of the types of additional investment [2].

Table 5.2 presents the volume of direct investment in the economy of Ukraine by type of economic activity for 2014-2018.

Table 5.2

**Dynamics of the volume of direct investment in the economy of  
Ukraine by type of economic activity for 2014-2018 (US \$ million) [4]**

Areas	2014	2015	2016	2017	2018	2018 in % to 2014
1	2	3	4	5	6	7
Agriculture, Forestry and Fisheries	776,9	617,0	502,2	586,2	578,6	74,5
Industry	17 681,4	12 419,4	9 893,6	9 667,6	10 543,7	59,6
Construction	1 580,0	1 301,9	1 104,1	1 043,3	919,5	58,2
Wholesale and retail trade; repair of motor vehicles and motorcycles	6 807,8	6 037,6	5 247,4	5 106,5	4 957,8	72,8
Transport, storage, postal and courier activities	1 535,3	1 355,5	1 088,0	1 086,0	985,3	64,2
Temporary Accommodation and Catering	446,5	382,3	332,6	330,0	343,3	76,9
Information and Telecommunicatio ns	1 894,7	1 646,2	2 089,4	2 075,7	2 100,1	110,8
Financial and insurance activities	12 261,4	6 421,7	4 350,1	3 627,4	3 526,3	28,6
Real Estate Operations	4 768,3	3 979,4	3 882,1	3 764,4	3 796,3	79,6
Professional, scientific and technical activities	4 006,8	2 634,5	2 222,6	2 253,5	2 131,1	52,9
Administrative and support services	1 686,9	1 340,2	1 222,7	1 507,3	1 550,9	91,9
Public administration and defense; compulsory social insurance	0,1	0,1	*	*	*	-
Education	12,0	10,7	16,0	21,8	21,2	176,7

*Table 5.2 (continued)*

1	2	3	4	5	6	7
Healthcare and the Provision of Social Assistance	59,9	50,7	44,0	44,5	36,6	61,1
Art, Sports, Entertainment and Recreation	157,0	141,0	112,5	100,7	98,8	62,9
Providing other types of services	28,9	18,4	*	*	*	-
<b>Total</b>	<b>53704,0</b>	<b>38356,8</b>	<b>32122,5</b>	<b>31230,3</b>	<b>31606,4</b>	-

*(The data do not include the temporarily occupied territory of the Autonomous Republic of Crimea, Sevastopol, as no part of the temporarily occupied territories in the Donetsk and Luhansk regions)*

Analysis of the data in Table 5.2 shows that over the past five years, the volume of direct investment has decreased in almost all sectors of the economy of Ukraine. The only exceptions are the «Information and Telecommunications» and «Education» sectors, the indicators of which increased by 10.8% and 76.7%, respectively. As for the sectors «Agriculture, Forestry and Fisheries», «Temporary Accommodation and Catering», «Healthcare and the Provision of Social Assistance» and «Art, Sports, Entertainment and Recreation», their investments decreased by 25.5%, 23, 1%, 38.9% and 37.1% respectively.

The study of modern economists is based on measuring the amount of capital attracted to a certain territory through the use of a tourist «multiplier», which reflects an indirect impact on the social sphere and the economy of the country.

The tourist multiplier is one of the most comprehensive indicators of the effectiveness of the development of the tourism industry, which is calculated based on a study of tourist demand using the analysis of tourist expenses.

H. Clement considers the tourist multiplier as the annual turnover of 1 dollar of tourist spending, which generates the economic activity of the region. According to Gulyayev, the tourist multiplier is the coefficient of the indirect impact of tourism on the social and economic sphere of this industry at the regional or federal level [5].

Thus, the tourism multiplier can be defined as the ratio of changes in key indicators characterizing the level of development of the industry (income, employment, budget revenues, etc.) to the increase in tourist spending in the region.

The long-term impact of tourism creates a wide multiplicative effect, manifested in the development of related industries: construction, industry, agriculture, handicrafts, etc. As a result, employment increases, and its incomes increase. Thus, the experience of developed countries, in particular France, Spain, indicates that the construction of 100 tourist accommodation places entails the creation of 20 to 25 new jobs to serve them.

The development of ecotourism enterprises in the country has a positive impact on socio-economic indicators. One of the main aspects of entrepreneurship in the field of ecotourism is the assessment of factors of socio-economic impact on the development of entrepreneurship in the field of ecotourism.

The social consequences of the development of ecotourism entrepreneurship can be quite weighty, especially for rural areas of Ukraine. The development of the infrastructure of ecotourism enterprises increases the prestige of the country, creates conditions for the recreation of tourists and the local population in a natural recreational environment. Ecotourism enterprises stimulate traditional forms of using natural resources, growing organic food; increasing investments both for infrastructure and services, and for nature conservation.

In terms of impact on economic indicators, ecotourism enterprises contribute to:

- increase the economic sustainability of the territories involved in the development of ecological tourism enterprises in rural areas by creating new jobs;
- attraction of local people to the service sector;
- raising the living standard of the local population and reducing the level of social tension.

Creating ecological routes and improving the infrastructure of ecotourism in Ukraine contributes to the development of domestic and foreign tourism. Activities aimed at the development of ecotourism enterprises, lead to the creation of new jobs, not only in rural areas, but also in potential travel companies.

Exploring the enterprises of ecological tourism in the ethnographic context, we note that their development can have a positive impact on the socio-economic indicators of communities, small nations, and ethnic groups. In particular, tourists during the trip will become familiar with the values of the culture of the people, applied art, local customs, ensure the availability of jobs and the flow of funds to the indigenous people,

help them maintain the traditional way of life. The tourism business is able to attract new types of natural resources to the economy on continuing basis; development of ecological culture of the population and support especially protected natural areas (EPNAs), the level of state support for which is not sufficient not only for their development, but also for conservation [6].

However, it should be noted that the contribution of ecotourism enterprises to economic development is the greater, the more it uses natural products and materials of organic production, as well as local staff. This is due to the tourist multiplier effect, as well as the factor of «leakage» of income. Despite this, it is worth noting that ecotourism enterprises may have a negative impact on social indicators, since most of the protected areas are not ready for an increase in the flow of visitors, especially ecotourists.

From the point of view of creating new jobs for the local population, they highlight the positive and negative aspects caused by the development of entrepreneurship in the field of ecotourism.

Positive aspects include: a high probability of creating new jobs that do not require high qualifications, which will satisfy the basic needs of the main group of the rural population; the need for qualified personnel to address the main tasks of entrepreneurial ecotourism (translators, guides, managers in travel companies, environmentalists, etc.), which will attract young, able-bodied, active workforce and increase the competitiveness of ecotourism.

The negative aspects include: low-paid, seasonal jobs that do not provide opportunities for career growth; low qualification of the local workforce and insufficient financial resources and competence for independent entrepreneurship.

Considering the above, the strategy for the development of ecotourism enterprises contributes to the creation of a special program that will provide the local population with the opportunity to get real benefits and social benefits from such activities. This is especially important given that in some cases the development of entrepreneurship in the field of ecotourism only enriched a narrow circle of investors and led to greater social stratification. In this context, local residents can view the development of ecotourism enterprises negatively. When organizing social and economic interaction with the local population, it is necessary to preliminarily build a development strategy that takes into account the above aspects.

The development of eco-tourism enterprises requires a real look at

their intended profitability, the competitiveness of the services offered, as well as the possibilities of their promotion. For this, it is important to optimize the level of development of ecotourism enterprises (tourist multiplier) for a given territory and develop a strategy leading to the achievement of this level. Such a strategy takes into account the mandatory principles for the development of enterprises in the field of ecological tourism: the preservation of natural complexes; the creation of mechanisms to increase employment of the local population; the emergence of revenue growth opportunities, both environmental structures and rural areas; development of environmental education. Local and regional governments and EPNAs companies, adopting such a development strategy, will be able to minimize the costs and risks of ecotourism enterprises and maximize their effectiveness. Thus, the development of ecotourism enterprises can have a positive impact on socio-economic indicators.

In this way, the article deals with the problems of doing business in the field of ecological tourism; identified five main criteria to be met by companies ecotourism. Eco-tourism enterprises are usually understood as active and informative recreation of people visiting ecologically clean places, natural reservations, national parks and reserves, balneological institutions.

Displayed factors of socio-economic impact on the development of eco-tourism enterprises in Ukraine, which will lead to increased economic stability of the territories involved in the development of ecotourism in rural areas through the creation of new jobs; attracting local people to the service sector and raising their standard of living; reduce social tensions.

Analyzed the positive and negative aspects of the activities of ecotourism enterprises. The main directions of the development strategy of ecological tourism enterprises with the aim of increasing profitability and competitiveness are considered.

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**RATINGS OF HIGHER  
EDUCATION  
INSTITUTIONS -  
COMPETITIVE  
ADVANTAGES IN  
CHOOSING  
INNOVATIVE  
STRATEGIES FOR  
THEIR DEVELOPMENT  
UNDER  
INTERNATIONAL  
ECONOMIC  
RELATIONS**

**Introduction.** The problem of choosing a strategy for the development of higher education institutions (HEI) is related to the priority issues for entrants selecting a particular university and the position of HEI in international and domestic ratings, namely: The Times Higher Education World University Ranking, QS Top University, Transparent Ranking, Webometrics, UniRank, TOP 200 Ukraine and Consolidated Rating. The study of the relationship between the rank of independent external evaluation (IEE) and the applicant's rating (by the IEE score) becomes particularly relevant in the context of the development of international economic relations and the globalization of educational services characterized by the possibilities of a visa-free regime, the demand of European and world markets for education in entrants from Ukraine, and as well as increasing the capacity of Ukraine's HEI to provide similar services to foreign students.

Perhaps it is impossible to overestimate the level of influence of the quality of education, in particular on the level of development of society as a whole and each state in particular, in the XXI century. Therefore, the scientific community today is sharply asked about ways to raise the level of education of citizens. The only way of this process is to create conditions for the development of educational institutions of all levels by state authorities.

The assessment of the quality of the methodology of world and domestic ratings is devoted to today a sufficiently large number of scientific studies. In particular, scientists: M. Bublyk [1-3], D. Dill [4] A. Kincharova [5], S. Liu [6], K. Tofalsis [7], Tsarenko I.O. [8], Shcherbata, T. [9] and others have devoted their work to the analysis and critique of the methodology of building the world's biggest ratings THE, QS, ARWU.

The main areas of criticism here include the recapitulation of the essence of the criteria, the definition of their nomenclature, the methods of establishing weight coefficients as complex criteria, and the indexes that form them. However, it is not enough to analyze the impact of a rating position on the choice of applicants for a particular institution of higher education. It seems that ratings exist to meet the ambitions of universities, whose representatives are part of the authoring teams of a rating. It remains unclear what the purpose of rating, as well as the consumer value of this expensive and labor-intensive product, as well as the final consumer. That is, the question of the addressee and the influence of the rating position on the quantitative and qualitative composition of the enrolled students' education remains open.

**Purpose and tasks.** The proposed study is intended to analyze the state of modern higher education in Ukraine and the impact of the practice of rating higher education institutions on improving the quality of their educational activities. The task is to formulate recommendations for inclusion in the list of complex criteria of such indicators as the index of the level of comfort of the educational process, namely: provision and condition of hostels, libraries and the auditorium fund, the quality of distance information support of the educational process, the quality of communication processes, "teacher-student", index employers 'assessment of graduates' level.

**Presentation of the main research material.** The rapid growth of the productive role of science, the transformation of scientific knowledge into a product that has a commodity price and brings profit during its consumption is a hallmark of our millennium and will only grow over time. Scientific, as

well as various professional environment of each country forms its system of education. Therefore, the priority task of management policy and decisions should be the development and implementation of a strategy for the development of a quality education system.

Obviously, the possibility of a significant advance in the level of education system over the level of economic and social development is generally limited, but it is precisely this advance that is the engine of economic growth.

According to the Global Competitiveness Index 4.0 [10], the Global Competitiveness Index (GCI) and the index of the first 50 countries in the national education ranking [11] are interdependent. The strict correspondence of the indices is observed in the first 13 positions (United States of America, Switzerland, Great Britain, Denmark, Sweden, Singapore, Canada, the Netherlands, Finland, Australia, Austria, Belgium, Norway).

Due to the indexes density in the World University Rankings Times Higher Education in 2019, we have identified some differences in the ranking of education and rankings in the global competitiveness indices. Significant differences are observed in countries such as Germany (16th and 3rd), Japan (20th and 5th), Taiwan (21st and 13th), South Korea (22th and 15th), Saudi Arabia (26th and 39th), Hungary (31st and 48th) (35th and 57th), Ukraine (36th and 83 rd), South Africa (37th and 67th), Serbia (30th and 65 th), Turkey (40th and 61st), Argentina (41st and 81st) , Brazil (42nd and 72nd), Iran (48th and 89th) respectively.

It should be noted here that in those countries where the index of the national higher education system is far ahead of the GCI in 2018, the growth of the latter is observed, despite the various unfavorable external and internal conditions. Thus, Ukraine has risen in the GCI rating by 6 positions compared with 2017, Serbia and India – 5 (see Table 5.3). This tendency is characteristic of recent years. The transition from an industrial economy to an economy, in which the share of production of an information product, which requires the introduction of innovations, is constantly increasing, will be more closely connected with the level of education of its citizens.

The lack of among the top 50 national higher education institutions in the countries with a high enough rating of the GCI, namely Estonia (32nd position), Malta (36th), Lithuania (40th), Latvia (42nd), Cyprus (44th), Oman (47th) due to the authors' opinion, a small number of people and wide opportunities to obtain higher education outside their own countries.

Table 5.3

**Position in the retentions of national higher education systems and  
global competitiveness indexes and the change in the index and  
position in the GCI rating**

THE Rating	Country	Index of THE	GCI 4.0 2018	GCI Growth	GCI 4.0 2018 Rating	Change of position in the GCI 4.0 rating in 2018 compared in 2017
A	1	2	3	4	5	6
1	United States	100,0	85,6	+0.8	1	0
2	Switzerland	86,9	82,6	+0.2	4	0
3	UK	85,5	82,0	-0.1	8	-2
4	Denmark	83,5	80,6	+0.7	10	1
5	Sweden	83,4	81,7	+0.1	9	0
6	Singapore	80,8	83,5	+0.5	2	0
7	Canada	80,2	79,9	-0.1	12	-2
8	Netherlands	80,0	82,4	+0.2	6	-1
9	Finland	79,9	80,3	+0.5	11	1
10	Australia	79,6	78,9	+0.7	14	1
11	Austria	75,0	76,3	+0.2	22	-1
12	Belgium	74,2	76,6	0	21	-2
13	Norway	73,9	78,2	-0.8	16	-2
14	Hong Kong	73,7	82,3	+0.3	7	0
15	New Zealand	72,1	77,5	-0.6	18	-2
16	Germany	68,8	82,8	+0.2	3	0
17	Israel	68,8	76,6	+0.4	20	0
18	France	67,5	78,0	+0.6	17	1
19	Ireland	66,2	75,7	-0.3	23	0
20	Japan	63,2	82,5	+0.9	5	3
21	Taiwan	60,7	79,3	+0.1	13	0
22	South Korea	59,0	78,8	+0.8	15	2
23	Spain	57,3	74,2	+0.4	26	-1
24	Czech Republic	56,9	71,2	+0.3	29	0
25	Malaysia	56,7	74,4	+1.1	25	1
26	Saudi Arabia	56,7	67,5	+1.6	39	2
27	Portugal	55,8	70,2	0	34	-1
28	Italy	54,5	70,8	+0.3	31	0
29	Slovenia	54,5	69,6	+1.1	35	0

*Table 5.3 (continued)*

A	1	2	3	4	5	6
30	China	52,7	72,6	+0.9	28	0
31	Hungary	50,8	64,3	+0.9	48	0
32	Poland	50,0	68,2	+0.2	37	0
33	Russia	49,9	65,6	1,7	43	2
34	Chile	49,4	70,3	+0.9	33	1
35	Greece	47,7	62,1	+0.3	57	-4
36	Ukraine	47,7	57,0	+3.1	83	6
37	South Africa	46,6	60,8	-0.1	67	-5
38	Slovakia	45,9	66,8	+0.6	41	-2
39	Serbia	44,1	60,9	+1.7	65	5
40	Turkey	44,0	61,6	+0.2	61	-3
41	Argentina	43,5	57,5	+0.1	81	-2
42	Brazil	43,1	59,5	-0.2	72	-3
43	Croatia	42,5	60,1	0	68	-2
44	Romania	41,6	63,5	+1.3	52	0
45	Bulgaria	40,2	63,6	+1.2	51	0
46	Mexico	40,0	64,6	+0.5	46	-2
47	Thailand	39,7	67,5	+1.3	38	2
48	Iran	38,4	54,9	+0.4	89	-1
49	India	36,7	62,0	+1.2	58	5
50	Indonesia	33,3	64,9	+1.4	45	2

*Note: compiled according to [12]*

The pre-analysis of the growing connection between the level of social and economic development of the country as a whole and the level of the national education system sets the task of researchers to develop strategies for the development of educational institutions, in particular higher education institutions (universities, institutes, academies). The development of strategies requires the possession of certain statistical data, which allow for the consideration of objective factors, which, without a doubt, must be taken into account.

First you need to take into account the number of students who will be trained in the coming years. For Ukraine, the decline in the number of students in fact every year is typical. This is due to low fertility, the conduct of hostilities with the Russian aggressor, as well as the opportunity to receive education outside of Ukraine. The first two factors can not be changed by any strategy for the development of educational institutions and its implementation. However, the latter,

obviously, can be greatly reduced or increased by improving the quality of domestic educational institutions. Ensuring the choice in favor of Ukrainian universities of their own entrants, as well as university entrants from other countries is one of the greatest priorities in the development of appropriate strategies.

According to [13], a decrease in the number of applicants was established. The tendency towards a decrease in the number of institutions of higher education has been shown to ensure the stability of the average number of students in higher education institutions.

Taking into account the growing statistics on the choice of Ukrainian entrants in favor of obtaining education abroad and the demographic situation, the struggle for students of each Ukrainian HEI is growing.

The search for ways to attract as much as possible and better prepared young people to the study is often engaged in HEI research groups. One of the important factors influencing the choice of an applicant for the current time is to consider the positioning of an educational institution in various ratings, and as a result, the implementation of purposeful actions to increase these positions.

Powerful Ukrainian universities are increasingly included in the feverish process of bringing their schools to leaders of those or other ratings.

Unfortunately, the possibility of our universities' access to at least 100 world leaders today is an overwhelming task. For reasons of such a reality, a number of articles have been published, the authors of which consider the most significant reason for the significant lagging behind the level of development of the Ukrainian economy from the level of education. According to data released at the World Forum in Davos in 2018, Ukraine ranked 36th in the ranking of higher education systems while ranking only 83 in the Global Competitiveness Index (Table 5.3).

This large gap of 47 positions is not observed in any of the 140 ranking countries. The result is a chronic underfunding of higher education, a low level of orders for scientific developments in the real economy, low implementation of state-of-the-art technologies.

Poor funding does not allow scientific and pedagogical workers to receive decent wages, use modern expensive equipment, and also prevent their full participation in international scientific events – conferences, seminars, etc. Also, the vast majority of universities do not have qualified staff who are responsible for finding and communicating with potential donors and customers of research in the country and abroad, as well as documentary support for the conclusion of various deals.

In the world rankings, the high coefficient has the category "international reputation". The level of such reputation is set by experts who, unfortunately, have very limited opportunities to get acquainted with the gains of Ukrainian scientists due to the extremely limited financial capacity of the physical presence of the latter.

Another reason for the "closure" in this context of higher education is the poor possession of scientific and teaching staff in foreign languages, in particular, in English. Therefore, one of the priorities in university development strategies should be broad support in the study of English: free courses, advanced training, school-workshops with the involvement of language teachers and others.

Therefore, European and American universities and their equivalents, including such components as the number of foreign teachers and students, the number of joint with foreign authors of publications indexed in the WoS, incomes of the institution, revenues for research (from the state and from industry), etc. with large weight coefficients, are the undisputed leaders of such ratings. However, the position of 500+ or 1000+ in Transparent Ranking, Webometrics, UniRank, QS Top University, or The Times Higher Education World University Rankings (or even lacking in rating) of these or other Ukrainian HEI will not be a valid argument for choosing their benefit for the entrant, who has the desire and opportunity to study at universities with a rating of 1+ or even 100+. Therefore, in the proposed study, we do not consider the problems of construction and efficiency of the mentioned ratings.

Given the foregoing, the authors consider it necessary to focus on the analysis of ratings, ranking participants who have only Ukrainian HEI. As well as recommendations on building a strategy for the development of Ukrainian higher education institutions.

Therefore, before carrying out an analysis of the quality of the rating, as part of the marketing activities of the governing bodies of the higher education system, one must answer the question: what goal should be achieved as a result of this marketing activity.

We can assume that the goal is to attract as many well-trained students to study for individuals. Moreover, the percentage of such students is increasing [13].

In Ukraine today, in the marketing of institutions of higher education, such ratings as TOP 200 Ukraine and the Consolidated Rating are widely used. The latter receive a simple summing up of the position in the TOP 200 Ukraine ranking, as well as positions in the

Scopus rating and the IEE score on the contract.

Considering the position in the Scopus rating, authors believe that the indirect effect on the number of applications submitted for a contract of entrants with the high IEE scoree.

The strategy of rapid increase of the university's rating position on the one hand stimulates active scientific activity of scientific and pedagogical workers, which inevitably contributes to the growth of professionalism of the latter. However, on the other hand, teachers still have much less time and energy to perform their teaching duties. Also, the pursuit of the number of publications necessarily negatively reflects on their quality. Unfortunately, the preparation of the publication for today in Ukraine requires authors of time spending not only on research, but also on the creation of a complete English-language layout. This circumstance also has a very negative moral aspect. Translators, collectors and layout makers (or those who pay for it all) often become "co-authors" of publications. This negative and very dangerous tendency can not be ignored. Consequently, the desire of the administration of a certain university to rise as soon as possible in the Scopus rating worsens the moral atmosphere of the teaching staff, and also reduces the opportunities for students to communicate with teachers, which impairs the quality of the educational process.

The strategy of university development, which prioritises the achievement of the highest possible positions in the TOP 200 ranking. There are, in the authors' view, a number of significant drawbacks.

The UNESCO Department of Higher Technical Education, Applied Systems Analysis and Informatics (Ukraine), based on the memorandum concluded between this department and the UNESCO-CEPES Center, performed the project "Identification of the ratings of the best 200 higher educational institutions of Ukraine". The methodology for determining the ratings of universities in Ukraine is as follows.

The general rating index  $I_3$  is integral and is determined by three complex criteria (indexes):

$$I_3 = I_{HN} + I_H + I_{MB} , \quad (5.5)$$

where:  $I_{HN}$  - the quality index of scientific and pedagogical potential, whose values vary in the range  $[0 - 50]\%$  ;

$I_H$  - quality training index, which varies in range  $[0 - 30]\%$  ;

$I_{Me}$  - the international recognition index varies in the range  $[0 - 20]\%$  .

Each complex criterion was determined over a number of years by a group of indicators, the list of which with the corresponding weighting factors is given in Table 5.4 [12].

Weights were determined by a group of experts using the expert evaluation method.

From the table you can draw the following conclusions:

- Indicators have the highest weights. The number of staff members elected by academicians of the National Academy of Sciences of Ukraine (27.5), ZOO scale (14.0), and the number of staff members elected as correspondent members of the National Academy of Sciences of Ukraine (13.5).

Taking into account that all indicators and criteria, as well as the overall rating index, were brought to a normalized form in such a way that they varied in the range  $[0-100]$ , it can be concluded that universities that attract young teachers to work who have valuable work experience in various branches of the economy but do not have scientific titles, deliberately underestimate their rating. Given the average age of academicians and correspondent members of the National Academy of Sciences of Ukraine (70 and above) and the concentration of such scholars in the capital, progressive universities in the regions do not have the chance to get in the leader's chamber at all.

- The quality of education is unclear as the HEI scale indicator. The values of this indicator are calculated according to the formula:

$$I_{11} = \frac{P}{P_c}, \quad (5.6)$$

where:  $P$  - the total number of graduate and undergraduate students,  $P_c$  - average, one educational institution, number of students for the study group.

However, its weight coefficient (14.0) is at least twice as high as the eighth indicator. Number of students, winners and prizewinners of international competitions (contests) (weight ratio 7.6) and Number of students, winners and prizewinners of all-Ukrainian Olympiads (competitions) (weight coefficient 1.5). As a result, we find that the number is significantly more weighty than quality.

Table 5.4

**List of groups of indicators and their weight coefficients according to the criteria of the general index of rating estimation**

Criteria	No.	Indicators	Weights
Quality of scientific and pedagogical potential	1	The number of staff members elected by academicians of the National Academy of Sciences of Ukraine	27,5
	2	Number of staff members elected by correspondent member of NAS of Ukraine	13,5
	3	The number of professors among the staff of HEI	2,5
	4	The number of associate professors among the staff of HEI	0,6
	5	The number of doctors of sciences among the staff of HEI	2,6
	6	The number of candidates of science among staff members of the HEI	0,5
	7	The number of staff members awarded the State Prize in Science and Technology or the State Prize of them. T. Shevchenko	2,8
Quality of training	8	Number of students, winners and prizewinners of international competitions (competitions)	7,5
	9	Number of students, winners and winners of all-Ukrainian Olympiads (contests)	1,5
	10	The ratio of the number of masters to the number of bachelors and specialists	7,0
	11	HEI scale	14,0
International recognition Criteria Quality of scientific and pedagogical potential	12	Number of foreign students	1,0
	13	Membership of the European Association of Universities	7,0
	14	Membership of the School at the Great Charter of Universities	6,0
	15	Membership of the educational institution at the Eurasian Association of Universities	3,0
	16	Membership of the educational institution in the network of universities of the countries of the Black Sea region	3,0

*Note: compiled according to [12]*

- Indicator  $I_{10}$  (The ratio of masters to the number of bachelors and specialists) with a weight ratio of 7.0 also does not stand criticism. Its value is calculated according to the formula:

$$I_{10} = \gamma \frac{M}{B + C}, \quad (5.7)$$

where:  $M$  - the number of students of HEI who received a master's degree;

$B$  - the number of students of HEI, received a bachelor's degree;

$C$  - the number of students of HEI who received a specialist diploma;

$\gamma$  - The scaling factor used to bring the indicator  $I_{10}$  change to a range [0 -100].

This means that if you want to increase its value, you should count to the magistracy not only worthy, but everyone who wishes. But this is not a way to improve the quality of education. This indicator can also be improved by reducing the number of bachelors or the stricter student deduction policy for poor performance. However, such a path will immediately cause a decrease in the indicator (HEI scale), which has an even higher weighting factor.

- Indicator (The number of staff members awarded with the State Prize in Science and Technology or the State Prize named after T. Shevchenko) actually "worked" for one university. First, why other state awards and honorary titles are not taken into account? And, secondly, by simple calculation it is possible to get the following figures: if the university employs the largest number of laureates of the aforementioned premiums, according to the rules of valuation, the corresponding indicator is assigned a value of 100. Given the weight factor of 2.8, we get 2.8 points to the total.

This approach suggests that a university, having attracted the largest number of academicians, members of the correspondents and winners of these awards with zero values of all other indicators, will be confidently in the top three with the value of the integral indicator:

$$I_3 = I_{HM} + I_H + I_{MB} = 27,5 + 13,5 + 2,8 = 43,8. \quad (5.8)$$

- The International recognition indicator is badly correlated with positions in international ratings (Table 5.4). A coincidence is observed only in the KPI I.I. Sikorsky and the Lviv Polytechnic National University. Surprisingly, a number of universities with a high-ranking international recognition in the TOP-200 Ukraine are not represented at all in any international ranking.

Some of these shortcomings were subsequently partially removed by some adaptation of the methodology of the "Top 200 Ukraine" project to changes in the country's higher education system.

In total, for the 2015/2016 academic year, 24 indicators of direct measurement with a total weight of 80% were used, the indicator of information resources (quality and functional completeness of university websites) was used for 5% and an expert evaluation with a weighting of 15%. Additionally, his participation in European programs such as Horizons 2020, the Seventh Framework Program, TEMPUS, Erasmus + has also been taken into account in assessing the international recognition of the university. Data on these indicators, based on the results of the universities' activity in the previous year, were selected from several independent sources (data of the Ministry of Education and Science of Ukraine, data of the Ministry of Education and Science of Ukraine, data of the Committee on State Awards of Ukraine and T. Shevchenko Prizes, data of international associations of universities, data on international projects Horizon 2020, Seventh Framework Program, TEMPUS, Erasmus+, other open source data). Expert evaluation was carried out according to the following criteria: level of basic, general education of students, level of their professional training, level of practical knowledge of information technologies, demand of graduates of higher educational institutions by labor market.

Taking into account the recommendations of the Lisbon Forum IREG-8 and the urgent need of Ukraine to implement high-tech, innovative development of its economy by the Organizing Committee of the National Academic Ranking "TOP 200 of Ukraine", with the support of the international supervisory board of the rating HEI, in 2015/2016 addition to the criterion " Innovative activity of universities ". This criterion was quantified by the volume of investments made by a private, high-tech business in the startups of universities. It should be noted that as startups, not only the latest technical developments, but also projects in various fields of human activity (biological, medical, agrarian, humanitarian, etc.), which were based on the latest ideas and were in demand in the consumer market, were considered. The result is

included in  $I_{HH}$  - the quality index of scientific and pedagogical potential. As a result of innovations, the rating system was strengthened by the innovative component of the University's academic work.

However, this study suggests that the choice of Ukrainian entrants in favor of a university is not to a large extent due to positions in any international or domestic ratings. Marketing of university education based on replication and disclosure of ratings does not deliver the expected results today. The first is the Ukrainian Catholic University (182 in the TOP-200 Ukraine ranking), the second in the National University of Kyiv-Mohyla Academy (12 ranked positions in the TOP-200), the third in the KNU, . Shevchenko (2nd place in the TOP-200) and only 9 and 10 in the KPI them. And Sikorsky and KhNU them. VN Karazin (1st and 3rd positions in TOP 200 respectively), etc.

Therefore, marketing of universities should not focus on the ways to increase positions in all possible imperfect ratings for today. Another confirmation of this opinion is the initiation and holding of the next international conference of the International Expert Group on Ranking and Ranking of Universities at the Bologna University (May 2019), "Academic Rankings: Challenges and Problems for Higher Education." At this conference, the first issue is to discuss particular issues: What is the real benefit of academic ratings for universities is it possible to find evidence or evidence? Can I claim the benefit of students and other stakeholders and university partners? What future impact of Artificial Intelligence and the development of Great Data on the existence of academic ratings? How to rate distance and online education ratings?

It is obvious that considerable funds are allocated to the construction of the principles of rating, collection and systematization of data. The large data used in this case is not "transparent", and, therefore, the intermediate and final values of the indices are not entirely clear origin. Therefore, the creation of a universal rating, the results of which could be accepted by the vast majority of rating entities, is unlikely, based on statistical data on a certain way, normalized indicators.

The authors believe that the theory of fuzzy sets and fuzzy logic could be an effective device for obtaining a certain integral index of the level of attractiveness of the university [14-15]. This approach would allow aggregating statistical data and knowledge about the university, made public by graduates and employers. However, for the construction of this kind of model, we need information of a completely different nature: questionnaires, interviews, reviews in social networks, etc.

## **Conclusions and perspectives of further exploration.**

Consequently, the study analyzed the state of modern higher education in Ukraine and the impact of rating institutions of higher education on improving the quality of their educational activities.

The recommendations for the inclusion in the list of complex criteria of such indicators as the index of the level of comfort of the educational process, namely: providing students with hostels and their condition, providing library and auditorium with the necessary literature, improving the quality of distance information support of the educational process, the quality of communication processes "teacher- student ", an index of employers 'assessment of graduates' level. This will allow the entrants to take due account of the University's rating position. It is established that the adequacy of the rank of HEI to its image among entrants justifies the expediency of efforts to participate in various ratings. The methodology of taking into account these qualitative indicators is proposed to choose the theory of fuzzy sets and fuzzy logic.

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**TRANSFER OF  
ECONOMIC AND  
LEGAL RESEARCH  
TO LOW AND NON-  
WASTE  
TECHNOLOGIES  
BASED ON THE  
IMPLEMENTATION  
OF A GREEN  
ECONOMY**

On the basis of the systematization of theoretical and methodological approaches and concepts of state policy in the context of the implementation of EU legislation, the definition of a clear coordination of state institutions with regard to ensuring the revitalization of the process of environmentalization of the Ukrainian national model of the "green" economy on the socio-ecological and economic parameters is an urgent necessity.

Significant volumes of wastes accumulated in Ukraine and lack of effective measures aimed at preventing their formation, utilization, disposal and disposal, progress the ecological crisis and become a brake on the development of the national economy. This situation necessitates the establishment and proper functioning of a nationwide waste prevention, collection, recycling and disposal, disposal and environmentally sound disposal. This should be an urgent task, even in conditions of relatively limited economic opportunities of both the state and the main waste generators. Thus, the only possible way to resolve the situation is to create a comprehensive waste management system with regulatory and effective legal regulation.

First of all, the Constitution of Ukraine, as the Basic Law, which has the highest legal force, defines the obligation of the state to preserve the provision of environmental safety for man and the entire animal world, maintaining the proper quality of the environment and environmental equilibrium.

Compliance with the norms and rules of environmental safety is provided by the state through three levers: the creation of a system of

modern legislation, effective administrative control, the introduction of an economic mechanism for the use of nature by the formation and development of the legal culture of citizens. The development of a system of economic legislation in Ukraine to a certain extent took place in accordance with the concept, the main ones being the laws on environmental protection, the protection of atmospheric air, the protection and use of wildlife. The next stage in the development of environmental legislation - its codification, taking into account the relevant constitutional provisions, and the Land, Forest, Water Code, Subsoil Code and other acts - is an instrument for regulating natural resources and publicity of the use of natural resources.

To date, the following Laws of Ukraine regulating social relations in the field of waste management exist in Ukraine:

- "On Pesticides and Agrochemicals" No. 86/95-VR of March 2, 1995 [2];
- "On Waste" No. 187/98-VR of March 5, 1998 [3];
- «About the scrap metal» № 619-XIV | May 5, 1999 [4];
- "On the exclusion from circulation, processing, utilization, destruction or further use of low-quality and dangerous products" No. 1393-XIV of January 14, 2000 [5];
- "On the National Program on the Treatment of Toxic Wastes" No. 1947-III of September 14, 2000 [6];
- "On Chemical Current Sources" No. 3503-IV of February 23, 2006;
- "On ratification of the Stockholm Convention on Persistent Organic Pollutants" No. 949-V of April 18, 2007 [8].

The norms of the subordinate legal acts, including decrees of the President of Ukraine, the Decrees of the Verkhovna Rada of Ukraine, the Decrees of the Cabinet of Ministers of Ukraine, etc. specify the regulation of public relations in relation to the treatment of waste.

The high level of waste generation and low rates of their use as secondary raw materials have led to the fact that in Ukraine, in the industrial and municipal sectors, significant volumes of solid waste accumulate each year, of which only a small part is used as secondary material resources, the rest fall into landfills.

The difference in the situation with waste in Ukraine, compared to other developed countries, lies in the large volumes of waste generation and lack of infrastructure for handling them. At the same time, the availability of such infrastructure is an indispensable feature of all economies of developed countries.

In general, the waste management system in Ukraine is characterized

by the following trends:

- accumulation of wastes both in the industrial and domestic sectors, which negatively affects the state of the environment and human health;
- improper disposal and disposal of hazardous waste;
- placement of household waste without taking into account possible hazardous consequences;
- improper use of waste as a secondary raw material due to the imperfection of the organizational and economic principles of their involvement in production;
- inefficiency of implemented economic instruments in the field of waste management.

The solution of this problem is key in solving energy and resource independence of the state, saving natural material and energy resources, and the actual strategic tasks (priority) of state policy.

The Cabinet of Ministers of Ukraine, by its Order No. 820-r of November 8, 2017, approved the National Strategy for Waste Management in Ukraine until 2030 (hereinafter - the Strategy).

The purpose of this Strategy is to create conditions for raising the standard of living of the population by introducing a systemic approach to waste management at the state and regional level, reducing the volume of waste generation and increasing the volume of their processing and reuse.

Auxiliary tools for qualitative regulation on the basis of the National Strategy should be the following groups of legal acts:

1. National Waste Management Plan;
2. Regional Waste management plans;
3. Framework Directive on waste based on legal provisions Directive 2008/98 / EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, Directive 1999/31 / EC of the European Parliament and of the Council of 26 April 1999 on waste waste disposal
4. Sectoral bills: Law of Ukraine "On Batteries, Batteries and Accumulators" on the basis of Directive 2006/66 / EC of the European Parliament and of the Council on batteries and accumulators and waste batteries and accumulators; The Law of Ukraine "On Waste Electrical and Electronic Equipment", Directive 2012/19 / EC of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment; Law of Ukraine "On packaging and packaging waste" Directive 94/62 / EC of the European Parliament and of the Council of 20 December 1994 on packaging and packaging waste; "On

waste disposal", "On waste incineration", "On waste petroleum products", "On decommissioned vehicles", "On waste management of extractive industries", based on Directive 2008/98 / EC, 1999 / 31 / EC, 2010/75 / EC, etc.

The National Waste Management Plan makes it possible to conclude that there is: adaptation of national legislation to the requirements of European legislation, implementing economic tools to improve waste management, improving the institutional structure, waste management, strengthening human resource capacity in waste management, reforming the information management system in the field of waste management, public awareness on waste management.

The main tasks of the National Waste Management Plan are the definition of specific socio-political, institutional, organizational, technical, regulatory, technological measures provided for by this Strategy, responsible executors and terms of implementation of measures, sources and amounts of financial support, means of monitoring the state of implementation of measures and monitoring the results of the reform in the field of waste management. Approves the National Waste Management Plan of the Cabinet of Ministers of Ukraine.

Regional waste management plans are developed to facilitate the implementation of this Strategy no later than two years after its approval and agree with the Ministry of Environment and the Ministry of Regional Development in accordance with their competence. The approved regional waste management plan is the basis for financing from the state and local budgets.

The advantages of the framework bill "On waste management" are: the terminological apparatus that will allow to speak "in the same language" with the EU, national list of wastes, permissive - licensed system, requirements for collection, transportation and handling of waste, integrated waste management information system, bases for the introduction of the expanded responsibility of the manufacturer, planning of waste management from national to local level.

Regional plans take into account the structure of the region's economy, the presence of large industrial enterprises, the existing infrastructure, the needs of large and small cities. For example, the National Plan contains the task of creating an infrastructure for the processing of waste construction and repair work, but it is in the regional plans that will be determined which regional objects will be created for the acceptance and storage of waste of construction and

repair works, with intermediate sorting and grinding using mobile crushing and sorting plants.

Another type of tools which activates the eco development of the national model of the “green” economy are projects, which is funded by European Union. Namely “Marine and River Litter Elimination New Approach-MARLENA” (hereinafter - MARLENA) which is realized at the Joint Operational Programme Black Sea Basin 2014-2020 (hereinafter - Programme) , and in which The Institute of Market Problems and Economic&Ecological Research of the National Academy of Sciences of Ukraine (hereinafter - IMPEER) is currently the beneficiary, is set towards union of the forces against pollution near the Black sea, rivers, protected areas and nature reserves or in the vicinity of the Black sea basin. All 5 target regions are in Black Sea Basin and have rich biological diversity and tourism potential. Project aims at jointly raising public awareness and education regarding river and marine litter problems, the value of biodiversity and environmental protection for target audiences such as youth, tourists, business, local communities and authorities, educational organizations. Particular attention is paid to development of environmentally and responsible-citizenship and ecological behavior among youth. MARLENA aims to strength community action and to involve local population in promotion and implementation of cross-border Black Sea Basin coastal and river clean-up campaigns and share good experiences in this field in reducing and eliminating pollution.

Group of activities are as follows: Joint Management activities-meetings, reporting, joint implementation activities:

- 1st group: better cooperation of organizations in BSB - survey on existing policy and legislation, networks and cooperation initiative to reduce river and marine litter in BSB; development of focus groups: waste management, illegal dumping and landfill sites on riverbanks/protection of the important natural areas from the water pollutions; guide with the good waste management practices of local authorities and environmental organizations, round tables and conferences between the partners, joint platform for signalization for wastes and illegal dumping sites, initiation of cross-border joint actions in 5 languages;

- 2d group - straightening capacity of local interested organizations: small – scale investment works will be implemented on the territory of 2 partners for solving common environmental issues: promotion of a good European practice for the use of a separate waste collection system in

Bulgaria and Elimination and reduction of illegal dumping and landfill sites on riverbank in Demirkoy, Turkey and turning it into a beautiful park. Capacity building trainings of the local authorities, good practice exchanges.

- 3rd group: activities for increasing of the public awareness and enhance of public include: wide awareness campaign in Black sea basin countries including: informational meetings, Preparation ‘responsible-citizenship’ guidelines for children and students, tourists, and visitors , River and sea-cost clean up informational campaigns, organization of eco actions and eco camps for enhancing the ecological culture of youth.

Regional branding of the local traditional products not only brings benefits for the producer – it may become the indicator of regional development affecting social and economic sphere of the region. The key issue is to create links between regional brands, local community and the region to support its promotion and further development. Certified local products can influence local business development and affect other products – increase their value, strengthen rural integration and valorise local resources. A local product can play a role of a binder for local community – develop networks and relationships between local producers, non-rural businesses, diversify the employment in the region, open new opportunities for migrating unemployed young people, rural retirement population and marginalized groups.

An important role in conducting research and development in the field of “green technologies” is played by private companies (including small and medium-sized businesses), which consider them as an opportunity to increase production efficiency and, as a result, their competitive advantages. Green Technologies is a vivid manifestation of the modern trend of the effectiveness of an interdisciplinary approach to solving complex problems. They do not replace, but connect ecology, economy, social technology, based on all modern achievements of science and technology. “Green technologies” is both ecologically safe raw materials, and ecologically safe final products, and ecologically safe production technologies.

We are convinced that regional branding of the eco local traditional products not only brings benefits for the producer – it may become the indicator of regional development affecting social and economic sphere of the region. The key issue is to create links between regional brands, local community and the region to support its promotion and further development. Certified local products can influence local business

development and affect other products – increase their value, strengthen rural integration and valorise local resources. A local product can play a role of a binder for local community – develop networks and relationships between local producers, non-rural businesses, diversify the employment in the region, open new opportunities for migrating unemployed young people, rural retirement population and marginalized groups.

In support of "green technologies" IMPEER is also the beneficiary of the project eMS BSB 383 "Sustainable Agricultural Trade Network in Black Sea Basin -AgriTradeNet" (hereinafter –AgriTradeNet), which is being implemented within the framework of Programme.

AgriTradeNET project aims increasing the capacity of the local producers, their opportunities for geographical certification / identification and establishment of links between the business organizations in BSB that on the local level supporting the work of these producers.

The results we expect to obtain from this project are:

- Increased cross-border links for trade and modernization in the agricultural and connected sectors in Black Sea Basin;
- Increased cross-border trade opportunities for agricultural and agro-industrial products with;
  - Ensured safety production of important agricultural products;
  - Ensured IT tools for increasing capacity of local producers – published research reports about the local legislation for safety producing of traditional products, report for the local branding opportunities and study about the international trading links for this type of products;
  - Developed local producers' market place for promotion of traditional agricultural products in the rural areas.

Summarizing the foregoing, one can suppose that the levers of institutional strengthening of the process of environmentalization of the Ukrainian national model of the "green" economy can be considered:

1. Dynamics of institutional and legislative and regulatory reforms in Ukraine regarding the implementation of the green economy model in the state policy mechanism;
2. Development of state and regional institutes of governance;
3. Transformation of public relations and modification of administrative management with saturation of its ecological dominant;
4. Development of measures for identifying priority segments of national development ecologization;

Taking into account the aforementioned, the concept of the development of the "green" economy should determine:

1. An economic component that cements the growth of economic potential in a sectorial view of the state;
2. Social component, which serves as a basis for improving the life support system of the Ukrainian population;
3. The ecological component, which forms the basis for implementation of ecologically safe policy of the state.

The said confirms the urgency and importance of the institutional provision for activation of the greening process of the Ukrainian national green economy model, which should include the main legislative regulations of the state environmental policy and the international tendencies of ecologization of social development on the principles of the "green" economy.

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**METHODICAL  
APPROACH TO  
DETERMINING THE  
RESERVES OF  
INCREASING  
EFFICIENCY  
INNOVATIVE  
ACTIVITY OF  
INDUSTRIAL  
ENTERPRISE**

The analysis of global trends of economic development convincingly proves that innovative processes have taken a prominent place and their role is constantly growing. The main purpose of investment activity is to provide the most effective ways of implementing the investment strategy of the state and its regions. The state performs the following functions of investment management:

1. Analysis and forecasting of investment market development taking into account its conjuncture and national needs in the results of investment activity;
2. Develop of strategic directions of investment policy taking into account the target directions development of the country and its regions;
3. Legislative activity for stimulation, regulation, support and control of investment activity;
4. Monitoring of investment activity and realization of concrete measures for its regulation at all levels, support and financing of individual investment projects [1].

For the Ukrainian industry as a leading area of the economy characterized by significant potential of innovation development, exacerbated the problem of rationalizing the management of the potential and its development, as further delay threatens the system separation from economically developed countries due to the

incompatibility of the economy, technologies, standards of quality of life, etc., which will be virtually impossible to overcome.

Innovation is the main means of ensuring the competitiveness of products and ensuring the sustainability of the success of the enterprise (corporation) on the market as a whole. Due to this, management of innovation activity is an integral part and one of the main directions of strategic management of the enterprise [2].

In the general form, the innovation process consists in obtaining and commercializing inventions, new technologies, types of products and services, decisions of organizational-technical, economic, social or other character and other results of intellectual activity [3].

The crisis in the innovation sector of Ukraine is partly due to the lack of targeted work to improve the effectiveness and efficiency of innovation activities. The role of innovation activity as a decisive factor in increasing the efficiency of production, ensuring stable economic growth is constantly increasing and in today's conditions for enterprises is a priority direction.

Now in the economic literature there is no unambiguous approach to the measurement of the effectiveness of innovation activity, and to the profitability of its organization within the enterprise [4].

The economic efficiency of innovations is the ratio of the economic effect from the introduction of innovations to the costs which it has caused [5].

Innovative activity at the enterprises has a number of features:

- stages of the innovation process are diverse in meaning and factors that significantly affect the achievement of goals [6];
- innovations involve the use of a variety of scientific knowledge and different in volume and nature of resources;
- there is a time gap between the cost of creating and implementing innovations and results from their use [7].

An analysis of the approaches to determining the reserves for improving the efficiency activity of the enterprise enabled to propose the following approach to identifying reserves for improving the efficiency of innovation activities.

In the course of the implementation of innovations, the source of the creation of reserves for improving the efficiency of innovation activity is the ratio between the amount costs of resource and time that is constantly changing.

An enterprise that conducting innovation activity should conduct a permanent work for optimizing the ratio costs of resource and time

between units, which implement different stages of the innovation process and between projects for the realization of innovations.

When measuring the level of profitability of the organization of innovation activity, it is necessary to take into account all stages of the innovation process, namely: carrying out of research and development works (R & D), estimation of economic efficiency of innovative projects, introduction of inventions. The analysis should be carried out in general and at each stage separately. At the same time, the analysis of innovation activity should be complex. Indicators should reflect quantitative and qualitative changes in the innovative field of the enterprise.

Indicators that characterize the stage creating of innovation in an industrial enterprise are shown in Table 5.5.

*Table 5.5*

**Indicators that characterize the stage creating of innovation in an enterprise**

Indicators	
Absolute	Relative
<ul style="list-style-type: none"> <li>- number of employed in R &amp; D;</li> <li>- R &amp; D costs;</li> <li>- number of purchased intellectual property objects;</li> <li>- costs for the purchase of intellectual property objects;</li> <li>- number of patents received;</li> <li>- number of own inventions, ideas received as a result of R &amp; D;</li> <li>- number of realized objects intellectual property.</li> </ul>	<ul style="list-style-type: none"> <li>- share of own developments in the total number of used inventions that meet the requirements of economic efficiency of the enterprise;</li> <li>- share of employed in R &amp; D in the total number of industrial-production personnel of the enterprise;</li> <li>- share of costs on R &amp; D in the profit from sales of commodity products;</li> <li>- ratio of proceeds from the sale of objects intellectual property belonging to the enterprise, to the cost of the acquisition of objects intellectual property;</li> <li>- share of proceeds the sale of objects intellectual property belonging to the enterprise in the total volume of commodity products.</li> </ul>

The following factors that influence the effectiveness the stage R & D can be distinguished:

- the effectiveness of works at the stage of R & D, i.e., the develop of inventions that meet the requirements of economic efficiency, adopted at the enterprise;

- reduction of irrational use of resources;
- reducing the time spent on the develop of inventions.

Indicator of the effectiveness of the stage of creating innovation is as follows:

$$R = \frac{Kci + Kni}{\sum Ki - Kp}, \quad (5.9)$$

where:  $R$  – the effectiveness of innovation activity at the stage of creating innovation;

$Kci$  – the number of self-developed inventions that provide an increase in the economic efficiency of the enterprise;

$\sum Ki$  – the total number of inventions obtained as a result of implementing R & D and  $i$ -th acquisition of objects intellectual property in external environment the enterprise;

$Kni$  – the number purchased of objects intellectual property;

$Kp$  – the number of objects intellectual property of R & D results, realized in external environment of the enterprise and not used in the activity of the enterprise itself.

Indicator of efficiency used resources at the stage of R & D is calculated by the following formula:

$$E\theta = \frac{\sum_{i=1}^K Zi + \sum_{j=1}^M Zj}{\sum_{r=1}^R Zr + \sum_{g=1}^G Zg}, \quad (5.10)$$

where:  $R=Kci$ ;  $M= Kni$ ;  $R=\sum Ki$ ;  $G= Kp$ .

$E\theta$  – efficiency of using resources at the stage of carrying out R & D in the process of innovation activity;

$Zi$  – the cost of resources in monetary terms on the independent creation of the  $i$  invention, which meets the requirements of economic efficiency of the enterprise;

$Zj$  – the cost for the acquisition of the  $j$ -th object intellectual property in the external environment of the enterprise, which meets the requirements of economic efficiency;

$Zr$  – the cost of developing and acquiring the total number of inventions;

$Z_g$  – revenue from sales of the  $g$ -th invention in the external environment of an industrial enterprise.

Rejection of indicators performance and efficiency from their maximum value are the magnitude of the reserves for improving the efficiency of innovation activity. Thus, the closer the value of these indicators to one, the higher the efficiency of innovation activity, in particular at the stage of R & D.

In addition to identifying reserves aimed at increasing the efficiency and cost-effectiveness, it is necessary to take into account the factor of the time carrying out of innovation activity. To do this, you can use the indicator of the average length of develop of one invention:

$$Tc = \frac{\sum_{i=1}^k t_i}{n}, \quad (5.11)$$

where:  $Tc$  – the average length of develop of one invention, as a result of R & D;

$t_i$  – time spent on creation and invention;

$n$  – the total number of created inventions as a result carrying out of R & D.

By comparing the actual and optimal level of costs time is determined the value of its reserves. Optimal rates of time should be based on the analysis of socially necessary costs.

Measuring the level of efficiency of innovation activity at the stage R & D can be as follows formula:

$$E = \frac{E\phi}{En}, \quad (5.12)$$

where:  $E$  – the economic efficiency of the invention;

$E\phi$  – actual economic efficiency of innovation after implementation;

$En$  – prognostic (before implementation) the economic efficiency of the invention.

If during the analysis period were introduced several inventions, the economic efficiency introduced of the innovations can be calculated by summarizing the values of actual and predictive effects. When using techniques that reflect a large number of different factors, it is advisable to select one of the most important indicators for measuring accuracy.

The amount of reserves for improving the efficiency of innovation activity in assessing the economic efficiency of innovation projects will be a deviation of the values of this indicator from its maximum value. When identifying reserves for increasing efficiency at the stage R & D, it is necessary to proceed from the fact that the main purpose of the estimation of economic efficiency is its maximum accuracy.

The objective assessment of the envisaged innovations is of paramount importance for the industrial enterprise, since in case of an underestimation of the effectiveness of the invention (know-how) and the consequent refusal to use it, it may lead to the use of other enterprises. In the event that the effect of the invention is exaggerated, an industrial enterprise not only uses resources inappropriately, but also suffers losses. Consequently, the more accurate the assessment of the proposed innovation, the higher the efficiency of the set of works associated with its implementation, and, respectively, the effectiveness of innovation activity of the industrial enterprise.

It should be noted that the greatest challenge is the assessment of radical innovation projects based on new scientific knowledge, since it is difficult to consider the factors that can affect both success and the final scope of the use of scientific-technical invention.

Particular attention during the organization of work and the assessment of the economic efficiency of the envisaged innovation should be given to the comparison of forecast estimates and the actual results obtained after the development of innovation.

This ensures the possibility of establishing feedback between the innovative and main activities of the enterprise. At the same time, a systematic analysis of the deviations of predictive estimates from the actual results and the identification of the causes of these deviations will allow for targeted work to improve the methodology for assessing the economic efficiency of innovation projects.

The effectiveness of the stage of carrying out R & D is due to the influence of a large number of factors of the external and internal environment of the enterprise, the impact of each of which on a specific project has different degrees of uncertainty and can have a crucial role at different stages of the innovation process.

This necessitates the substantiation of the program of actions taking into account the specifics and needs of an individual enterprise, the effectiveness of innovative activity at the stage of innovation creation:

1. Selection and active work with personnel engaged in carrying out R & D;

2. Harmonization of strategic plans of the enterprise with the direction of carry out R & D;

3. Organization of interaction between different departments of the enterprise at the initial stages of conducting R & D;

4. Evaluation and selection of projects in the early stages of R & D;

5. The choice of forecasting methods for setting purposes the whole stage of carrying out R & D;

6. Provision of workers who carry out R & D, necessary equipment and information;

7. Substantiation of methods of moral and material incentives personnel who carries out R & D;

8. Evaluation performance of R & D.

In many respects the effectiveness of the stage carry out of R & D is due to the creative activity engaged in conducting R & D, which requires the involvement of qualified professionals who have the appropriate knowledge and skills. At the same time, it must be taken into account that specialists may lose their skills over time.

In this regard, it is necessary at certain intervals time to conduct certification of personnel involved in the development of innovations. The developed method allows carrying out the selection of employees for conducting R & D, as well as controlling the level of their qualifications. In the course of attestation it is expedient to take into account the effectiveness of the work of each particular specialist for a certain period of time.

This approach will allow maintaining the necessary level of qualifications of employees, thus creating the necessary conditions for improving the effectiveness of the stage of creating innovation.

The effectiveness of the stage carry out of R & D is largely determined by the degree of alignment of strategic plans of the enterprise and the direction carry out of R & D, since, on the one hand, innovation activity should contribute to the achievement of strategic goals of the enterprise, and, on the other hand, in the course carry out of R & D, it is possible to obtain such results that can greatly affect the strategy of enterprise.

The strategy of enterprise must have some flexibility in order to prevent the use of implementation the inventions that have sufficient potential but do not fit into previously established strategic plans.

In general, innovation activity should be aimed at contributing to the achievement of the goals defined by the overall strategy of the enterprise.

The organization of the interaction of various departments of the enterprise at the initial stages of conducting R & D allows to take into account the opportunities and requirements that apply to new products and technology from the positions of a other structural subdivision. The result of such interaction may be the emergence of new ideas, as well as identify problems that are relevant to the development of the enterprise.

Involving specialists from different departments of the enterprise will prevent unforeseen problems at the next stages of the innovation process. As a result, the eternal targeting on the capabilities and requirements of departments enterprise at an early stage will help exclude projects that the enterprise can not carry out. This will increase the level effectiveness of this stage of the innovation process.

In the early stages carry out of R & D are required periodic evaluation and selection of projects, taking into account a set of factors of the external and internal environment, which actively influence on the implementation of the project. The predicted evaluation of projects on the early stages of R & D and subsequent changes during the implementation of the project can provide an increase in the efficiency of innovation activity at the stage carry out of R & D.

As a result are selected first the most optimal and promising projects, emerge the opportunity to concentrate efforts and resources, thereby reducing the timing of obtaining results. Identifying low efficiency from project results or impossibility of implementation is facilitated by inappropriate use of resources.

Specific value for performance at the stage carry out of R & D is the specification of goals. The determination of the necessary characteristics of inventions (technical, economic, environmental, aesthetic, etc.) is possible on the basis of the use of economic-mathematical modeling and forecasting. To this end, carried out an analysis of the changes in the most important parameters of the product (service) that is being produced or provided and the technology used in previous years, described the trends of these changes, which are by a certain mathematical model. On its basis are determined the most probable parameters of future products and technologies. The results of the forecast are used as targets or specified characteristics in the course carry out of R & D and the subsequent assessment of their results.

However, the use of economic-mathematical modeling for prediction will be most effective in the areas of industry that produce such products when there is no dramatic change in the short period of time, both in the characteristics of products and technology, and in demand for it. In

science-intensive areas (especially those that are progressing) changes occur frequently, so the use of forecasting will be less effective [8].

In order to achieve a certain level of performance at the stage carry out of R & D, it is necessary to ensure an adequate level of equipment and infrastructure of scientific-research activities.

Sources of scientific-technical information are: periodicals, advertising catalogs, exhibitions, fairs, conferences, as well as patent information. Particular attention should be paid to patent information, since it has a pre-emptive period in relatively to production of products (provision of services). On the basis of patent information it is possible to predict not only changes in individual product parameters, but also possible qualitative transformations of its properties.

In addition, it is advisable to organize an information observation on the external environment of an industrial enterprise. Information observation will allow detecting changes that have occurred in products and technology, methods of organization of work, production, forecast their development and timely takes measures that allow us to make maximum use of the emerging situation.

The most important directions of information observation are:

- competitors (their activity is connected with introduction of innovations);
- consumers (presentation of certain requirements for products (services), changing needs);
- suppliers (changes in supply organization based on the use of new materials for the creation of innovations);
- scientific-technical information.

Increasing the effectiveness of the innovation process at the stage carry out of R & D is determined by the degree of association of interests of the industrial enterprise and specialists who are developing innovations. In this regard is increasing the role of stimulating works at this stage. At the same time achievement of the best results is possible only on the basis of rational use of two types of stimulation: material and moral. In general, funding of personnel who carry out of R & D should be directly dependent on the results of their activities.

It is advisable in practice to use the system of material incentives, which covers all levels of this stage of the innovation process, that is, should be stimulated:

- in general, the structural units associated with the develop of innovations;
- individual projects within the entire R & D program;

– individual employees.

Stimulation within the entire R & D program should be aimed at providing favorable conditions for financing the most optimal projects in accordance with the priorities development of enterprise.

The use of this approach makes it possible to create at the industrial enterprises favorable climate, which provides active work for develop and mastering of innovations.

Increasing the efficiency of innovation activity at the stage of implementation of inventions is determined by the extent of using the following set of factors:

- increasing the effectiveness of implementation;
- reducing the time spent on the introduction of inventions.

To determine the level of performance of the stage of implementation of inventions is used the following formula:

$$R_{\text{в}} = \frac{K_{\text{вв}}}{K_{\text{пв}}}, \quad (5.13)$$

where:  $R_{\text{в}}$  – the effectiveness of the stage of implementation of inventions;

$K_{\text{вв}}$  – the number of the introduced inventions that provide increase of economic efficiency of the enterprise;

$K_{\text{пв}}$  – the number of developed inventions.

Effectiveness of the stage of introduction of inventions is due, above all, to the availability at the enterprise of appropriate financial resources. In this regard, it is advisable to distinguish two main directions of work that ensure the effectiveness of this stage of the innovation process:

- improvement of planning of flows of funds during the implementation of innovation activities;
- economically attractive attraction of financial resources from external sources.

It is the provision of the appropriate financial base to guarantee the effectiveness of the stage of implementation of inventions in the course implementation of innovation activity.

The efficiency of using resources at the stage of innovation implementation can be determined by the formula:

$$E_{\epsilon} = \frac{\sum_{i=1}^k B_i}{\sum_{j=1}^m B_j}, \quad (5.14)$$

where:  $k = K_{\epsilon}$ ,  $m = K_p \epsilon$ ;

$E_{\epsilon}$  – efficiency the use of resources at the stage of implementation of innovations;

$B_i$  – the cost of resources for the development  $i$ -th of an introduced invention, which meets the requirements of economic efficiency of the enterprise;

$B_j$  – the cost of resources for the development of  $j$ -th invention, which meets the requirements of economic efficiency of the enterprise.

Deviations of the values of indicators from their maximum value will amount to the amount of reserves for improving the efficiency of innovation activity at the stage of implementation of inventions.

The task of reducing the inefficient use of resources at the stage of implementation of inventions is the result of the lack of 100% efficiency of this stage and, ultimately, reduces to the selection of inventions that meet the criteria for the efficiency of the enterprise. Thus, on the one hand, the reduction of inefficient use of resources at the stage of implementation of inventions can be considered as a priority introduction of inventions, the creation of which was spent more funds, since their non-use is associated with a large loss of funds for the enterprise compared with other inventions. On the other hand, rationalization of the use of resources at this stage of the innovation process can be considered as a reduction in the value of the lost benefit from unused inventions, since the high amount of costs for the creating invention does not yet mean its high economic efficiency.

The managers of an enterprise should decide issue on the use of this or that approach, taking into account the specific conditions for the implementation of innovations [9].

Of great importance at the stage of the introduction of inventions is the appropriate organization of work and management of a set of works on their development. One of the most effective methods that allow achieving the goal is the network planning method, which can significantly improve the quality of planning and management when implementing a complex of work on the develop of inventions. Thus, the method of network planning allows you to shorten term the

developing of inventions and, accordingly, to provide increasing the efficiency of this stage of the innovation process.

The time spent on the developing of inventions is of paramount importance for improving the efficiency of the stage of their implementation during the conduct of innovation activities.

To calculate the amount of reserves associated with the factor of time, it is necessary to take into account indicator the average duration of developing of one invention:

$$T_o = \frac{\sum_{i=1}^m t_i}{n}, \quad (5.15)$$

where:  $T_o$  – average duration of developing of one invention;

$t_i$  – time spent on the introduction  $i$ -th of the invention;

$n$  – total number of mastered inventions.

By comparing actual and socially necessary time costs, determined the volume of their reserves.

Consequently, the overall volume of the economic effect of using innovation in the activity of enterprise will be greater, the rather will be introduced the invention, which lies at the heart of the next innovation, especially if there are similar innovations on the enterprises that go with their products to this market. In this regard, the primary importance at the stage of the introduction of inventions should be devoted to reducing spent the time costs on their developing. Achievement of the set goal is largely due to the establishment of time standards for a set of work on the developing of inventions that adequately reflects the trends of this process.

For each enterprise it is expedient to calculate the effectiveness of innovation activity in the form of an integral indicator:

$$Ri\partial = R * E * R\partial, \quad (5.16)$$

where:  $Ri\partial$  – the effectiveness innovation activity of enterprise;

$R$  – the effectiveness of innovation activity at the stage carry out of R & D;

$E$  – the economic efficiency of innovative projects;

$R\partial$  – the effectiveness of innovation activity at the stage of introduction of inventions.

If an enterprise does not have the stage of innovation process associated with conduction of R & D, but innovation activity is carried out, then the efficiency of this stage of the innovation process with the help of the above indicator should be taken as a unit.

In general on the enterprise, the efficiency of using resources during carry out an innovation activity can be measured on the basis of the following indicator:

$$Ei\partial = E * Ee, \quad (5.17)$$

where:  $Ei\partial$  – the efficiency of the use of resources in the course carry out of innovation activities;

$E$  – the efficiency of using resources at the stage carry out of R & D;

$Ee$  – the efficiency of using resources at the stage of the introduction of inventions.

The deviation of the value of the previous two indicators from their maximum value will be the size of the reserves for improving the efficiency of innovation activity.

In order to take into account the factor of time, it is necessary to determine the average duration of creation and mastering of one invention:

$$Ti\partial = Tc + To, \quad (5.18)$$

where:  $Ti\partial$  – the average duration of creation and developing of one invention in the enterprise;

$Tc$  – the average duration of creation one invention;

$Te$  – the average duration of mastering one invention.

Particular importance for determining the size of reserves for improving the efficiency of innovation activity is to compare the result of calculating reviewed the indicators at the enterprise with similar data from other enterprises.

It can be concluded that the calculation of indicators of the effectiveness of innovation activity must be carried out on the basis of actual results of activity the enterprise at certain intervals of time. Frequency of the analysis of the effectiveness of innovation activities will allow the timely identification of reserves, develop a strategy for their use on the basis of specifying goals and ultimately create within the enterprise a highly effective mechanism for the implementation of scientific-technological achievements.

The implementation of the proposed approach to ensuring the

increase of the efficiency of innovation activity will increase the efficiency of the enterprise.

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**INNOVATION STRATEGY FOR  
QUALITY CONTROL OF DIESEL  
FUEL ECOLOGICAL CLASS  
EVRO-5 AS A SOURCE OF  
COMPETITIVE ADVANTAGES**

Strategic management of innovations solves a wide range of issues of planning and implementation of innovative projects and programs that develop qualitative changes in the activities of organizations in the market, production or social enterprises. Behavior "strategy" is a set of all regulated actions aimed at changing the organization's position and satisfaction of consumers that contribute to the achievement of the mission and objectives of the organization [1].

The strategy is a comprehensive plan that orientates the organization not to the present but to the future. The purpose of the strategy is to provide not only the current success, but the accelerated constant development of the organization in terms of competition, market leadership [2].

The formation of an innovative development strategy consists of:

- ensuring the continuous introduction of new advanced products;
- continuous reduction of all types of expenses;
- improvement of qualitative characteristics of innovation activity.

The development of an innovative control strategy involves:

- acceptance of strategic tasks (goals);
- assessment of the possibilities and resources for their use;
- analysis of alternatives;
- preparation of specific programs and projects;
- assessment of the strengths and weaknesses of the activities of the entities taking into account the chosen goals;
- providing competitive advantages on the market.

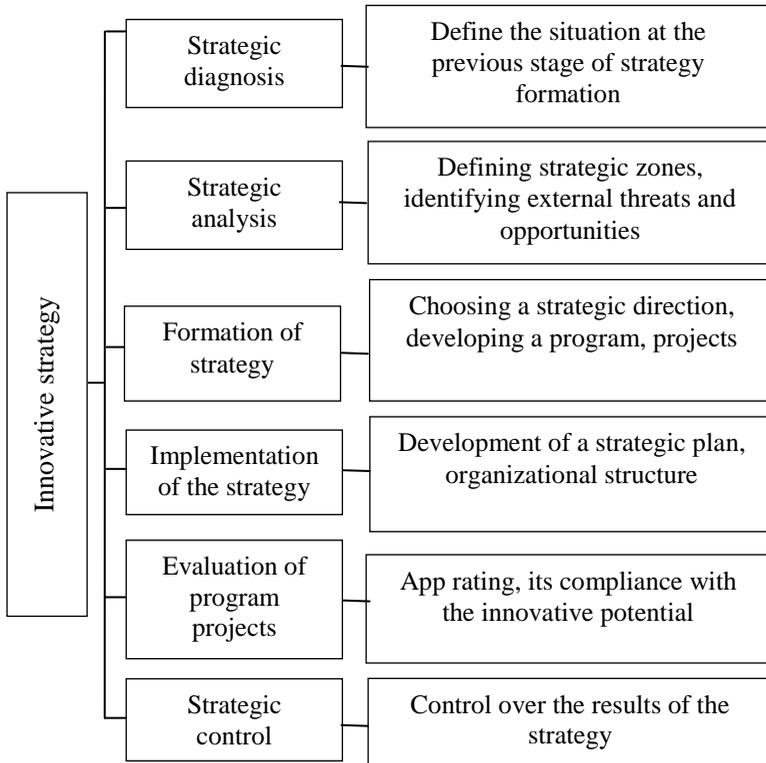
Innovation strategy as a source of competitive advantage is a concentrated manifestation of the advantages over competitors in the economic, technical, organizational spheres of activity that can be measured by economic indicators (additional profit, higher profitability, market share, sales). This is a fact that is fixed as a result of the real and obvious benefits of consumers. Therefore, competitive advantages are the main goal and result of economic activity. The relative competitive

advantage manifests itself in the attachment to specific conditions and causes. A product with price advantages in one geographic market may not have this advantage on the other. Conversely, goods that suffer from a commercial failure that is being squeezed out of the market can succeed due to, for example, the exit of the main competitor, the change in the exchange rate, the leap of inflation, and the successful advertising campaign. Consequently, the competitive advantage of any particular economic object can not be universal. It is necessary to take into account the factor of binding to real market conditions in its analysis.

The overall structure of the innovation strategy involves a strategic diagnosis and analysis, the formation and implementation of a strategy, evaluation of program projects and strategic control (Figure 5.3). A strategic diagnosis determines the situation at the previous stage of strategy formation. Strategic analysis is a definition of strategic zones, identifying external threats and opportunities. When forming a strategy, the choice of a strategic direction is made, programs and projects are being developed. Implementation of the strategy is the development of a strategic plan, an organizational structure. In evaluating program projects, an assessment of the program, its compliance with the innovative potential. Strategic control is the control of the results of the strategy implementation.

The sequence of stages of strategy development [3] is as follows:

- Stage of goal setting and goal setting:
  - formation of orientation and policy of the organization, which emphasizes the commitment to innovation;
  - formation of the goal of innovative development of the organization.
- Stage of Strategic Analysis:
  - analysis of the state of the internal environment and assessment of the innovation climate;
  - analysis of the state of the environment and assessment of the innovative climate;
  - definition of the organization's innovative policy.
- The stage of choosing an innovation strategy:
  - definition of basic development strategies and their innovative components;
  - choosing and justifying an innovation strategy that benefits.
- Stage of implementation of the strategy of innovation:



**Figure 5.3 Structure of innovation strategy**

- development of a strategic project (a list of strategic changes and measures for their implementation) and a plan for the implementation of the project, especially taking into account the innovative nature of the transformation;

- organization of strategic control over the project implementation process;

- assessment of the effectiveness of the implementation process and the necessary adjustments to the project, strategies and objectives.

The basic principle of the formation of an innovation strategy as a source of competitive advantage is to provide advantages over competitors, achieved through the provision of high quality goods to consumers, either because of low prices or through the provision of large benefits that offset high prices for goods and services. The

implementation of such a competitive advantage will enable us to implement the strategy of innovations in the quality control of diesel fuel at gas stations and to start competition among themselves.

An innovative strategy for controlling the quality of diesel fuel at the gas station involves the emergence of competition for the quality of diesel fuel of the environmental class Euro-5 and for the consumer. The development of the project strategy, including the purpose, objectives and objectives of the strategy, will ensure the use of alternative diesel fuel of the Euro-5 class on the use of Euro-4 diesel fuel.

Since January 2018, the circulation of diesel fuel of the environmental class Euro-4 is prohibited in Ukraine. At the Ukrainian gas stations there should be diesel fuel only for the Euro-5 class, with lower sulfur content, and which has an indefinite life. Environmental classes of fuel oil differ in sulfur content. For diesel fuel class Euro-4 allowed content up to 50 mg / kg of fuel, while for Euro-5 - not more than 10 mg / kg.

A significant step towards improving the ecological situation in the country is the use of high-quality diesel fuel, which will meet the environmental norms of the Euro [4]. The application of environmental norms will improve the ecological situation in Ukraine. The introduction by the state authorities of the norms of the Euro will make it possible to reduce emissions of harmful substances of vehicles to the atmosphere to a minimum. In wholesale sales, the difference in fuel prices for the Euro-4 and Euro-5 classes is about 5%. In practice, the strengthening of fuel quality requirements in Ukraine will only be a factor in the growth of prices in one case: if the state restores system quality checks that will help exit the market of unscrupulous traders for a share of low-quality fuels, which now occupies 20-25% of the market. In addition to improving the quality of diesel fuel and its prices, it becomes competitive for the related services and consumer loyalty. Therefore, the development of an innovative strategy for quality control of diesel fuel of the Euro-5 class and the ability to select high-quality diesel fuel at the appropriate gas stations offering it are effective and relevant.

When forming a strategy, they are guided by methods of analysis, such as: factor, comparative, expert, calculation, SWOT method. The innovative strategy for controlling the quality of diesel fuel aims to provide a competitive advantage to the fuel that is of high quality at the gas station that offers it and to identify the needs of consumers who buy it and to compare their results among themselves. To do this, you should use the calculated method of analysis.

The most innovative control strategy includes the following steps:

- the formation of a system of parameters that are monitored;
- conduct a control assessment;
- making decisions based on the results of control.

At the first stage of control, the choice of the controlled parameters (standards) is carried out and their actual values are determined. This stage of control demonstrates the interdependence of planning and control functions within management. Controlled parameters are directly selected for planning purposes.

In doing so, goals that can be used as standards for control must meet two basic requirements. The first requirement is that they should be used only within a certain time frame, which corresponds to the period of plan elaboration. Secondary requirement - controlled parameters must have a quantitative dimension. In this case, it is expedient to use indicators of effectiveness in the process of control, which characterize the degree of achievement of the planned goals. Using these indicators allows you to compare the real results achieved with the planned activities.

At the second stage of the control process, a comparison is made of the actual results achieved in various areas with established control standards.

The third stage of the control process involves making decisions based on the results of monitoring and eliminating the deviations that have arisen or revision of the control standards. This is the case if the comparison of the actual results with the control standards indicates that the goals are achieved.

The purpose of the innovation strategy of quality control of diesel fuel is to ensure the satisfaction of consumers of diesel fuel of the Euro-5 class of proper quality, which is realized at the gas station. The objectives of this strategy are to determine the highest quality Euro-5 diesel fuel at the gas station, in line with the requirements of consumers. The task of the strategy is to establish points of contact between fuel of high quality and the needs of consumers.

In accordance with the structure of the innovation strategy, the developed strategy for controlling the quality of diesel oil will have the following explanations. Strategic diagnosis - identification of the main indicators of fuel quality and the formation of consumer needs. Strategic analysis - analysis of diesel fuel by quality indicators at different gas stations and comparison with indicators in accordance with the standard. Formation of a strategy is a way to meet the needs of diesel fuel

consumers, which is realized at the gas station and to match these needs with the quality of the proposed fuel. Appraisal of software projects - polls of consumers about the quality of diesel fuel at the gas stations that implement it, and the formation of a concept about the quality of this fuel. Strategic control - control of the created mathematical model of quality control diesel fuel at the gas station, which it offers in conjunction with customer satisfaction.

The proposed innovation strategy for controlling the quality of diesel fuel of the environmental class Euro-5 is reduced to the creation of a mathematical model of an optimization problem based on finding the optimal value of diesel fuel quality indicators at different gas stations, determining the level of consumer satisfaction and matching them among themselves [5]. The point of contact between the optimal value of diesel fuel quality indicators and the level of consumer satisfaction is found and will be a solution of the mathematical model. This allows consumers to choose a high-quality Euro-5 Euro-grade GP at different gas stations according to their needs. Finding the optimal value of the diesel fuel quality indicator is reduced to finding a conditional local extremum using the Lagrange method [6].

The main indicators of diesel fuel quality [7] have been selected, where the relationship between physical and chemical parameters of diesel fuel and its consumer characteristics is established. Based on this data, the indicators will be used to find the critical point by the Lagrange method.

It is necessary to find the extremum of the function  $n$  of the quality indices  $F(x_1, x_2, \dots, x_n)$  under  $s$  conditions:

$$g_i(x_1, x_2, \dots, x_n) = 0,$$

where:  $i = 1, 2, \dots, s$ .

By introducing  $s$  unspecified Lagrange multipliers, the Lagrange function is constructed:

$$F(x_1, x_2, \dots, x_n, \lambda_1, \lambda_2, \dots, \lambda_s) = f(x_1, x_2, \dots, x_n) - \sum_{i=1}^s \lambda_i g_i(x_1, x_2, \dots, x_n)$$

The problem of finding the conditional optimum is reduced to solving a system of equations with variables:

$$\frac{\partial F(x_1, x_2, \dots, x_n, \lambda_1, \lambda_2, \dots, \lambda_s)}{\partial x_i} = 0, i=1, 2, \dots, n;$$

$$\frac{\partial F(x_1, x_2, \dots, x_n, \lambda_1, \lambda_2, \dots, \lambda_s)}{\partial \lambda_j} = g_j(x_1, x_2, \dots, x_n) = 0, j=1, 2, \dots, s.$$

Find partial derivatives and equate them to zero. A system of equations is formed and solved. The resulting system consists of linear equations, which can be solved by the method of Cramer. For this, a determinant is formed and computed. If the determinant is found to be nonzero, then the system has a single solution. Then calculate auxiliary determinants. After that, there is a solution of the given system. The solution of this system is a critical point of the Lagrange function. That is, the solution is the optimum performance indicator of Euro-5 diesel fuel at one of the gas stations. To display other critical points, it is necessary to apply this method for determining the optimal values of diesel fuel quality parameters of the Euro-5 class at other filling stations. From these points a curve is constructed that reflects the quality of diesel fuel at different gas stations. To display points of contact of consumers with points that characterize the quality of fuel, it is necessary to find the level of satisfaction of consumers.

Finding the level of consumer satisfaction is the use of a complex quality indicator, which is determined by the method of arithmetic mean value. The result of the arithmetic evaluation equally depends on all the averaged quantities [8], and has the form:

$$K_0 = \sum_{i=1}^n M_i \cdot K_i,$$

where:  $K_0$  is a complex indicator of quality;

$M_i$  is the weight factor of the  $i$ -th quality indicator, which is equal to;

$K_i$  - indicators of diesel fuel quality according to DSTU 7688: 2015 [9].

To determine the numerical values of the generalized quality index, their linear uniform distribution over the interval [0-1] is used.

In determining the weighting factors, an expert method is used. This method is based on the averaging of estimates of weightings put by a group of experts. It is characterized by flexibility, visibility and

familiarity. One of the most advanced expert methods is the so-called Delphi method. Which is to identify the prevailing opinion of experts on any issue. It is necessary to select the experts who have best fulfilled the test tasks and give the most correct answers when choosing the best options. And also provide experts with all the necessary information: qualitative and quantitative requirements of consumers of evaluated products, description of operating conditions, characteristics of the best analogues, etc. In addition, in order to increase the reproducibility of expert estimates of weight, it is desirable that the expert be systematically involved in this work.

The point, which is responsible for the quality of consumers, is a linear function. This function shows what requirements consumers put to the quality of diesel fuel.

The optimal values of diesel fuel of the Euro-5 class at each of the filling stations are compared with the level of consumer satisfaction. At the point where the level of consumer satisfaction will correspond to the optimum value of the fuel quality index at one of the fuel stations, and will be the point of touch of customer satisfaction.

That is, the innovative strategy of quality control of diesel fuel of the ecological class Euro-5 on the basis of the created mathematical model allows to find high-quality diesel fuel at one of the filling stations and to find points of contact between fuel quality and the needs of consumers. But the gas station, which has the highest fuel quality indicators, and therefore the best quality, and corresponds to the level of consumer satisfaction.

### **Conclusions**

An innovative strategy as a source of competitive advantage is a concentrated manifestation of the advantages over competitors in certain areas of activity and allows one product to prevail over another.

The innovative strategy of quality control of diesel fuel of the environmental class Euro-5 allows to control the quality of diesel fuel at various gas stations and enables the consumer to choose the highest quality fuel at the gas station that implements it. The proposed mathematical model of control reflects the strategy of innovation to control the highest quality of diesel fuel at the gas station, taking into account the level of consumer satisfaction. This is a competitive advantage of one gas station over others, which is achieved by offering consumers of diesel fuel of the Euro-5 class a higher quality than other gas stations of the same low-quality fuel.

Innovation strategy will not be effective if it does not take into

account the situation in the enterprise, does not create a significant advantage over competitors and does not ensure the development of the enterprise in the long run.

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## Chapter 6

### WORLD EXPERIENCE IN MANAGEMENT INNOVATIVE DEVELOPMENT OF ECONOMIC ENTITIES

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**CERTIFICATION**

**AND**

**STANDARDIZATION**

**IN THE**

**HOSPITALITY**

**SPHERE**

**Articulation of the issue.** Hotel industry is the key factor and the main component of the tourism infrastructure; it plays an important role in the presentation of the domestic tourism product on the world market of tourism services. The latest economic activity experience in the hotel industry of Ukraine shows that the quality parameters of the work efficiency evaluation at the enterprises of the sphere have been increasing slowly; in some cases the service quality has even got a bit worse which causes an objective necessity to introduce, develop and use the system of evaluation and control of service quality at each hotel enterprise. The speeded up development of the service sphere, the desire of the enterprises to get the highest income and the growing paying capacity of the customers favor the expansion and diversity of the hotel enterprises' activity.

**Analysis of the latest researches and publications.** The works of such domestic and foreign scientists as L.H. Ahafonova, V.I. Azar, S.I. Bailyk, O.O. Beidyk, R.A. Brymer, J. Bowen, N.I. Kabushkin, H.A. Karpova, V.A. Kvartalnov, Ph. Kotler, O.O. Liubitseva, M.M. Malska, I.H. Pandiak, H.A. Papirian, T.H. Sokol, J. Walker, V.K. Fedorchenko and others are dedicated to the social and economic as well as organizational and legal problems of the market economy in the hotel

industry and tourism spheres.

Such scientists as V. Kardash, H. Krylova, B. Myhachev, K. Trofymov and M. Khorozova were looking at the problem of service sphere quality systems certification that stimulates a distinct organization of the enterprise work aimed at improving quality. Upon that, the standards should recognize the opportunities of novelties that favor the improvement of production quality and the systems themselves; they should also recognize the new components of the systems as legal and such that do not hinder its certification. S.S. Halasiuk also studied certification problems in detail; not only did she analyze the state of certification implementation by the government authorities but also suggested ways of solving some problems of the rules and regulations improvement.

**Objective setting.** This being said, the article is aimed at analyzing the current state of the hotel services standardization and certification procedures in Ukraine and suggesting ways of solving the existing problems at the state level.

**Main research material summary.** Nowadays such state mechanisms of regulation as certification and standardization are recognized as one of the most efficient ways of service quality improvement. Certification process foresees a system of measures that certify in writing the accordance of services to the set standards on the final stage. Certification is closely connected with the standardization.

The word “certification” translated from Latin means “done correctly”. To make sure that the service is “provided correctly” it is necessary to know which demands it should meet and how the credible evidence of this accordance can be found. The acknowledged way of such a proof is the code certificate. Certification is a procedure which helps the authority determined according to established procedure to prove the accordance of the products, services or quality systems with the legislatively set demands.

At the same time, standardization is an important element of service quality improvement. This is a type of activity aimed at work and setting demands, norms, rules and characteristics that are obligatory or recommended which ensures the customer’s right to buy services of proper quality at a reasonable price. The objective of standardization is increasing the level of products and service processes correspondence with their functional use and safety demands.

It is worth noting that certification becomes almost the only way to protect the customer under market conditions. Alongside with traditional

methods and ways of securing service quality, certification is becoming more and more wide-spread.

Certification of hotel services is performed by the certification and management system development department according to the “Rules of hotel services obligatory certification” approved by the Decree of the State Committee for Technical Regulation and Consumer Policy from the 3<sup>rd</sup> of September 2007. Certification of tourism and hotel services is one of the most important mechanisms of service quality management which gives an opportunity to objectively assess the level of services and confirm their safety for the customer.

In particular, it is worth noting that certification of hotel services is performed with the aim of:

- not allowing selling the services, goods and certain kinds of work that are dangerous for customers’ lives, their health and properties as well as for the environment;

- favoring the customers’ conscientious choice of services, goods and kinds of work;

- ensuring sticking to the obligatory norms, rules and demands on environment protection, natural resources usage and ecological safety provision;

- harmonizing the standards, norms and rules with the international standards, recommendations, norms and rules concerning the demands on tourism services objects placement [4].

It is worth mentioning at the present stage that according to the List of products that are obligatory to certify on the territory of Ukraine approved by the Decree of the State Committee of Ukraine for Standardization, Metrology and Certification from the 30<sup>th</sup> of August 2002, food and lodging industry enterprises are obligatory to certify [5].

The right for obligatory certification of hotel services in Ukraine belongs to the enterprises (organizations, institutions) of state-owned legal entity authorized as hotel services certification organs on the UkrSEPRO national certification system.

It is worth noting that certification in Ukraine is performed in accordance with three models:

- quality system certification;

- certification trials;

- service provision certification [11].

Hotel service sector is nowadays the most dynamic economy sector in Ukraine.

Insufficient activity of entrepreneurs in obtaining certificates of

establishing a certain category can be explained with a number of reasons:

- the procedure of setting the category was voluntary and did not encourage the entrepreneurs to confirm the correspondence of their properties to the regulations;

- the low level of entrepreneurs' knowledge in the hotel business sphere;

- the discrepancy between the property and its desirable category (the actual state of the hotel corresponds to one or two stars but the owner wants to have at least four).

On the 5<sup>th</sup> of September 2012 the Cabinet of Ministers approved the Decree on “Making changes to the rules approved by the Decrees of the Cabinet of Ministers from the 15<sup>th</sup> of March 2006 № 297 and from the 29<sup>th</sup> of July 2009 № 803”, according to which the certification and the evaluation of the hotel will be performed by the certification authorities appointed by the Ministry of Economic Development and Trade of Ukraine for performing certification works in the UkrSEPRO national certification system.

The categories of the hotels and other properties designed for providing services of temporary lodging (living) are assigned in accordance with the results of the free-will temporary lodging (living) service certification taking into account the safety for the people's lives and health, protection of their properties as well as the environmental protection in compliance with the agreement between the certification organ and the owner or the designated person (hereinafter referred to as customer) and evaluating the compliance of the hotel with the certain category (hereinafter referred to as evaluation of the hotel).

Hence, the scheme for obtaining the state evaluation of the temporary lodging services for tourists was changed/simplified with this decree.

Let us briefly analyze and identify the main advantages and disadvantages of the existing legislation in this sphere.

Therefore, clauses 6 and 7 of the Decree of the Cabinet of Ministers on “Approving the procedure of temporary lodging (living) services” from the 15<sup>th</sup> of March 2006 № 297 states:

Private entities – owners or tenants of the collective lodging means provide temporary lodging (living) services upon the condition of being registered as entrepreneurs' property parties.

Private entities – owners or tenants of the collective lodging means provide temporary lodging (living) services without being registered as entrepreneurs' property parties [3].

However, it is worth mentioning that there is no clear definition of individual and collective lodging notions. The notion is defined in the Certification rules but not clearly.

Clause 9 states: the fee for the provided temporary lodging (living) services is paid at the 12<sup>th</sup> hour of the current day local time.

There should be introduced force majeure amendments, as a lot of hotels establish individual rules because of the absence of these amendments in the law, and the client can find themselves in an unpleasant situation which spoils the impression about the hotel and the country in general.

Clause 13 states that according to the law, legal and private entities that provide temporary lodging (living) services bear the responsibility for providing customers with the right information about these services.

The responsibility should be transferred to the controlling authority. In this case they will be performing their duties better and carrying out inspections for compliance in the controlled placement facilities in a more strict way.

Clause 4 of the Decree of the Cabinet of Ministers on “Approving the procedure of assigning categories for the hotels and other temporary lodging (living) services properties” from the 29<sup>th</sup> of July 2009 № 803 states: hotels are assigned such categories as: “five stars”, “four stars”, “three stars”, “two stars” and “one star”. Other temporary lodging (living) services properties including motels, boarding houses, recreation houses, holiday centers, camping facilities are assigned categories according to the level of service provided (the first, the second, the third, the fourth and the fifth levels correspondingly) [2].

In order to simplify providing the level of service for tourists at this or that lodging facility it is necessary to standardize all the temporary lodging facilities and develop a consistent transparent system for assessing the quantity and quality of the provided services.

Clauses 5–8 describe the certification procedure and executives which allows assuming that this procedure is quite long-lasting, expensive and includes a lot of excessive elements.

In order to improve the situation, it would be more profitable to develop an assessment committee or use the services of professionals of this or that consulting company. It is necessary to get rid of intermediate evaluations; as soon as the owner of the hotel submits an entry for certification, the committee that is an official certification authority representative is sent to them; it observes, assesses and makes a conclusion which the hotel owner and the certification authority

management will be informed about. If the owner is not satisfied with the assigned category, they are given recommendations for half a year as to what should be improved. If they get rid of the disadvantages, they submit an entry to the committee again. The data about the inspection are not deleted; they are kept in archives and posted on the certification authority official website for every person to be able to see how the evaluation was carried out and what drawbacks were found.

Clause 9 states that the applicant should provide favorable conditions for the work of hotel assessment committee including unhindered access to the necessary documents and premises where the services are being provided.

It is worth mentioning at this stage that the term “favorable conditions” sounds unclearly and perhaps ambiguously. This can be estimated as bribery. There is no definition of these conditions. To ensure the honesty and the quality of work of the committee, it should be filmed when and where the committee was assessing this or that object in the hotel and which conclusions were made. In this case the certification authority can reveal the committee’s bias and the customer will not be able to claim that the committee assessed something in the wrong way or underestimated something in the hotel. The video footage should be kept at the certification organ archive until the next occasion of the hotel confirming its category or its termination.

Clause 14 states: the applicant informs the certification authorities about the changes in providing services that can affect the results of hotel assessment confirmed by assigning a category.

The owner of the hotel can easily hide the data about changes without having the legal demands in front of them; however, these demands exist but they are very vague and give an opportunity to shrink away from responsibility in case of not sticking to this decree clause.

There should be a distinct system of fines and other penalties for data hiding. There should also exist or there should be developed a committee on inspecting the certified enterprises; the time of the inspection should not be given any notice of in advance.

Clause 17 says: Certification authorities and category assigning committee ensure keeping the information confidential since it is commercial classified information.

There should be a unified register for the Ministry to be able to see all the information and for any person to be able to view the information about the owner, hotel sizes, services as well as the compliance with the health and safety regulations.

Clause 18 indicates: Controversial issues that arise when the categories are being assigned to the hotels are viewed by the appeal commission; the provision about this commission is approved by the Ministry of Infrastructure agreed with the Ministry of Economic Development.

It is much easier to have a state contractor – a consulting company that can provide its best professionals in this situation; their services will be paid for by the party that lost.

The Decree of the Ministry of Economic Development and Trade of Ukraine has become operational since the 8<sup>th</sup> of October 2012; it excluded hotel and food services provided by tourism companies from the list of products that are obligatory to certify. Free-will service certification and assessing the compliance of the hotels with the certain category demands based on the contract between the certification organ and the owner were introduced as an alternative, i.e. assigning “stars” to the hotels has become possible due to free-will certification results. This solution looked like the liberalization of state control over conducting tourism activity.

A number of countries, Poland, Lithuania and Latvia in particular brought their hotel industry statutory documents to unified European standards which do not foresee obligatory certification.

The main problem was the fact that service certification on people’s life and health safety was cancelled, although it is the main demand for hotel operation. Taking into account that foreigners are cautious about travelling to Ukraine, this factor can play a negative role in Ukrainian tourism development. Cancelling the unified certification system without introducing a new one is illogical; it would be more reasonable to develop a new modern control mechanism that levels the possible risks, however, the decision was made and the results were not long to come.

European countries that refused from obligatory state certification adopted the HOTREC unified hotel classification standards approved by the European Hotel and Restaurant Confederation and began using new standards for confirming their category with the aim of being competitive.

In their turn, some Ukrainian hotels, feeling free began assigning themselves the necessary amount of stars on their own, without additional cares and expenses. As a result, apart from the hotels that assessed their level on their own and lost the majority of clients, tour operators also suffered losses by lodging their guests in hotels with unofficial “stars”.

The suggested certification freedom did not become an impulse for tourism business development, did not increase the budget and did not

improve the tourism rating of Ukraine. Nowadays governmental authorities are talking about the necessity of obligatory categorization as an important step of organizing hospitality industry in Ukraine. Besides, it is necessary to drastically change the existing hotel classification criteria and bring them in compliance with the European standards.

By virtue of amendments to the law on tourism, tourism infrastructure properties that do not have the certificate of being assigned a certain category (hereinafter referred to as Certificate) should immediately dispossess their guests and close their doors until they obtain the Certificate.

Taking into consideration the complexity and multi-levelness of the procedure, the process of certificate issuance can take a long time which is why some of the terms are not legislatively limited and the term for viewing the documents confirmed by the Order of assigning categories to the hotels (hereinafter referred to as Order) is 14 days.

It is worth mentioning that the introduction of two-level procedure of assigning categories to the hotels in the Ukrainian reality is, in itself, the right solution. This procedure gives an opportunity to ensure the maximum compliance with the statutory regulations under the conditions when not sticking to demands has become the life norm. The committee that obtains the documents is fully protected from inner compromises and outer pressure.

The biggest disadvantage is the sharp increase in the time of the procedure. It is not a secret that the hotels' entering governmental organizations and buying the service of intermediate document checking by the highly qualified lawyers considerably increases the chance of the positive outcome when they will be considered.

Besides, it is worth noting that the cost of the certification authority works has increased together with the new demands being adopted. Two new certification kinds have been added to lodging services certification (for all categories) and food services certification (for 3-5 stars): hairdresser's certification (for 3-5 stars) and the compliance of the category assessment. The cost of each work comprises from 2 to 5 thousand UAH according to the desirable category and the size of lodging facilities.

If we look at the disadvantage in regulatory legislation, one of the main ones is the absence of many terms present in laws, clauses and acts and insufficient distinctness and clarity in the existing definitions. Because of this, these documents can be interpreted ambiguously. There are no connections with the state organs, enterprises, universities and

colleges that educate the professionals in this field who would help in defining the terminology. The problem of indistinct wording in laws, their ambiguity for actual performers and the absence of dialogue between the representatives of this sphere with the government could be solved in this way.

One of the decrees of the Cabinet of Ministers mentions that the hotels are assigned stars during categorization and other lodging facilities are classified according to the level of service. This system is inefficient and does not give the potential clients of “non-hotels” the information about the level of service quality and quantity that they will receive by lodging.

By unifying the system of lodging facilities categories, it is possible to simplify the scheme of category assessment and enlarge the number of both inner and outer tourists as it is not worth making complicated what can be made generally comprehensible for the residents of the country and the foreigners coming to visit us.

A considerable disadvantage for the State Committee of Tourism of Ukraine is the absence of full official Internet list of certified hotel enterprises. As long as the country has a lot of “shadow” lodging facilities and the ones that overstate the number of stars on their own, it would be necessary to develop such a resource and make it popular. It would prove the persistent work of the State Committee of Tourism of Ukraine and other legislative authorities for improving the hotel services quality and providing their customers with full information.

In this way it would be possible to show that the country takes care of its citizens and protects them from dishonest service providers. Moreover, this resource would be able to raise the shadow hotels’ interest to obtaining a category.

As for the Rules of the temporary lodging (living) services obligatory certification approved by the State Committee on Metrology, Standardization and Certification from 03.09.2007, the analysis was carried out that revealed a number of drawbacks.

The certification procedure is unreasonably long; there are not so many hotels and not as few certification authority workers in Ukraine to view one entry during one month. It is necessary to change the certification terms. Hence, in order to speed up making the decision about carrying out or refusing to carry out the certification, it is necessary for the applicant to submit the questionnaire together with the certification application. It makes possible shortening the time for viewing the entry to 14 days. Besides, it is necessary that all the

documents should be sent via email from the organ to the customer; this will also considerably reduce the amount of time and help to avoid delaying and losing the documents.

Furthermore, it is necessary to shorten the term of the customer's giving notice in case of refusing from carrying out the certification about the intentions of getting rid of the drawbacks from 10 to 5 days maximum.

It is worth mentioning that the professional carrying out the certification can be the workers of respective consulting companies or, in compliance with the signed cooperation agreement, professional of various spheres of hotel industry. Financial expenses are shortened; hence, the payment will be made upon completion of services. Thus, it is possible to reduce the number of certification authority workers and keep them only for document management without on-site visits.

The committee membership on appellation categorization should be published on the website. There should be no concerned parties in the committee.

In the questionnaire that is sent to the certification organ, the applicant submits the existing extra questions and annexes that include no important information for the certification organ. This makes filling in and viewing the questionnaire longer.

**Conclusions.** All the countries of the world are concerned with the problem of enhancing production quality including service production. For the enterprises in the service sphere the most important thing is what and how the potential customer recognizes as quality on the service market, in other words, when we are talking about the notion of "quality", the customer's personality is in the center. So, it is undoubtedly necessary to improve and adapt the certification procedure for hotels and lodging facilities.

It has been summed up that the current state of the hotel services standardization and certification procedures in Ukraine is at a quite low and old level; therefore, some suggestions for their improvement on the governmental level have been made, and namely: making amendments to the Order of providing temporary lodging (living) services on terminology, responsibility of the certification controlling organ, the order of carrying out the certification procedure, enterprises owners' giving notice about changing the conditions of providing services, developing a unified information register about hotel enterprises; introducing the state contractor for solving controversial issues – a consulting company instead of appellation committee approved by the Ministry of Infrastructure agreed with the Ministry of Economic

Development. Moreover, it has been suggested to unify the system of lodging facilities categories and develop a single full official Internet list of certified hotel enterprises.

It is worth mentioning that the absence of marketing and service quality management departments in hotels remains a considerable problem of hotel industry in Ukraine. Suburban hotels with lower prices and high level of services that are not worth than world-famous hotels compete with lodging facilities in big cities. Service quality management should foresee studying the hospitality service market, carrying out market researches according to which improving hotel services quality should be performed in accordance with customers' needs.

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**FEATURES OF  
SHARING  
ECONOMY  
DEVELOPMENT  
IN MODERN  
CONDITIONS**

The intensification of globalization processes and the aggravation of environmental problems demand the transition to a fundamentally new culture of goods consumption and the search of innovative approaches to meeting social needs on the principles of cooperation, resource sharing and their efficient use, minimizing the negative impact on the environment. This led to the emergence of such a new phenomenon as

economy of joint participation (sharing economy) which penetrates more and more into all spheres of life of a modern person, allowing him/her to solve his/her problems at a lower cost and much faster.

Ukraine integrates more and more into the world economic system. The rapid dissemination of information technology enhances the links between economic actors and makes them increasingly transnational, and the interplay of the processes taking place there becomes increasingly noticeable. In this connection, the study of sharing economy essence as a socio-economic phenomenon and its impact on all spheres of life in a modern society acquires special significance.

“Sharing economy” notion is rather new and received a detailed coverage of world science only at the end of the last decade. These problems have not been adequately covered in the national scientific literature. A number of theoretical and empirical studies in the context of the economy of joint participation have been carried out in the writings of such foreign economists and sociologists as M. Weitzmann, K. Frenken, L. Gansky, R. Botsman and others.

In 1980s, Martin Weitzman, a professor at Harvard University, laid the idea of the relationship between the growth of well-being and the ability of people to share.

Researchers originally considered sharing economy as the rejection of classical compensation schemes, according to which the remuneration depended on the outcome. Managers and employees were intended to share profits and bonus incentives [1]. The modern phenomenon of “sharing economy” is interpreted differently, for example, collaborative consumption, collaborative economy, on-demand economy, the economic platform, access economy, etc.

The essence of collaborative consumption economy was clearly explained and popularized for the first time by R. Botsman and R. Rogers in their book “What’s Mine is Yours: Rise of Collaborative Consumption” (2010). In particular, they defined the following forms: collaborative consumption, collaborative economy, distributed economy [2].

R. Belk criticizes this definition and makes a distinction between “true” and “pseudo-sharing”. He explains sharing economy as access-based consumption, which is determined by a set of transactions that can be carried out on the market but without transfer of ownership and are significantly different from traditional distribution [3].

R. Vaughan also points out that sharing economy uses digital platforms to allow clients to have access, but not to own tangible and

intangible assets [4].

A similar and most precise explanation for the “collaborative consumption” category was provided by C. Frenken, T. Meelen and other researchers in the “Smarter regulation for the sharing economy”, where they define it as consumers granting each other temporary access to under-utilised physical assets for money “[5].

J. Hamari, M. Sjöklint and other researchers define the collaborative consumption as interdependent work on obtaining, providing or accessing goods and services coordinated by Internet-based services on a specific platform basis [6].

L. Gansky investigates specific networks that allow contact with different nodes of sharing system in her book “The Mesh: Why the Future of Business is Sharing” [7].

In her works, J. Schor defines sharing economy as “digital connection” of economic activity, which includes the following possible categories: recirculation of goods, the increase of the use of long-term assets, the exchange of services, the distribution of productive assets, and the construction of social ties [8].

I. Pais and G. Provasi describe six types of the sharing economy: rental economy, economy of equivalent levels, demand economy, bank and local exchange trading systems, free software, social lending and money mobilization [9].

Explaining the phenomenon of the sharing economy in the future, K. Frick points out that consumers want less to own but gain more profit; they also understand that it is cheaper, easier, and more economically due to social networks [10].

Theoretical research of the sharing economy essence led to the formation of sharing economy model as an alternative to the traditional system.

The scientific hypothesis that underlies this work is that the sharing economy has a significant impact on a number of economic and social parameters reflected in the international indices determining the country's place in world rankings.

The goal of the research is to determine the preconditions of the sharing economy emergence in the world and in Ukraine, its impact on human potential development and the status of social and economic institutes in the country.

The sharing economy (the economy of collaborative participation) is a comparatively new phenomenon in the world. It is considered as a social-economic system based on the collaborative use of resources as

an alternative way of their consumption and distribution, the principles of confidence, accessibility, exchange, cooperation, mutual assistance in direct contact between the participants without intermediaries. The impetus for its emergence was the global financial and economic crisis of 2007-2010.

The main prerequisites for its emergence were:

First, it was the rapid spread of information technology in the world that, in the early 2000's, created opportunities for online communication and network communication systems such as MySpace, Facebook, LinkedIn, which greatly expanded the capabilities of their users to interaction and information exchange, greatly accelerated these processes and provided them with transboundary character. The latter, in this case, has become not just passive consumers of information, but its generators, which has created new opportunities for accelerating the exchange and sharing of benefits.

Secondly, tectonic changes in the system of modern society values contributed to the emergence of the sharing economy. The processes of globalization, economic, financial and political instability have led to a rethinking of people's life goals that, in many cases, consist in the rejection of individualism and demonstrative consumption in favour of collectivism in solving problems, socially responsible behaviour, including through goods reuse and waste utilization.

This was also facilitated by a widespread awareness of the danger posed by anthropogenic pressure on the environment related to climate change, the inexhaustible depletion of resources, population growth, etc. These factors led to the emergence of a new model of business, which is to reduce the negative external aspects of economic entities' activity and to maximize positive ones [7].

The sharing economy is represented by the following areas: providing transport services (Uber, UberX, Lyft), car rental (Relay Rides), travel services (Zimride, BlaBlaCar), bicycle sharing (Boston's Hubway, Chicago's Divvy Bikes); short-term rental of accommodation worldwide (Airbnb, Booking); rental of tools and other things, sale and sharing of unnecessary things, including those used (Ebay, Amazon, OLX, Plyushkin); provision of any services (TaskRabbit, Kabanchik, Sorted); remote work (Freelance); production and sales of individual and rare items (Etsy, Crafta); household and business loans (Fixura, Lending Club); crowdfunding (co-financing of projects, startups, enterprises), discount services, online auctions, sharing of laboratories; service for communication of travelers ready to bring the necessary

travel souvenirs (Bringwasmit); services of a private pilot of a light-jet airplane (2-6 passengers) (Wingly); realization of surplus cooked meals (Shareyourmeal); Christmas trees rental (Happy Tree) and others. The above mentioned sites show that the relationship of people's confidence to one another transforms into the potential of trust in such a service and, accordingly, in financial capital.

The world first sharing platforms were the Hub London, AirBnB, TaskRabbit, Landshare, Ebay, Couchsurfing, Freecycle.

In 2017, the profits from the use of the sharing economy tools in Europe exceeded billions of dollars. They continue to grow. Thus, according to the forecasts of "Price water house Coopers" revenues from collaborative consumption services will exceed 335 billion dollars by the end of the first quarter of the 21<sup>st</sup> century [11].

According to Pew Research Center survey conducted in May 2016, 73% of Americans, even without knowing the term "sharing economy", used the services being its elements. At the same time, 50% of them bought or rented online used goods; 41% used services offering one-day or quick delivery; 28% bought tickets online, 22% bought handicrafts or handicraft products; 22% took part in the collection of funds on-line; 15% used special travel websites; 6% made orders for delivery of goods via the Internet from a local store; 4% worked in the common business space; 2% rented clothes and other goods for a short time [12].

In Ukraine, the establishment of the sharing economy was facilitated by the processes of deepening participation in the world globalization processes, the rapid spread of computerization and informatization in all spheres of Ukraine society life, facilitating access to the Internet, its relative cheapness, the emergence of a powerful school of programming. The first domestic Internet platforms were: OLX, which provided opportunities to buy, sell or exchange products and services online; BlaBlaCar, GiveMeALift, which made it possible to find a travel companion for travel; Dressboom, an online clothing exchange service; "Neighbours" (the personalized info-graphics on finding or renting housing); Preply (service for selecting private tutors), etc.

The use of on-line observations using Internet space to establish links and relationships between research objects based on monitoring blogosphere, websites, Google notifications, Twitter channels and similar sources is widespread in Ukraine. The way of collecting information through searching systems and their updating allows getting data about enterprises, modern tendencies in economy and social sphere, in people's moods and preferences, political processes, etc. [13].

Testing the hypothesis about the interdependence of object prevalence in sharing economy and a number of global indices determining the place of a country according to its social, economic, innovative and institutional development is at the heart of the second part of the work.

To assess the development degree of sharing economy, the special index, sharing initiatives index (SII), is considered expedient to use. It is proposed to be determined by formulas 6.1 and 6.2. The negative value of this index indicates the higher level of sharing service development and vice versa.

$$SII = \frac{\overline{SI} - SI_n}{\overline{SI}}; \quad (6.1)$$

$$\overline{SI} = \frac{\sum_{i=1}^n SI}{n} \quad (6.2)$$

where:  $\overline{SI}$  – the average value of sharing initiatives in tourism sphere;  
 $SI_n$  – sharing initiative in the country of  $n$ ;  $n$  – number of countries participating in the research;

$$\sum_{i=1}^n SI$$

– total amount of sharing initiatives of all participating countries.

Table 6.1 shows the correlation of global indices and sharing initiative index.

138 countries have been selected for research including Australia, the United Kingdom, Israel, Iceland, Canada, China, New Zealand, Norway, South Korea, the USA, Switzerland, Japan, EU countries, the former CIS countries involving Ukraine and other countries of the world in which the above-mentioned international indices were recorded.

To test the hypothesis, the following steps have been completed: collection and analysis of the indicated statistical indices that clearly, uniquely and adequately characterize the development and prevalence of sharing economy objects and provide an opportunity for formulating hypotheses and criteria to verify them; the choice of time interval of research and data preparation for conducting correlation analysis; conducting a correlation analysis with the construction of a correlation matrix and interpreting the obtained results.

The results of the correlation analysis between the studied indicators are presented in Table 6.2.

Table 6.1

**Correlation of global indices and sharing initiative index**

No.	Index	Index essence	Correlation with sharing economy
1	Sharing initiatives index in tourism sphere (SII)	considers available tourist potential and tourist objects offered on Internet platforms (Airbnb, Booking)	reflects number of tourist objects offered by sharing services for short-term housing rentals
2	Human Development Index (HDI)	involves living standard, literacy, education and life expectancy	considers age and education of people who can potentially use sharing platforms
3	Happy Planet Index (HPI)	considers subjective life satisfaction, the expected life expectancy and “ecological footprint”	shows the dependence between sharing service use saving time and money, and happiness level
4	Social Progress Index (SPI)	synthesizes a large number of studies to determine the size of social and environmental indicators of society	shows how social development of the population and urbanization encourage people to self-organization, exchange, mutual assistance
5	Global Innovation Index (GII)	includes innovative aspects that contribute to the growth of production efficiency	shows how innovative Internet technologies and entrepreneurial skills encourage people to use sharing platforms to maximize needs satisfaction
6	Network Readiness Index (NRI)	includes both proprietary and non-proprietary data used to calculate an index	
7	Corruption Perceptions Index (CPI)	is an aggregate indicator that combines different sources of corruption information	proves that the population of countries with the highest CPI is more inclined to solve their issues on the sharing platforms
8	Global Entrepreneurship Index (GEI)	provides information on global entrepreneurship and entrepreneurial skills	the higher the value, the more people use the sharing economy
9	Ease of Doing Business Index (EDBI)	suggests better and easier business regulation	
10	Index of Economic Freedom (IEF)	includes freedom of business, trade, labour relations, investment, and tax, monetary, financial freedom, public expenditure, etc.	
11	Property Rights Index (PRI)	shows the degree of property rights protection	

Table 6.2

**Dependence of the SII and the main global indexes of all countries selected for the calculation**

	SII	HD I	HPI	SPI	GII	NR I	GE I	IEC	ED BI	IEF	PRI
<b>SII</b>	1.00										
<b>HD I</b>	-0.25	1.00									
<b>HPI</b>	-0.23	0.76	1.00								
<b>SPI</b>	-0.25	0.40	0.37	1.00							
<b>GII</b>	-0.25	0.82	0.75	0.42	1.00						
<b>NR I</b>	-0.14	0.74	0.69	0.35	0.82	1.00					
<b>GE I</b>	-0.22	0.83	0.64	0.46	0.84	0.76	1.00				
<b>IEC</b>	-0.06	0.62	0.54	0.25	0.68	0.76	0.76	1.00			
<b>ED BI</b>	-0.23	0.76	0.63	0.36	0.73	0.75	0.69	0.63	1.00		
<b>IEF</b>	-0.18	0.67	0.63	0.25	0.71	0.76	0.66	0.70	0.72	1.00	
<b>PRI</b>	-0.21	0.67	0.58	0.34	0.71	0.68	0.66	0.65	0.63	0.72	1.00

*Note. Calculated on sources [13-16].*

Table 6.2 shows that there is no correlation between SII and other global indices, and there is no close interaction between them. Ranking of countries by size of the indicated indices allowed making more than 20 analytical samples in the order of their growth. Thus, a high correlation was obtained with sorting countries for the SII from less to greater. As a result, significant correlation was found between SII and other global indices among the countries having SII>0 (Table 6.3).

Table 6.3 shows high correlation between SII and other global indices. The mentioned above is logical and confirms these hypotheses: 1) countries with SII>0 have less developed market of sharing initiatives in tourist sphere; 2) the minus sign in the ISP column indicates the feedback of the ISP and other indexes; 3) the less developed the market of sharing initiatives, the less the values of global indices are and lower the level of the country development is; 4) the correlation between SII and CPI is -0.71, which confirms the dependence of the influence of the development and prevalence of the sharing economy objects on the

Table 6.3

**Correlation of SII and basic global indices having SII>0**

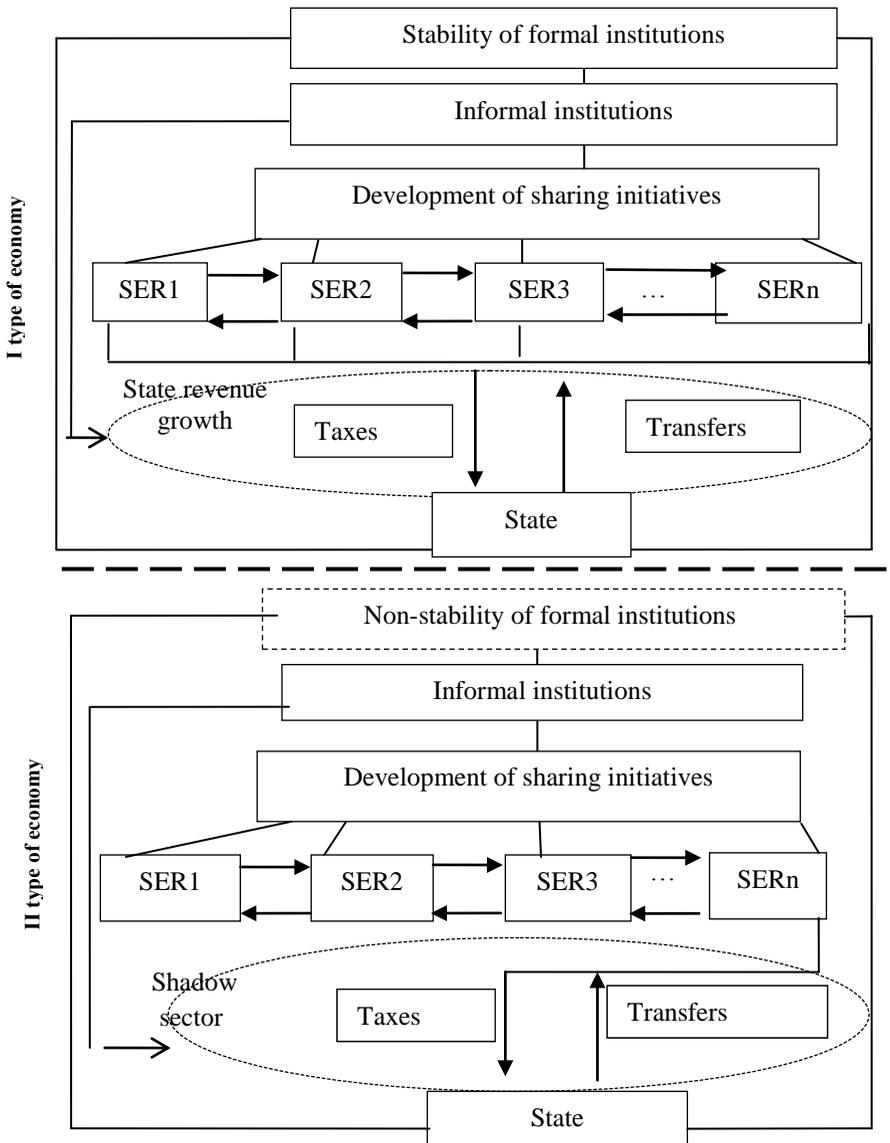
	<b>SII</b>	<b>HDI</b>	<b>HPI</b>	<b>SPI</b>	<b>GII</b>	<b>NRI</b>	<b>GEI</b>	<b>IEC</b>	<b>ED BI</b>	<b>IE F</b>	<b>P RI</b>
<b>SII</b>	1.00										
<b>HDI</b>	-0.73	1.00									
<b>HPI</b>	-0.57	0.71	1.00								
<b>SPI</b>	-0.61	0.52	0.46	1.00							
<b>GII</b>	-0.68	0.76	0.76	0.65	1.00						
<b>NRI</b>	-0.71	0.69	0.69	0.61	0.80	1.00					
<b>GEI</b>	-0.67	0.78	0.59	0.67	0.81	0.78	1.00				
<b>IEC</b>	-0.52	0.55	0.47	0.49	0.63	0.71	0.76	1.00			
<b>ED BI</b>	-0.51	0.75	0.53	0.44	0.63	0.64	0.62	0.56	1.0 0		
<b>IEF</b>	-0.55	0.62	0.58	0.41	0.59	0.64	0.60	0.61	0.6 7	1.0 0	
<b>PRI</b>	-0.53	0.62	0.50	0.46	0.65	0.59	0.62	0.57	0.4 6	0.6 1	1.0 0

*Note. Calculated on sources [13-16].*

degree of transparency of the economy, bureaucratization in the country and filling of the state budget; 5) there is a need to split countries into two types depending on the development level of the sharing initiatives market.

Figure 6.1 shows functioning mechanism of sharing tools in the countries with the developed transparent economy and developing countries having the shadow sector. It is well-known that both formal and informal institutions have an impact on the formation of the economic environment in any state with the developed or non-developed economy.

Thus, we can stress on the basis of this model that the main difference between the developed countries with a transparent system or with a large shadow sector is stability / instability of formal institutions (regulatory framework, political and other spheres of life), which has a close positive relationship with informal institutions (moral and traditional system). Functioning peculiarities of the mentioned institutes have an impact on the fullness of the country budgets and the formation of the shadow economy sector. In fact, in a country with a significant shadow sector, only the nth economic entity will pay direct taxes on its



**Figure 6.1** Functioning mechanism of sharing economies in countries according to development degree and size of shadow sector

*Note: where SER1, SER2, SER3... SERn – subject of economic relations*

*Source: developed by the authors on the basis of the study*

activities and fill the state budget with income. However, the low level of social responsibility of citizens and the instability of formal institutions will contribute to the growth of the shadow sector and low liability in paying taxes when using the objects of the sharing economy, since most operations are not documented [16, p. 557].

Sharing platform spread in the world practice and in Ukraine plays an ambiguous role. On the one hand, national commodity producers providing similar services, producing goods and paying taxes in the budget of the country, suffer from this (have economic losses). On the other hand, they satisfy consumer needs, save resources, save time, formulate distance employment and receive additional income from participants [18].

In the future, the sharing economy will transform not only individual markets and consumption patterns, but also the entire business ideology. Today, technologies, intellectual potential, human resources and time savings remain in the leading position, while material resources goes to the background. Sharing changes the phenomenon of state institution as a regulator of relations, therefore, state governments should develop the model of efficient cooperation ensuring the quality and safety of goods and service consumers, find the way of stimulating innovations, providing guarantees to participants, insuring risks, while supporting the expansion and development of sharing platforms.

Thus, “sharing economy” can be defined as a system of social and economic relations which arise in the process of sharing resources and results of activities (goods, services) and are based on the principles of mutual confidence, joint participation, saving, rational consumption, exchange equivalence based on a subjective assessment of its object usefulness to maximize needs satisfaction.

On the basis of the correlation analysis, close interconnections between global indices and SII have been found that is a statistical confirmation of the development of sharing initiatives and the overall development of countries. The prospect of further research on the role, development and use of sharing initiatives in the economy of Ukraine and other countries of the world is: 1) calculating the integrated index of sharing service market and determining its impact on the development of economy, in general; 2) outlining the role of state regulation and international organizations in the formation and development of the sharing economy.

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**CHINA INTERNATIONAL  
LOGISTICS DEVELOPMENT  
OF BUSINESS AND  
MANAGEMENT**

### **Introduction**

The practice of world economic development shows that a country's economic development has a relatively stable internal links with its industrial structure evolution, and presents a higher sequentiality. Under the background of informationization and globalization, one of the fundamental fact is China's economic development depends on its sustained development rapidly and the economic situation changes driven by industrial development. Of course, it is widely accepted that the economic situation changes reflects not only the structure changes of intra and inter industry, but also the concomitant development of industrial internationalization. At present, as one of the most important productive service industry, the internationalization of logistics enterprises is an important foundation and power to improve the quality of China's economic growth. China's economic is shifting to the "new normal" with the characteristics of enhancing quality and efficiency in order to maintain the rapid development of the domestic economy depending on the optimization of economic structure and industrial innovation as the core driving force. Especially, with its fast economic development and increasing global role, China will promote the internationalization development of its logistics industry according to the design of putting actively forward and implements "the Silk Road Economic Belt and the 21st-Century Maritime Silk Road" in the "new

normal”. In fact, “the Silk Road Economic Belt and the 21st-Century Maritime Silk Road” is structuring infrastructure construction projects with the developing countries along the Belt and Road in order to serve the global trade of China “going out” and build the international service network. China enterprises will reap large business orders including construction, equipment manufacturing and transportation and so on depending on the Belt and Road. However, all those need efficient multinational logistic enterprises using two markets and two resources of the domestic and overseas through internal and external linkage and sea and land planning in order to build well a new pattern of continuous open international competition and cooperation with win-win. At present, it is common to take the proportion of the logistics costs accounting for GDP as a key indicator to measure the efficiency and effectiveness of logistics. In most developed countries and regions, it has been controlled around 10% and even lower. But as for China, the developing country, whose the modern logistics industry scale is still relatively small, and the added value in GDP is less than one-third of that in the developed countries, while the logistics cost is twice than them. Presently, the mode of operation in most logistics enterprises remains in the extensive and primary stage, concept of the modern logistics has yet to take shape, and their service capacity, quality and effectiveness are far more behind the advanced ones. Therefore, it is necessary to strengthen the logistics cost management, analyze and implement the effective strategy to reduce the logistics cost of the enterprises, so as to reduce the overall logistics cost and improve the quality of logistics.

### **Influencing Factors of the Logistics Cost**

From the view of the logistics level, the influencing factors of the logistics cost can be divided into macro, micro and industry. The macro level mainly refers to a country or a region's overall level of logistics development. The improper implementation of the government functions and the irrational industrial structure are important factors that constrain the reduction of the overall logistics cost. As for the industry logistics, it is an activity that mainly refers to a particular industry or a certain category of goods, organize and distribute according to the goods' characteristics. Only by constantly promoting the industry logistics rationalization and standardization, can we achieve the effective control of logistics costs. At last, the micro refers to the enterprises, as the main body of logistics business, the management

level of the enterprises will directly influence the cost of logistics.

## **Macro influencing factors**

### **Government**

#### **1) Government planning and logistics industry**

Industrial development planning, which includes industrial scale, structure and the location of the main producing area directly affect the logistics distribution, scale, level and is the key influencing factor of the logistics cost.

#### **2) Policy support and protection**

The government's plan to reduce the logistics cost is only the basis, it still need the government to secure the implementation. Government policies of logistics include logistics infrastructure construction policy, industrial control and guide policy, open market policy, land policy, financial policy, encouraging investment policy, modern logistics business cultivation policy, logistics personnel training policies, customs policy and so on.

#### **3) Orderliness of government management**

In China, the phenomenon of cross-department, cross-industry and cross-regional is very prominent. Right now, the serious fragmentation problem among the industries or sectors has hampered the scientific and rational allocation and the full play of the social advantages of the existing logistics resources, which bounds the development of logistics industry. And it is contradicting with the modern logistics' systematic and network operation. As a result, it has caused the poor logistics system compatibility, information blockade and increased cost. Furthermore, it is not conducive to the integration of logistics resources and form the large-scale enterprises.

#### **4) Industrial Structure**

A country's industrial structure is also an important factor that affects proportion of the logistics cost accounting for GDP. In the composition of the cost of logistics, transportation and stock cost can account for 85%. So it can be proved that if the logistics cost is high, the transportation and stock cost is also high, and vice versa. From various industry's demand for the logistics services, The manufacturing and mining industry which belong to the secondary industry provide the physical shape products that they can not be separated from the transportation and storage in the process of production and consumption. In consequence, the secondary industry demands for greater transportation and storage, and its logistics cost is relatively high. On the

contrary, the tertiary industry which is service-oriented, the output value mainly from the intangible services, is less dependent on the logistics. Therefore the logistics cost is low and compared with output value it represents part a very small proportion. So that we can come to the conclusion that the logistics cost of the regions which are orientated by the secondary industry accounts for larger proportion of GDP than the ones which is orientated by the tertiary industry. Even if the two regions have different levels of logistics development, the part of the logistics costs proportion is bound to be influenced by industrial structure.

#### **5) The Strategy of the macro logistics cost reduction**

Government should do overall planning, increase the investment and support the development of logistics enterprises. The rationality of Logistics system planning, distribution, as well as the convenience of distribution channels is of vital importance to logistics costs. Logistics system plan and management as a whole must be carried out scientifically and effectively. And with the use of advanced logistics technology, it can ensure the whole logistic system efficient and low-cost. Therefore the Government should do a good job in the city and the whole country's logistics development planning first. The logistics development planning involves in making coordinate and matched strategy among the industrial structure, economic and social development and the logistics, the logistics infrastructure planning, logistics distribution system planning, logistics information platform planning, establishing the logistics development policy. Then on the basis of the appropriate logistics development policy, the government should also set up the specialized logistics management department and logistics trade associations. So that the government can achieve overall coordination in logistics planning, logistics policy establishing, implementing and logistics services, and ultimately reduce the macro logistics cost. Second, the government should also increase the investment in logistics infrastructure, introduce advanced equipment to improve the existing logistics level, optimize and integrated the existing infrastructure, transform and upgrade the existing resources and give full play to the comprehensive effectiveness of existing facilities. Finally, the government should support the development of logistics enterprises in order to promote the optimization of industrial structure. Firstly, it is necessary to encourage the manufacture and circulation enterprises business to transform their processes, separate and outsourcing non-core business, so that can focus on developing the core business; second, it is essential to speed up the development and cultivation of the professional

logistics service businesses, and relax the market access; encourage the transportation, warehousing, distribution, freight forwarders, multimodal transport enterprises through equity participation, mergers, joint venture and other forms to carry out the asset restructuring, gradually build up some cross-border, cross-ownership of large-scale professional logistics business which is high-level service and international competitive; the third is to use information technology to promote Logistics modernization, largely develop the e-logistics and prompt the information sharing; the last is to positively develop the transportation service mode that meets the logistics operation. Through developing multimodal transport, container transport, bulk cargo transport, air transport, using a variety of special vehicles, speeding up the building the transit point for container and bulk terminal, we can make more specialized logistics enterprises achieve rapid development, so that the scale of operation, the use of the advanced technology and automation equipment are all possible and feasible. At the same time, these large-scale logistics enterprises a gradually form a network of logistics and economic union and ultimately enhance their competitiveness, based on these to optimize the industrial structure of the region.

#### **6) Influencing Factors of Industry**

Logistics standardization which includes the standardization and systematic of package of products, the bar coding of logistics information, and the container unitization of loading, unloading, transportation, storage and so on is an effective measure to reduce the logistics cost and improves the efficiency. Logistics is a comprehensive industry, which involves transportation, packaging, storage, loading, unloading, handling, distribution processing, distribution and information and so on. Chinese modern logistics industry is developed on the basis of the traditional industry. As the traditional logistics were artificially separated for a lot of stages and all them can not converge and coordinate well, combined with the blocked information sharing, low level of standardization of the industrial logistics, decentralized management and small-scale, so resulting in inefficient and high costs.

#### **7) The Strategy of the Industrial Logistics Cost Reduction**

The establishment of the standardization of the logistics facility should be in accordance with prevailing international practice and national standard-setting. Then take the whole logistics system as a starting point to study the coordination of the technical and work standards in the various sub-systems and sub-fields, so that to uniform the standard for the entire logistics system. Meanwhile study the

coordination between the logistics system and other related systems, to seek the uniform standard for the large logistics system. The specific measures include logistics facility and related technical equipment normalization, implementation of the standard terms of logistics, unified technical standards and technical management standards for the industrial logistics, the unification of industrial equipment standard, the adoption of the same summons, and specification of goods, policy and regulation as well as the reunification of the tray.

#### **8) The Influencing Factor of Micro Logistics Cost**

The level of the information and integrated management of enterprises in China is generally low. Moreover, the enterprises are lack of infrastructures and logistics talents, and have the poor technology and equipment. The low level of logistics management and service, which lead to high cost. Given the lack of unified planning, it results in the redundant construction. Due to the Market development lagging behind, the most logistics enterprises are in small, many, scattered and weak condition, they don't form an effective social service network. Logistics companies generally do not adopt the total cost control, which has lead to logistics cost fuzzy, logistics cost accounting system guidelines and reputations unclear. When the cost is checked by different sectors, it is not clear enough. The scope and content of logistics cost are not comprehensive, only involve in part of logistics cost, which affect the authenticity of accounting information and is not conducive to the stakeholders to make the right decisions. At the same time, in many enterprises the logistics cost is only a part of the indirect cost of them. These factors have seriously hampered the development of the logistics business, so it is high time that took effective measures to change this situation.

#### **9) The Strategy of the Micro Logistics Cost Reduction**

Firms today increasingly consider total supply chain management to be a major vehicle to gain a competitive advantage in turbulent markets. By implementing the total supply chain management, the flow of goods especially the unnecessary duplication processes can be streamlined. For example, through adopting the total supply chain management in the circulation of goods, the supply chain composed by the manufacturers, third party logistics companies, sales businesses and consumers can become a whole system, and then achieve the integrated logistics. To link the logistics activities from the total supply chain, and focus on the interaction and coordination among various logistics links, especially on the middle links(such as the scientific inventory management which can

reduce the inventory cost; outsourcing which can shorten the in-transit time of goods, reduce the flow of goods and the cost and losses of this process; efficient distribution which can reduce the distribution cost of transportation by decreasing the transport, increasing the rate of loading ,arranging reasonably for the allocation plan of vehicles and choosing the best routes and means of delivery, etc.). On this basis above and with the help of the modern information management system to achieve the optimal control for all as the logistics links, and make all the links processing become more accurate and fast.

#### **10) Virtual Logistics Enterprises Strategy Alliance and Prompt the Development of the Third party Logistics**

Logistics outsourcing is beneficial to the enterprises to reduce the logistic cost effectively and develop their core businesses, accelerate restructuring and achieve scale benefit with the limited resources. As a result, the logistics business outsourcing is an inevitable choice for enterprises to reduce the cost, while the vigorous promotion of development of third party logistics will play a key role. Accelerating the development of third party logistics enterprises is a requirement to achieve the logistics socialization and specialization and the fundamental way to reduce the cost. Now in China, small-scale, narrow scope of business, poor management, low level of logistics information and technology and the lack of personnel is a widespread problem in the third party logistic. In order to change this situation, the traditional ways are to change the management idea, strengthen the management foundation, introduce logistics personnel and advanced logistics technologies, and optimize the allocation of logistics resources. But there is another effective new way which is to form virtual logistics strategic alliance between the third-party logistics companies. Inline with the “complement each other and benefit-sharing "principle, the enterprises cooperate each other, expand logistics market and improve the logistics efficiency, so that cultivate an internationally competitive third party logistics group and finally reduce the logistics cost.

#### **11) Strengthen the Logistics Cost Checking**

Through the logistics cost checking, we can fully reveal the full cost of logistics activities, and raise the person awareness for the importance of logistics cost, thus to achieve the aim of prompting logistics management, reducing the cost and improving the efficiency. So in order to carry out logistics cost control better, and propose logistics cost improvement measures, we must accurately implement the logistics cost checking as follows:

1) The norms and calculation standard of logistics cost checking should be made as soon as possible, which can provide timely and accurate information support for the logistics management and decision-making.

2) Setting up a specialized logistics accounting management and supervision institution. The logistics accounting management is an important part of the logistics industrial management, so the specialized institution should be set up timely to supervise and manage the logistics accounting.

3) Enterprises should establish and perfect the personal responsibility for logistics cost control and regulate the operation of the cost control, including the logistics cost forecast, check, control, analysis and logistics cost information feedback, and so on.

4) Enterprises should build specialized channels to disclose the logistics accounting information to enable the accounting information be completely, timely and accurately received by the business management and relative government administration, which is helpful to implement the proactive monitor and management.

### **Conclusions**

Finally, this paper points out the future trend and direction of the internationalization of China logistics enterprises. The logistics industry is an important driving force for national economic development, and the cost of logistics is an important factor to measure the level of development of the logistics industry. The economical and social benefits due to the effective logistics cost control are notable, and it becomes the most direct means in extending the third-part profit. Therefore, how to implement the rationalization of logistics cost control has been increasingly focused, explored and fulfilled. In this paper, by analyzing the current cost of logistics in China as well as the factors which affect the status of the logistics industry, we put forward an effective strategy based on the view of logistics level which is appropriate to the current situation to reduce the logistics cost.

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**STATE MANAGEMENT OF  
INNOVATIVE  
DEVELOPMENT IN  
FOREIGN COUNTRIES**

Innovation in the global economy is a key factor in improving the competitiveness of the world and is important in the context of globalization.

Innovation activity is an important factor in the development of entrepreneurship and the economy of the country as a whole, therefore, it is necessary to put regulation of innovation activity on the priority positions in the state policy, which would stimulate scientific activity and create innovative products. Therefore, the task of studying the methods of state regulation used in developed countries of the world, the identification of methods that would work effectively in Ukraine [2, p. 32].

The purpose of the work is to study the experience of developed countries regarding the formation and implementation of state innovation policy, as well as substantiation of proposals for the enhancement of innovation activity in Ukraine.

According to the Innovation Union Scoreboard 2018 in 2017, states are divided into 4 groups [1]:

- **Innovation Leaders** are all countries with a relative performance

in 2017 more than 20% above the EU average in 2017 (Denmark, Luxembourg, The Netherlands, Finland, Sweden, The United Kingdom, Switzerland);

– **Strong Innovators** are all countries with a relative performance in 2017 between 90% and 120% of the EU average in 2017 (Belgium, Germany, Ireland, France, Austria, Slovenia, Iceland, Israel, Norway;

– **Moderate Innovators** are all countries with a relative performance in 2017 between 50% and 90% of the EU average in 2017 (Czech Republic, Estonia, Greece, Spain, Croatia, Italy, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovakia, Serbia, Turkey);

– **Modest Innovators** are all countries with a relative performance in 2017 below 50% of the EU average in 2017 (Bulgaria, The Former Yugoslav Republic of Macedonia Ukraine).

The next document that highlights the level of innovation in the economies of the world is Global Innovation Index. The research assesses the elements of national economies in which innovative processes take place, in particular, institutes, human capital, research, infrastructure, market and business development. The Global Innovation Index includes more than 80 parameters, including the number of applications for intellectual property rights, created mobile applications, scientific and technical publications and the cost of education.

Every year, the Global Innovation Index ranks the innovation performance of nearly 130 economies around the world. In terms of income allocated 4 groups of countries (Table 6.4).

*Table 6.4*

**Innovation leaders by income group [4]**

Income level	Countries (ranks)
High income (above \$12,236)	Switzerland – 68.40 Netherlands – 63.32 Sweden – 63.08
Upper-middle income (\$3,956–12,235)	China – 53.06 Malaysia – 43.16 Bulgaria – 42.65
Lower-middle income (\$1,006–3,955)	Ukraine – 38.52 Viet Nam – 37.94 Moldova – 37.63
Low income (under \$1,005)	Tanzania – 28.07 Rwanda – 26.54 Senegal – 26.53

According to the rating in 2018 among the leading innovation countries (Table 6.5): the Netherlands, Sweden, the United Kingdom, Singapore, the USA, Finland, Denmark, Germany, Israel, South Korea, France, Japan, Canada, Australia. Switzerland took the lead in the rating. China entered the top-20 for the first time, and Ukraine – in the top-50 (38.52 points, 43 place) [4]. In 2018 rating includes 126 countries.

*Table 6.5*

**Top-20 States for Global Innovation Index [4]**

Country/Economy	Score (0–100)	Rank
Switzerland	68.40	1
Netherlands	63.32	2
Sweden	63.08	3
United Kingdom	60.13	4
Singapore	59.83	5
United States of America	59.81	6
Finland	59.63	7
Denmark	58.39	8
Germany	58.03	9
Ireland	57.19	10
Israel	56.79	11
Korea	56.63	12
Japan	54.95	13
Hong Kong (China)	54.62	14
Luxembourg	54.53	15
France	54.36	16
China	53.06	17
Canada	52.98	18
Norway	52.63	19
Australia	51.98	20

Our studies allowed us to distinguish between two models of state policy in the field of innovation support:

- 1) Anglo-American, which is characterized by the least interference of the state in the economy, including in the innovation activity;
- 2) Franco-Japanese, where the state most actively supports the innovation process by all possible methods.

In the first case, it is believed that market mechanisms themselves contribute to accelerating the innovation process, so enterprises have full autonomy in the innovation field. The state, meanwhile, focuses its

efforts on creating favorable conditions for doing business, but does not directly provide financial and direct economic support for its implementation. In the second, on the contrary, there is a rather significant influence of the state on the development of the innovation process in the form of direct subsidies and subsidies to enterprises and organizations that carry out innovative activities. Thus, the first model involves the use of mostly indirect methods of stimulating innovation (granting tax and credit privileges, insurance of innovative risks, depreciation allowances, incentives for R & D, formation of reserve funds, etc.), while the second one is characterized by a wide application of a set of methods of direct stimulation of innovation the process.

The most common forms of methods for stimulating innovation processes in a number of countries of the world are reflected in Table 6.6.

For EU countries, three-tiered innovation policy, covering regional, national and supranational components, is characterized. Governments of individual countries have fundamental research priorities, and regions are generally implementing a policy of promoting innovation. Examples of this area of development of the regional component of innovation policy were the widespread participation of particular regions of Great Britain in EU innovation programs, as well as the development and implementation of regional strategies for the innovation development of their own territories. Innovative cooperation enabled the use of production and financial resources, competitive advantages of enterprises of other countries, contributed to the increase of labor productivity and the development of capital-intensive products, enabling a large project to be realized, which is extremely difficult without unifying efforts [2, p. 34].

The European Union uses several innovation policy tools and investment to fund innovation. Among them are direct government funding, primarily through grants, loans, grants, etc.; creation of infrastructure for innovation activity; tax incentives, special schemes for supporting risk financing, providing state guarantees [5, p. 79].

Tools of innovation policy in virtually all countries of the world are different. For example, in Portugal and Spain, a large set of fiscal incentives is used by all companies regardless of their size, and in the United Kingdom – only for small and medium-sized businesses. In countries with high levels of scientific and technological development (Sweden, Germany, Finland), they prefer direct financial support measures, which enables the state to determine which technologies or

Table 6.6

**State regulation of innovation processes in foreign countries**  
**[2, p. 35; 5, p. 80]**

Organizational structures of institutional support	Forms of stimulation	Organizational structures of the innovation process
1	2	3
USA		
Small Business Administration, National Science Foundation, Federal Offices, National Network of Centers for the Introduction of New Technologies, American Association for the Development of Science, Technology Administration, National Research Council, National Institute of Standards and Technology, National Technical Information Service, Office of Technology Policy	Preferential taxation, investment tax credit, preferential treatment of depreciation, subsidies, targeted budget allocations, deductions for R & D expenditures related to basic production and trading activities, from the amount of taxable income	Technological capital network (MKT), technopolises, scientific and technical parks, quasi-risk form of corporation organization, small innovative firms, research consortia and organizations, business incubators, scientific and technological centers, scientific and engineering centers, joint industrial-university research centers, venture companies
Japan		
State Funds to Encourage R & D Activities, Small and Medium-Sized Venture Capital Fund, Small Business Financing Corporation, Center for Enterprise Development Support	Favorable loans, preferential taxation, subsidies	Japanese Research Development Corporation, Technopolis, Science and Technology Parks, Small Innovation Firms, Research Consortia and Organizations

Table 6.6 (continued)

1	2	3
France		
<p>Special Governmental Organization, French Venture Capital Assistance Society, National Center for Scientific Research, National Agency for Research Implementation, National Agency for Advanced Studies, Public Private Bank for Small Business Innovative Business, Science and Technology Foundation</p>	<p>Grants, subsidies, long-term loans, tax credits, credit guarantees, preferential taxation</p>	<p>Technopolises, technoparks, small innovative firms, research consortia, venture capital firms, technology transfer centers</p>
Germany		
<p>Consortiums of small innovative business, state specialized banks, Ministry of Economy Ministry of Science and Technology, Federation of Industrial Research Associations, Patent Center</p>	<p>Targeted free subsidies, subsidies, fees for technical expertise, preferential loans, credit insurance system, tax deductions and benefits, accelerated depreciation, targeted bank loans</p>	<p>Technopolises, technoparks, small innovative firms, research consortia, venture companies, technopolises</p>
United Kingdom		
<p>Council for Science and Technology, Government Councils for Research and others</p>	<p>Preferential taxation, subsidies, write-off of R &amp; D expenses on the cost of production (services), credit guarantees</p>	<p>British technology group, technopolises, small innovative firms, science and technology parks, venture companies, research consortia</p>

sectors of the economy need to be developed in the first place. Unlike indirect incentive methods, financial assistance is targeted. The state, and not the market, determines in which cases additional stimulation is necessary, and in which – not [5, p. 79].

In the UK, East Midlands, Wales and Scotland have their own innovative strategies and actively participate in EU innovation programs. The main focus of this activity is the Forum of Innovation Regions and Innovation Relay Centers – IRC. The Centers for the Promotion of Innovation have the status of independent technology and business advisory organizations that receive assistance from the European Commission [5, p. 79].

Issues of the development of state innovation infrastructure are also given to the USA, Japan, China, India and Russia. However, the United States traditionally holds high positions in various ratings related to innovation. At the same time, in most developed countries, the level of state regulation of innovation activity increases in the form of measures of direct and indirect influence. Among the forms of interaction between the state and business in the field of innovations it is worth mentioning public-private partnership.

To fund fundamental and applied work in the United States, the state creates special funding programs:

- a) Small Business Investment Companies (SBIC);
- b) Small Business Transfer Technology Transfer Program (STTR);
- c) Small Business Innovation Research Program (SBIR) [2, p. 34].

Such a kind of financing of innovation activity as venture financing is widespread. It can be noted that venture financing in developed countries is a powerful lever for the development of innovative projects.

The Japanese model for stimulating innovation involves providing preferential loans, preferential taxation and subsidies [2, p. 34]. The development of public-private partnership, international cooperation in the form of international innovation cooperation, including at the level of regions.

The global innovation divide remains wide, with high-income economies leading the innovation landscape and big gaps in terms of nearly all innovation input and output metrics between these leaders and other less-developed countries.

In scientific works, when considering the methods of state support for innovation, distinguish: European, American and Japanese approaches to innovation activation.

The reasons for differences in approaches to using innovation tools

are difficult to determine, since it is necessary to take into account a large number of different factors, among which are the features of national culture and the history of the country, the current economic situation, which significantly influence the adoption of political decisions. In countries with a lower level of scientific and technological development than the average in the European Union, there are general measures that support a wide range of areas in all sectors of the economy. In this case, the government of these countries focuses on fiscal stimulus measures, which differ in that they allow the market and its participants to decide independently which sectors of the state's economy should be developed.

Thus, taking into account the experience of developed countries in the field of activating innovation, it is possible to distinguish between direct and indirect methods of stimulating the innovation sphere in Ukraine.

Direct methods include:

- budget financing or provision of loans on preferential terms to enterprises and organizations that carry out scientific developments and train qualified personnel;
- gratuitous transfer or provision of state property and land for privileged conditions for the organization of innovative enterprises;
- creation of scientific and service infrastructure in regions where research activities are concentrated;
- implementation of targeted programs aimed at increasing the innovative activity of the business;
- government orders, mainly in the form of research contracts, which provide an initial demand for innovation, and then widely used in the economy of the country;
- creation of scientific and technical zones with a special regime of innovation and investment activity [3, c. 56].

Among the indirect methods, the most priority are:

- tax incentives for investments in the innovation sphere;
- various privileges for subjects of economic activity, which specialize in scientific and technical directions;
- legislative norms that stimulate research activity.

In today's conditions of transnational interaction and globalization, leaders in world markets have countries whose economic development is based on innovation. The demand for innovation is always available, therefore they are the priority direction of policy of most countries,

which aspire to economic growth. It is necessary to formulate such a state policy of regulation of innovation activity, which would enable to effectively stimulate the activities of innovative enterprises and scientific institutions, and also based on the implementation of innovations in the production and the full use of the country's scientific and technological potential, taking into account strategic development prospects.

Managing innovation activities in different countries varies by the degree of state intervention, the needs of society and the level of scientific and technological progress.

For many developed countries, a comprehensive approach to the regulation of innovation is typical, based on the use of both direct and indirect stimulation methods. The innovation environment in different countries is uneven, because each country is at its own level of development, technology levels, educational levels, levels of innovation activity, etc. This combination of other factors predetermines a situation where innovative policy tools and mechanisms of their use can effectively operate in one country, while in other countries they are completely inappropriate, ineffective.

In addition, one of the priority tasks for our country should be the creation of an economic and legal mechanism for the development and introduction of state-of-the-art technologies and innovations in the practical sphere. These mechanisms should facilitate the formation of appropriate conditions for the development of enterprise innovation. It is also important to form the economic policy of the state regarding the introduction into production and the life of the newest technologies, the definition of real prospective sources of financial resources necessary for realization of the predictable directions of innovation development, stimulation and development of venture business, as well as the compliance of the normative and legal base of the scientific and educational levels of specialists for implementation of the cycle "idea – development – innovation – implementation", appropriate methods of managing these processes.

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**THE ASSESSMENT  
 METHODOLOGY OF THE LEVEL  
 OF INTEGRATED STRATEGIC  
 PERFORMANCE OF  
 METALLURGICAL ENTERPRISES  
 BASED ON WORLDWIDE  
 EXPERIENCE IN MANAGEMENT  
 OF INNOVATION DEVELOPMENT**

In the face of growing competition, metallurgical enterprises must constantly seek and exploit new competitive advantages. Such benefits can be attributed to the use of innovative technology for strategic performance management, which may include individual business processes: from simulating different processes to the use of laboratory management systems and computerized logistical support systems, which are integrated with production data coming in real time mode. The use of advanced technologies can help companies to more precisely formulate their inquiries in order to make optimal decisions in various aspects of their activities, such as output prices and profit from the sales, an information about customers and consumer demand, risk management, capital investment, safety of production and operations, relationships with suppliers and international logistics chains.

Thus, the transformation of the business model of metallurgical

enterprises, aimed to increase their strategic performance, should be based on the principles of continuous improvement with the development of a modern management system, measuring and providing the highest possible results as a single integrated model that satisfies the prospects of a criterion determination, based on the identification of key competitive advantages.

The main theoretical development of the concept of measuring performance was obtained in the works of German authors: R. Gleichen, R. Hauber, T. Wetstein, M. Gruning, A. Baum and others.

Almost all of them agreed on the fact that the system of measuring performance: consists of a certain set of interrelated indicators; reflects the comprehensive aspects of the company's activities and monitors the results of its work both at the strategic and operational level of management; provides all interested persons with analytical information on the achievement of the goals of the enterprise; promotes the adoption of strategic and operational decisions at all organizational levels of enterprise management.<sup>1</sup>

The analyses of set of available modern models and systems (BSC, the Performance Prism (Neely, 2002); TPS (Rampersad, 2003), V-model (2004), Kanji's Business Scorecard (KBS) (2002); SAILS (Balachandran et al., 2009), Functional performance measurement system for the integrated business model (Baeza, 2015), "Triple Bottom Line» (Secara,2006), Almström SuRE BPMS (Almstrom et al.,2017); Landstrom's Life Cycle Model (2018) and more than 60 others), in the context of a certain chain of factors ensuring the effectiveness of the activities of metallurgical enterprises on the basis of the impact of global challenges of the industry, precedes the development of an optimal system of "measurement, management and provision" strategic performance of the metallurgical enterprise.

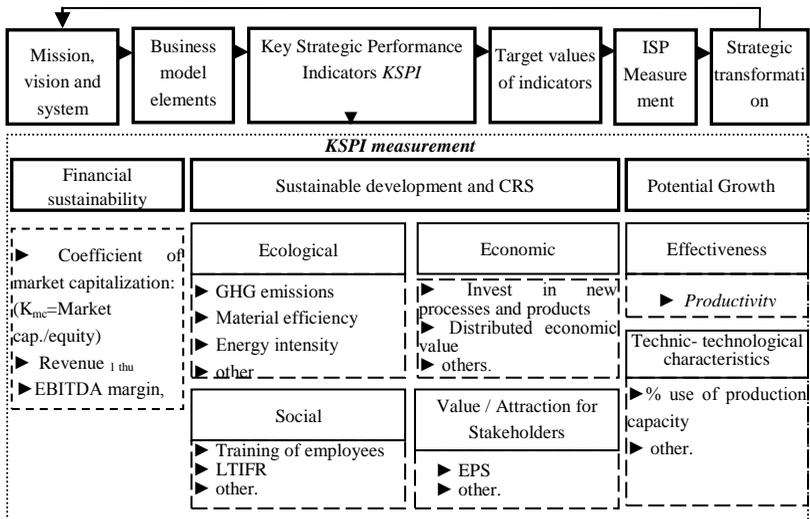
Such a model (system) should be based on the synergistic use of continuous improvement systems (such as EFQM) through the Integrated Life Cycle Toolkit (Batochio, Born) and an intensified CSR management model, which accurately reflects the current prevalent triple model of sustainable development and resource efficiency (SURE BPMS: Almstrom etc.). The implementation of the life cycle model on the basis of the CRS of the metallurgical enterprises is preceded by a general assessment of the level of strategic performance, and provides a

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<sup>1</sup> Samsonowa T. (2012). *Industrial Research Performance Management: Key Performance Indicators in the ICT Industry*. Springer Heidelberg.

comprehensive set of modeling, provision and measurement of the integrated indicator of such performance, starting with identifying key perspectives that should be identified as carriers of key benefits. To optimally identify such benefits, it is advisable to use the benchmarking toolkit, which opens up a range of potential opportunities for strategic development of enterprises in the industry.

Before identifying specific values and prerequisites for providing strategic results, I will present a generalized methodology for measuring them, which should serve as an indicator of the direction of designing specific prospects for the analysis. Using the mechanism of strategic measurement, the model of strategic measurement, that will help to determine the indicators, which are critical to the success of metallurgical enterprises and to measure their integrated strategic performance, can be presented as Figure 6.2.



**Figure 6.2 The universal strategic measurement model**

In this case, the synergistic interaction of key performance indicators that influence and determine the financial-economic, technological, environmental and social performance of metallurgical groups can be measured by calculating the integral strategic performance of the activity, which can be calculated according to the following formula:

$$ISP = \frac{\sum_{i=1}^n \frac{KSPI_i}{KSPI_{ref_i}} \times C_{IO}}{n}, \text{ where: } C_{IO} = \sum_{B=1}^k (C_{IB} \times C_{BO}), \quad (6.3)$$

where:  $ISP$  – integral strategic performance,  $KSPI_i$  –  $i$  key strategic performance indicator,  $KSPI_{ref_i}$  - reference or average value  $KSPI_i$ ,  $n$  – number of chosen for calculation  $KSPI$ ;  $C_{IO}$  - the contribution of  $i$   $KSPI$  into the achievement of the strategic objective  $O$ ;  $C_{IB}$  - the relative contribution of  $KSPI_i$  into the key strategic advantage  $B$ ,  $C_{BO}$  – the relative contribution of key strategic advantage  $B$  into the achievement of the strategic objective  $O$ ,  $O$ - strategic objective of the enterprise;  $B$  – key strategic advantage,  $k$ - total number of key advantages. To compare and find interconnections for the integrity of the estimation, the contribution rates should be equal to units ( $C_{IO} = 1$ ).

When the company is focused on achieving the best possible results,  $IPS$  should be interpreted as follows:  $IPS > 1$  – high strategic performance (the business model of the company is fully corresponds with its strategic objectives and does not require any changes);  $IPS = 1$  optimal / satisfactory strategic performance (the set strategic objectives are fully achieved, the probability of pursuing the previous strategy or identifying new objectives and key benefits, the development of innovation processes);  $IPS < 1$  low strategic performance (it is necessary: to review the strategy of the enterprise, innovation activities, to identify key benefits, to reform the business model, to optimize business processes). The presented methodology of measuring strategic performance is based on a critical success method for identifying key indicators, which are oriented towards objectives, and for identifying key advantages for achieving them.

It is worth to mention that the proposed formula (6.3) can serve as a universal mechanism for measuring the integral level of strategic performance, and should be improved within the framework of the research in the narrow-branch section. To determine the importance of  $KSPI$  and the overall level of strategic performance of metallurgical enterprises, it is advisable to find a correlation coefficient between it and the  $ISP$  of industry leaders. In this way, it is possible to identify the key factors of the success of the chosen industry as a whole, for optimization of which it is necessary to focus the attention of the management of a separate enterprise, further setting them in strategic objectives.

The identification of key success factors for global industry leaders enables both the implementation of best practices in the company's management, as well as the achievement of specific strategic objectives of the company and the development of a strategy based on ensuring long-term business sustainability, requiring structural organizational transformations. Ukrainian enterprises need to constantly implement the best management practices based on a common vision, values, culture and the effective implementation of adaptive changes.

In order to identify the key values of providing strategic performance on the basis of the analysis of worldwide experience in the management of innovative development of metallurgical enterprises, we selected the 8 world largest companies representing TOP countries of the industry sample of comparisons in the key areas: iron, steel and ferroalloys production (ArcelorMittal (Luxembourg), Nucor (USA), POSCO (South Korea), China Baowu Group (China), Nippon Steel & Sumitomo Metal Corporation (NSSMC) (Japan), PJSC Novolipetsk Metallurgical Plant (NLMK) (Russian Federation)), production of light metal packs (Crown Holdings, Inc., USA), manufacturing of metal building constructions and products (Lindab group., Inc. (EU)). The sampling rate is fully corresponds with the scale of enterprise activity in both the global and national levels.

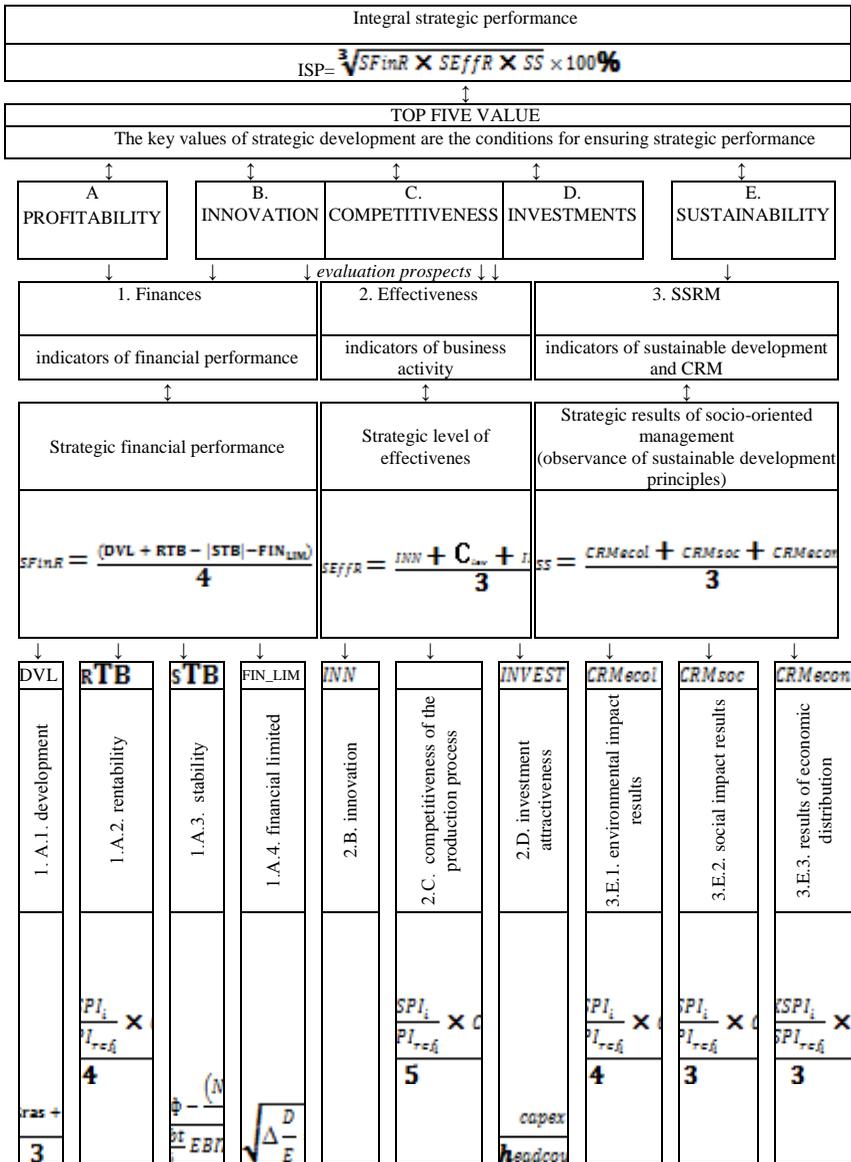
According to the analysis of companies with "the best practices", global leaders' strategies have a tripartite focus on: financial development (including long-term profit growth, expansion of business in targeted international growing markets, disciplined pricing, cost control and thorough capital allocation), high value propositions (including long-term strategic reorganization to create higher added value for bigger number of stakeholders and cover most of the value creation chain, combining operational efficiency programs and investment projects, developing an optimal production structure with a globally expanding production base based on production capabilities through product competitiveness) and sustainable development (including promoting the development of national economies through the production of high-quality products on the basis of following the new paradigm of growth "corporate citizen").

Thus, the strategic benchmarks of leading industry leaders are consistent with CRM and CRS principles, based on the principles of sustainable development and continuous innovation-oriented improvement (i.e. using a process management approach).

With the aim of realizing strategic benchmarks, which, under the actual conditions, promote the leading place of the selected companies in the economy of the industry, the leaders of metallurgical industry have identified key competitive advantages, providing strategic performance. These key competitive advantages are following:

- ✓ global scale and scope;
- ✓ favorable geographic location as the basis for energy efficiency and productivity;
- ✓ excellent technical capabilities;
- ✓ vertical integration (diverse portfolio of metallurgical and related enterprises, including mining);
- financial capabilities;
- ✓ the core values of sustainable development, quality and leadership coupled with entrepreneurial courage;
- ✓ effective distribution concept (expansion of sales channels to enter the market in order to increase the volume of basic loading of their own metallurgical plants in order to achieve sustainable results);
- ✓ commercial excellence in addition to traditional operating capacity;
- ✓ creating value for all stakeholders, social responsibility, corporate culture of trust and creativity,
- ✓ cost management / competitive cost advantages (supply of materials and solutions that respond to changes in society and industry);
- ✓ technical leadership, ahead of service, SMART production, urban development concept (a new philosophy of developing plants within the city – "sensory plant, sensual city" – based on the maximum involvement of staff and management in the process of creating a comfortable environmental urban environment (the main goal-improving the quality of life)
- ✓ increase in business processes efficiency,
- ✓ the collaboration with customers
- ✓ the commitment to innovation and the development of new products (above all, investment in innovation);
- ✓ the development and training of staff.

Thus, the three universally key values of strategic development, which act as fundamental conditions for provision of strategic results, which, in turn, facilitate a certain level of success of the selected companies are as follows: 1) their profitability, 2) ability to innovate, 3) competitive advantage or the USP of their product 4) active investment policy 5) continuous development.



**Figure 6.3 Author's methodology for assessing the level of integrated strategic performance of metallurgical enterprises by identifying key factors for the success of global industry leaders in innovation development**  
*Source: developed by author based on benchmarking and analytics*

The abovementioned key values give an opportunity to isolate three key perspectives for valuation/assessment of the strategic performance: financial indicators, efficiency indicators and society sustainability related management. (SSRM = CRM + SS).

Figure 6.3 illustrates the author's methodology for estimation of the integral level of strategic performance. It bases upon all universal and industry specific key success factors of the global leaders of metallurgical industry and remains an original instrument for assessment of performance, when it comes to hitting strategic objectives for metallurgical enterprises.

$$ISP = \sqrt[3]{SFinR \times SEffR \times SS} \times 100\% \quad (6.4)$$

where: SFinR - strategic financial performance,

SEffR - strategic level of effectiveness,

SS - strategic results of the societally oriented management (i.e. maintaining continuous economic development). All perspectives of strategic performance, highlighted within the main grouped KSPI are examined as a measure of achievement of target results.

According to hierarchical conception of KPI construction, specific to the system of the lifecycle and continuous improvement of BPMS, for every perspective analysis, it is necessary to identify the group's KSPI – conditions for results provision based on key strategic values, the own/personal KSPI, the estimated indicators of identification of satisfaction of the given conditions and proxy changes based on correlational-regressive interconnection, at the same time, separating the necessary KSPI for modeling of optimal decisions of national companies for review on “best business practices”.

According to the author's methodology, financial performance of the companies is estimated through a measure of achieving of the objectives and the distance which separates it from the perfect figures in four specifications (group's KSPI) (6.5):

$$SFinR = \frac{(DVL + RTB - |STB| - FIN_{LIM})}{4}, \quad (6.5)$$

where: **I** – the universal indicator for development of an enterprise, is examined against a perfect score (positive value > 0);

**E** – the universal return indicator of the enterprise, which indicates a % of achieving the targeted profitability results (out of a 100%),

**S** – the stability indicator, which indicates a the distance of the enterprise from the optimal level of debt loading,

FIN\_LIM – efficiency of the division of capital in the atmosphere of financial limitations and it is estimated as %-ge change (wherein, growth demonstrates a negative tendency).

The perspective of measure of effectiveness is estimated through the degree of achievement of objectives and by deviation from the perfect figures in the following three parameters of Innovation (INN): ability to innovate, optimal level of production (competitiveness of production process, and fulfillment of production potential) (C lev) as well as attractiveness for investment (INVEST) (6.6):

$$SEffR = \frac{INN + C_{lev} + INVEST}{3} \quad (6.6)$$

Performance of society sustainability management, based on CRS principles, according to author’s methodology is introduced as an extended modification of the “Eight Global Economic, Social and Environmental Indicators” of sustainable development WSA<sup>2</sup>, and can be determined through the following formula (6.7):

$$SS = \frac{CRMecol + CRMsoc + CRMecon}{3}, \quad (6.7)$$

where: CRMecol, CRMsoc and CRMecon are the results for environmental, social and economic influence respectively, in the context of sustainable development. All these measured must be estimated against perfect global average figure (defined by WSA) through the methodology of IPS determination.

ISP of the global leaders within metallurgical industry in 2017 was estimated within this research (Table 6.7, calculated by author's methodology based on company reporting and WSA data) and a degree of correlation between it and KSPI was established (6.4).

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<sup>2</sup> WSA sustainability indicators // WSA (2019). Retrieved from <https://www.worldsteel.org/steel-by-topic/sustainability/sustainability-indicators.html>.

Table 6.7

**Integral strategic performance of the global leaders of metallurgical industry in 2017 (lag-year)**

KSPI Group / Perspective	KSPI Group/ KSPI	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	AVER
		ArccelorMit tal	Nucor	POSCO	BAO stell	NSSM C	NLM K	Crown Inc.	Lindab Group	
Development, %	<b>DVL, %</b>	7.8	6.0	0.3	5.7	18.2	44.4	0.6	2.2	10.6
	<b>GRrev, %</b>	20.9	25.0	17.3	15.6	18.6	31.8	5.0	5.2	17.4
	<b>Gras, %</b>	5.6	5.1	-3.7	-0.5	12.2	10.8	3.3	3.3	4.5
	<b>GR<sub>EVA</sub>, %</b>	-12.4	-48.6	-50.5	7.6	95.7	362	-26.3	-7.8	40.0
Rentability,%	<b>RTB, %</b>	87.8	107.8	66.6	94.0	52.4	189	140.7	61.2	100
	<b>EBITDA<sub>margin</sub>, %</b>	11.9	12.9	13.1	14.9	9.2	26.4	15.2	7.9	13.9
	<b>ROA, %</b>	5.7	8.9	3.8	5.7	2.9	13.7	4.2	4.6	6.2
	<b>ROE, %</b>	12.5	15.9	6.5	12.1	6.4	22.4	53.8	8.7	17.3
	<b>ROS, %</b>	6.7	6.8	4.9	7.0	3.9	14.4	4.9	4.2	6.6
Stability, points.	<b>STB, p.</b>	0.1	-0.6	-0.2	-0.2	0.6	-0.7	0.4	0.0	-0.1
	Net debt/ EBITDA, p.	5.1	2.1	3.8	4.0	7.6	1.4	6.8	5.0	4.5
Financial limited, % of change	<b>FIN LIM, %</b>	-11.5	14.2	-6.8	-3.9	11.8	-0.1	97.2	-7.3	11.7
	<b>D/E, p.</b>	1.2	0.8	0.7	1.1	1.2	0.6	11.9	0.9	2.3
	<b>KZ_Index, p.</b>	1.4	-1.8	1.3	3.3	2.9	1.7	24.5	1.5	4.4
Innovation, % of change	<b>INN, %</b>	23.9	6.4	19.5	-28.0	17.9	39.7	2.0	1.1	10.3
	Prod, mln \$ by emp	0.3	0.8	1.7	0.8	0.5	0.2	0.4	0.2	0.6
Competitiveness, point	<b>FoV, p.</b>	1.9	4.0	1.9	1.8	2.0	1.9	2.7	6.4	2.8
	<b>C lev, p.</b>	0.92	1.08	1.02	1.03	0.87	1.15	1.03	0.96	1.0
	<b>ef_ness, p.</b>	0.92	1.01	0.99	0.99	0.88	0.96	1.00	1.00	1.0
	<b>Qy, p.</b>	0.7	0.7	1.1	0.8	0.9	0.4	25.1	3.2	4.1
	<b>K<sub>bit</sub>, p.</b>	0.85	1.00	0.99	0.97	0.89	0.65	1.00	1.00	0.9
	<b>res_ec, p.</b>	70.3	70.3	63.3	70.6	75.2	74.6	75.8	49.8	68.8
Investment attractiveness, % of change	<b>tr_iny, p.</b>	0.3	0.6	0.5	0.6	0.1	1.2	0.8	0.4	0.6
	<b>INVEST, %</b>	16.2	-29.4	-4.7	-60.3	12.3	9.8	3.8	-3.4	-7.0
Environmental impact results	<b>capex/h.c., mln \$ by emp.</b>	0.01	0.02	0.11	0.03	0.04	0.01	0.02	0.00	0.0
	<b>CRMecol, p.</b>	0.9	2.0	1.2	1.3	0.9	0.9	1.0	3.3	1.4
	<b>CO2/t</b>	2.1	0.9	1.9	1.0	2.0	2.1	4.0	7.9	2.7
	<b>En_int, GJ/t.</b>	23.8	4.9	11.5	17.0	23.0	23.0	12.2	1.8	14.7
	<b>M_ef, %</b>	88.6	82.0	98.4	99.2	99.0	86.9	100.0	89.0	92.9
Social impact results	<b>Env_MS, %</b>	98.1	100.0	92.3	92.0	96.7	89.1	99.0	97.0	95.5
	<b>CRMSoc, p.</b>	3.3	3.8	3.3	8.6	3.2	1.5	4.7	1.7	3.8
	<b>LTIFR, inj / mln h of work</b>	9.3	0.0	0.8	0.1	0.3	0.1	0.7	0.4	1.5
	<b>train_h, train days/emp</b>	22.0	82.0	49.0	85.0	13.1	16.9	16.3	11.4	37.0
Results of economic distribution	<b>Sal<sub>av</sub>, k\$</b>	1 192	792	701	1 120	1 183	639	11 924	909	2300
	<b>CRMecon.p.</b>	0.98	1.18	1.07	0.84	1.16	1.37	0.73	1.23	1.1
	<b>cont_impr, %</b>	2.0	6.1	4.5	4.1	7.2	8.6	6.0	4.5	5.4
	<b>ValAd, %</b>	24.2	27.0	19.3	18.8	17.2	42.0	20.5	53.2	27.8
Strategic fin. performance, %	<b>Ec_inv, %</b>	97.3	99.0	99.2	97.0	98.0	97.9	99.3	94.3	97.7
	<b>SfinR, %</b>	25.4	10.5	12.9	21.6	0.3	41	0.9	17.0	16
Strategic level of effectiveness, %	<b>SeffR, %</b>	43.9	28.5	38.8	4.9	39	55	36.1	31.1	35
Strat.sustainable performance,p.	<b>SS, p.</b>	1.7	2.3	1.8	3.6	1.8	1.2	2.1	2.1	2.1
<b>Integral strat. performance</b>	<b>ISP, %</b>	80.4	90.5	78.7	128	72	73	83.9	84.8	86

According to the calculation, China Bao Steel had the highest level of strategic performance, recorded at 128,3%. This company exhibits a balance among all key performance indicators and acts as an industry leader in environmental efficiency and technological innovation. Thus, effective strategic management of the metallurgical enterprise lies within harmonization of various types of performance and development of innovation for products and processes. The lowest level of integral strategic performance among the entities who employ best practices equals to 71,9% (NSSMC), which marks a border line for satisfactory results. Thus, optimal range for strategic performance lies between 70% an 150%.

Table 6.8 illustrates results of analysis of correlations between ISP, KSPi and KSPI of the enterprises, which employ best practices. The goal of that analysis is to identify the success factors, which facilitate high strategic performance.

The research found that among KSPI of financial performance, the company's development indicator has the highest impact on IPS. The determining change here is the level of increase of the market capitalization (economic value  $R2 [DVL:GR_{EVA}]=0,96$ ), provided other indicators have an average level of impact ( $R2 [DVL: GR_{rev},GR_{as}] \approx 0,53$ ). The key advantages in the metallurgical industry among KSPI of the effectiveness are innovational and investing orientation of the enterprises, among KSPI of sustainable development are results of the social impact. It is identified that the integral value of IPS is found to be in the highest possible level of dependency from results of society sustainability management ( $R2[ISP:SS] \approx 0,93$ ).

Further research of this methodology should be oriented for its practical application for selected metallurgical enterprises.

Table 6.8

The analysis of correlations between ISP, KSPi and KSPI of the enterprises

Prospect	R2 to ISP	KSPi Group		Estimate	KSPIi	R2 Group to KSPI <sub>i</sub>	
Strategic financial performance	SFinR	0,383	Development, %	DVL	positive value > 0; relative to etalon	GRrev	0,529
						GRas	0,530
		0,005	Rentability, %	RTB	% achievement of target results (About 100)	GR <sub>EVA</sub>	0,963
						EBITDAmargin, %	0,538
						ROA	0,518
0,022	Stability, points	STB	(0-ideal stability, distance estimation from 0)	ROE	0,660		
				ROS	0,570		
0,008	Financial limited, % of change	FIN_LIM	% of change (growth of indicator- negative, decrease-positive)	Net debt/ EBITDA	1,000	D/E	0,294
Strategic level of effectiveness	SEffR	0,783	Innovation, p.	INN	positive value > 0; relative to the standard; growth-improvement	Prod	0,013
						FoV	0,056
		0,008	Competitiveness, point	C_lev	valuation relative to 1, 1-target competitiveness achieved, >1 competitiveness above the competition)	ef_ess	0,428
						Qy	0,003
0,862	Investment attractiveness	INVEST	growth -positive value> 0; regarding industry indicators within country	-K_rd	0,081		
				res_ec	0,034		
Strat. sustainable performance	SS	0,016	Environmental impact results, p.	CRMecol	valuation relative to 1, 1- targets achieved; <1 - not reached	tr_iny	0,838
						capex/h.c.	1,000
						CO2/t	0,511
		0,794	Social impact results, p.	CRMsoc	valuation relative to 1, 1- targets achieved; <1 - not reached	En_int	0,700
						M_ef	0,158
						Env_MS	0,092
						LTIFR	0,010
0,250	Results of econ.distrib., p.	CRMecon	valuation relative to 1, 1- targets achieved; <1 - not reached	train_h	0,464		
				3Ilc	0,175		
Integral strategic performance	ISP	0,005	Strategic fin. performance	SFinR	% achievement of target results (About 100)	cont_impr	0,233
		0,857	Strategic level of effectiveness	SEffR		ValAd	0,269
		0,930	Strategic sustainable performance	SS		Ec_inv	0,077
ISP model	1	ISP=14,85 C_lev+9,28 CRMecol+8,37 CRMsoc+7,73 STB-0,21				1	
accor KSPI	1	FIN_LIM+0,16 RTB -0,09 DVL+14,9					

Source: calculated by author's methodology based on company reporting and WSA data

## CONCLUSION

In a market economy one of the most important factors in the effective functioning and development of economic entities is the successful implementation of their innovation activities. In turn, the spread of processes for the introduction of innovation by economic entities becomes a key condition for accelerating the socio-economic development of the country.

The results of the author's research in the collective monograph are devoted to solving problems of formation and development of an effective system management of innovative development and theoretical-methodical principles of organizational-economic management by choosing directions of innovative development the economic entities.

Innovative activities are usually carried out by economic entities from time to time, rather than on a regular basis, due to lack of financial and other resources, uncertainty and increased risk of innovation, lack of appropriate experience in innovation management and effective science-based tools formation of the mechanism management of innovative development.

The main advantage of the innovative way of development is ensuring economic growth without proportional increase in consumption of raw materials, formation of conditions under which investment into the creative and scientific potential of society becomes extremely advantageous. After all, innovative development the economic entities, based on the general principles of cyclical development of scientific-technological progress, determines the objective need for changes in generations of technology and technologies, provides of possible alternatives for the implementation of scientific-technological innovations, etc.

The presented results of the research in the collective monograph reflect the theoretical and practical aspects of the introduction of mechanisms for the management of innovative development the economic entities.

It is established that the increase of the efficiency activity the economic entities in the current harsh environment of the competitive environment is based on the improvement of the process management of innovative development the enterprise.

It is determined that the need for implementation of innovative development the economic entities are stipulated: the intensification of intensive factors the production development, which promote the

application of scientific-technological progress in all spheres of economic activity; the determining role of science in improving the effectiveness of the develop and introduction of new technology; the need for a significant reduction in the timing of creation and implementation of new technology; increase of technical level of production; the need to develop the creative skills of inventors and innovators; increase in costs and deterioration of economic indicators of economic entities when developing new products; rapid moral aging of technology; the objective need for accelerated implementation of new technology, etc.

The system management of innovation development is an open system that constantly interacts with the external environment of activity, providing flexibility and adaptability the economic entity to market conditions. Taking into account these functions makes it possible to conclude that the process of transition the economic entity to the innovative way of development requires the creation of a new system of its organizational management taking into account corrective actions.

Innovative development in the volatile market conditions of the transition economy is characterized by specific features that cause the formation of numerous models of management systems in each particular situation. The choice of a model depends on the conditions of activity the economic entity, the level of economic development, the formation of its innovative potential.

The current stage of expansion of globalization, informatization and market relations provides great opportunities for development at the expense of connecting to innovation processes more advanced economic entities, integrating participants of innovations within the framework of cooperation, attracting Internet technologies, using world achievements and opportunities of international institutions. According to practice the business entities in the formation of organizational potential insufficiently used the possibilities of world consolidation. The main reason for such a situation is the low level of readiness for changes the economic entities. The period of organizational change requires serious investment, which in turn limits the possibilities of the current economic growth the economic entity, regardless of the sources of funding for innovative development programs. At this stage, the formation and flexibility of the management system of innovative activity the economic entity enables to transform into a new way of development without unnecessary expenses. Innovative development is a systemic orientation of activity the economic entity to achieve high performance results at the expense of innovation factors, which are based on a continuous uninterrupted search of new means and

spheres of realization of the potential the enterprise in an unstable market environment. Innovative development at the level of an individual economic entity involves the implementation of the process of introducing promising innovations, the implementation of which should contribute to increasing the competitiveness of the enterprise.

The transition of the economic entity to the way of innovation development requires him to organize a management system capable of responding quickly to changes in both the external and internal environment of operation. Management of innovative activity the economic entity is a complex system of interrelated functions, the sequence of which ensures the formation of competitive advantages through innovative development factors.

The economic situation in recent years is characterized by an increase in the degree of globalization and business informatization, increased competition on the markets of goods and services, capital and labor. Such market development leads to the need to create a sustainable innovation policy, which is based on the integration of economic entities, concentration of capital. As the world experience shows, alternatives to innovative development today do not exist yet, since it is practically impossible to compete in foreign markets in the traditional field of activity. Only fundamentally new technologies, supported by managerial innovations, will create a new competitive environment and provide the prerequisites for achieving leadership positions on the market. In turn, increase of business activity and innovation will allow providing high rates of economic growth, increase of capitalization the economic entities and scale of production.

The generalized researches in the collective monograph indicate that the management of innovative development the economic entities should be considered as a systematic management of innovation activities aimed at creating and ensuring the achievement of economic growth through the rational use, increase and distribution of innovation and economic-technological potential, including material, labor, financial, information resources, in order to transform it into innovative capital, is capable of providing innovative development the enterprise. That is, while managing of innovative development the economic entities there is a systematic decision-making process and the transformation of innovation potential into innovative capital, the very realization of innovation potential leads to the innovative development of economic entities, and the systemic ensures the sustainability of development.





# **Organizational-economic mechanism of management innovative development of economic entities**

Collective monograph edited by  
M. Bezpartochnyi

## **Mechanizm organizacyjno-ekonomiczny zarządzania innowacyjnym rozwojem podmiotów gospodarczych**

Monografia zbiorowa pod redakcją naukową  
M. Bezpartochnogo

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