GLOBAL ASPECTS OF NATIONAL ECONOMY DEVELOPMENT IN THE CONDITIONS OF TRANSFORMATIONAL CHANGES

Collective monograph

Lviv-Toruń
Liha-Pres
2021

Reviewers:

Prof. nadzw., dr hab. ***Stanisław Kunikowski,*** *Rektor of Cuiavian University in Wloclawek (Republic of Poland);*

Prof. dr hab. ***Joanna Marszałek-Kawa,*** *Uniwersytet Mikołaja Kopernika w Toruniu / Nicolaus Copernicus University (Republic of Poland).*

Recommended for publication by the Academic Council of the Kherson State Agrarian and Economic University (Minutes № 3 of November 3, 2021)

Global aspects of national economy development in the conditions of transformational changes: collective monograph / L. O. Aleschenko, O. V. Averchev, V. O. Boiko, S. Yu. Bolila, L. V. Borovik, O. V. Cheremisin etc. – Lviv-Toruń : Liha-Pres, 2021. – 248 p.

ISBN 978-966-397-239-8

Liha-Pres is an international publishing house which belongs to the category „C" according to the classification of Research School for Socio-Economic and Natural Sciences of the Environment (SENSE) [isn: 3943, 1705, 1704, 1703, 1702, 1701; prefixMetCode: 978966397]. Official website – www.sense.nl.

ISBN 978-966-397-239-8

CONTENTS

OPENING ADDRESS

Global aspects of the national economy development in the conditions of transformational changes

Today's world is undergoing a difficult period of radical transformation, which are uncertain in their effects on the foundations of different levels of economic systems, reflected in a decline in their systemic resilience, and are accompanied by crisis-related phenomena. The intensification of conflicting views, the randomness of economic dynamics, and the increase in global crises at the turn of the millennium are due to the industrial economic system in the most developed countries, to the exhaustion of growth potential with insufficient ability to find the appropriate response to the challenges of the new century, the era and transform to digital development.

Global trends are changing in national economic systems, which are different from their own trajectories. The large-scale transformations have spread to modern countries. As a result of their implementation, there has been a sharp shift in the trajectory of economic relations, accompanied by enormous social costs resulting from a lack of attention to the state of economic relations and the characteristics of their previous development.

Today it is becoming even more that the choice of ways of further development of modern countries requires an analysis of one's own practice of systemic economic transformation and a detailed study of the directions of development of the world economy, generalizing the experience of the developed countries in adapting to the realities of the modern world market. The inevitable result of general development patterns is the processes of transformation of economic systems, which at the same time presuppose a theoretical understanding not only of the general but also specific, including taking into account current trends in economic dynamics and the challenges of rapidly evolving globalization processes. At present, it is particularly important to understand the relationship between the transformation of

economic systems and contemporary globalization challenges, patterns, and trends in the information and scientific and technological development of the world economy. The increasing interaction of national economies and the accelerated development of globalization processes are increasingly influencing the shaping of the vector of economic transformation and the effectiveness of systemic changes.

The questions of transformation the economic systems are deeply rooted in general economic theory. The problems of forming, development, and changes of economic systems are directly related to it, and they have been studied in the work of many scientists for a long time. Active interest in the transformation of economies has recently emerged. The interest is largely caused by the strengthening of the interconnection of national economies, the expeditious integration into the world economy, the increase in the number of factors in the functioning of the economic system and its changes.

The authors of the collective monograph «Global aspects of the national economy development in the conditions of transformational changes» have been reviewed the modern state of the economy and industry given global challenges, new economic reality, development of the theory of digital economy and management, and have been developed of proposals and aggregation of the results of practical activities on the formation of industrial policy in the conditions of the turbulent environment, introduction into production of modern science-intensive technologies, as well as generalizing experience in preparing agri-economic personnel.

The monograph has been prepared by employees of the Kherson State Agrarian and Economic University, and the monograph materials will be useful for researchers, managers, and specialists of agrarian enterprises, scientific enterprises, organizations and institutions, teachers, post-graduate students, and students.

DOI https://doi.org/10.36059/978-966-397-239-8-1

ANALYSIS OF ACTIVITIES AND PROSPECTS OF DEVELOPMENT OF TOURIST BUSINESS ENTITIES

Aleshchenko L. O.

INTRODUCTION

At the present stage, the tourism industry in the world has a significant impact on the functioning of the economic system of each country. Stable development of the tourism sector has a positive impact on socio-economic processes – new jobs are created, budget revenues increases, the welfare of the population also increases. According to the UN World Tourism Organization, the contribution of tourism to the world's gross domestic product is 10%, and in Ukraine, this industry is just beginning to develop, not using the significant tourist and recreational potential of most regions. During the crisis caused by the coronavirus pandemic, the problems of domestic tourism development become relevant and the issue of financial support of the industry as a whole, including through investments, becomes quite acute.

One of the main components of an efficient economy around the world is entrepreneurship. It creates the conditions for effective economic development and growth, which leads to lower unemployment and creates conditions for increasing the number of jobs. The experience of the whole world shows that small and medium-sized businesses play a key role in ensuring employment and economic growth. Therefore, the rather difficult situation in the world and the difficult state of the economy in the country have increased the need for the formation of these forms of entrepreneurship. In turn, the tourism sector in the world economy is a very attractive type of financial activity that brings high and stable profits.

Realization of the set strategic tasks in the tourist branch of Ukraine is possible only on the basis of active introduction of small and medium business in the sphere of tourism, development of the organizational and economic mechanism of effective cooperation of subjects of tourism and authorities taking into account regional competitive advantages and available potential.

This study is devoted to the current state, problems, and prospects of development of tourism businesses in Ukraine in general and the Kherson region in particular. Proposals for the realization of the tourist potential of the southern region have been developed. On this basis, the task is to conduct an economic assessment of tourism businesses in the country and the region, identify types of tourism in which the region can be realized, and increase the

attractiveness of domestic and foreign tourism; prospects for effective cooperation between the state and tourism businesses are grounded.

1. Current state, problems and prospects of development of tourist business entities in Ukraine

The Strategy for the Development of Tourism and Resorts for the period up to 2026 states that for the rational and efficient use of tourist, natural, medical and recreational resources of Ukraine it is necessary to form a tourist and recreational space by creating and ensuring the development of tourism and resorts and develop, implement and propose consumer competitive national tourism product. Therefore, tourism businesses face strategic goals to create a stable competitive advantage in the market by ensuring compliance with the price and quality of travel services and the implementation of standards that meet international level.

Successful development of tourism business in market conditions requires a constant increase in the level of competitiveness of each entity, providing a quality tourism product of growing demand, improving socio-economic relations of business structures, territorial associations and the state. The social mission of tourism is to increase the contribution to the cultural, economic and regional development of the country.

Conditions for creating an effective management system of investment processes in the tourism industry are to increase the scientific validity of management decisions in the field of investment, ensuring the interaction of such basic elements of the management system as principles, methods, management functions, tools to guide investment projects.

The economic activity of individual economic entities and tourism in the country as a whole is largely characterized by the volume and forms of investment processes. In a broad sense, investment is an input of capital in order to further increase it. In this case, the increase in capital should compensate the investor for refusing to use available funds for consumption in the current period, to reward him for the risk, to compensate for losses from inflation in the future[1]. Therefore, tourism will be attractive for investment on condition that its profitability increases.

The term “investment” comes from the Latin word “invest”, which means “to invest”. The Tax Code of Ukraine covers investments as business transactions that involve the acquisition of fixed assets, intangible assets, and corporate rights and/or securities in exchange for funds or property, i.e. the objects of investment are disclosed.

[1] Moroz, A.M. (2002). Bankivski operatsii [Banking operations]. 2 nd ed, KNEU, Kyiv, Ukraine.

In the Law of Ukraine "On Investment Activity" the concept of "investment activity" is defined as a set of practical actions of citizens, legal entities and the state to implement investments, and investors are defined as investment entities that decide to invest their own, borrowed and attracted property and intellectual values in investing[2].

Sharko M.V., Meshkova-Kravchenko N.V., Radkevych O.M. reveal the concept of "investment project" as a program of measures related to the implementation of investments, with a view to their subsequent reimbursement and profit, the define the investment process as deployed in time implementation of the investment project, where the beginning is the decision to invest, and the result is the achievement of the goal, or forced termination of the project[3].

Based on the study of the theoretical nature of investment processes, it should be noted that investment in the tourism industry should be considered as the use of financial resources in the form of current and long-term investments to obtain the desired return both domestically and abroad.

Malskaya M.P. in her scientific works notes that investment in tourism is the placement of investor's capital in the tourism business to make a profit. Since capital is one of the main factors of production, the ability of the tourism industry to produce a quality tourism product (service) directly depends on the amount of capital invested[4].

Objects and subjects of investment activity in the field of tourism have specifics, as the tourism industry is characterized by species diversity, features of development, resources used, organization of business processes.

The following objects of investment in the field of tourism can be distinguished: property of entrepreneurs in the field of tourism, tourist routes, historical objects, museums, libraries, green areas, technical products, places for accommodation of tourists, countryside.

The subjects for investment are: private investors, the state, foreign programs and grants, cooperatives, local governments, financial institutions, owners of the tourism business.

Investments play an important role in managing tourism development both in the country as a whole and in the regions. Volumes of investments should be analyzed and forecast in the process of developing measures for the formation of material and technical base of tourism, schemes of

[2] Zakon Ukrainy «Pro investytsiinu diialnist» (1991). [The Law of Ukraine "On Investment Activity"]. URL: https://zakon.rada.gov.ua/laws/show/1560-12#Text

[3] Sharko, M.V. Mushkova-Kravchenko, N.V. and Radkevich, O.M. (2016). *Ekonomika pidpryiemstva* [Economy of the Enterprise]. Oldi-plus, Kherson, Ukraine.

[4] Malska, M.P. (2008). Mizhnarodnyi turyzm i sfera posluh [International tourism and the sphere of services]. Znannia, Kyiv, Ukraine.

accommodation and development of tourist facilities, tax forecasting, formation of data banks of tourist investment projects, measures for standardization, certification of tourist products, licensing of certain activities, when planning employment and income, infrastructure development[5].

Tourism should become one of the priority sectors in the economy of Ukraine. The state and regions develop and implement projects and programs in this area. For the effective functioning of the tourism industry it is necessary to include in the developed strategy of tourism development sections with investment proposals, to form an idea of a favorable tourist image of the country, to create favorable conditions for tourism development in order to attract investors.

Factors that encourage investment can be different:

– desire to increase sales and services in tourism;

– the need to update and improve the existing material and technical base (improvement of facilities, equipment, implementation of a modern reservation system);

– the desire to develop new activities (entering the market of the tourism industry with a new tourism product or a new type of service).

These factors emphasize the importance of investment in creating an economic base to address socio-economic problems. To increase the inflow of foreign investment into the economy, it is necessary to create a favorable investment climate. The investment climate is a set of social, economic, organizational, legal, political, socio-cultural prerequisites, which determines the attractiveness and feasibility of investing in the economy[6].

Characterizing investment activities in Ukraine, it is necessary to emphasize the importance of investment in tourism. Tourism has a significant impact on the economy and development of the region, contributes to the inflow of currency into the country, creating new jobs, improving infrastructure. To get the most out of tourism, each state develops a tourism policy, which is one of the areas of socio-economic policy of the state.

The growth of income from tourism indicates an increase in its investment attractiveness. Table 1 highlights the revenues from the provision of tourist services for 2017–2019.

[5] Shuplat, O.M. (2016). Finansuvannia investytsiinoi diialnosti pidpryiemstv sfery turyzmu: teoretychnyi aspekt [Financing of investment activity of enterprises in the sphere of tourism: theoretical aspect]. Investytsii: praktyka ta dosvid, vol. 15, pp. 28–33.

[6] Tretyak, N. (2013). Faktory formuvannia investytsiinoho klimatu v Ukraini [Factor for the formulation of the investment class in Ukraine]. Finansovyi prostir, vol. 3, pp. 165–170.

Table 1

Revenues from the provision of tourist services

Indicators	Years			2019 in % to 2017
	2017	2018	2019	
Legal entities				
Income from the provision of tourist services (excluding VAT, excise tax and similar mandatory payments), thousand UAH	18502975,3	21069268,5	31948701	172,7
including excursion activities	57565,5	89220,9	113651	197,4
Individual entrepreneurs				
Income from the provision of tourist services (excluding VAT, excise tax and similar mandatory payments), thousand UAH	519654,3	556652,4	751474,8	144,6

Revenues from the provision of travel services for both legal entities and individuals are growing rapidly. If in 2017 the income of legal entities in the field of tourism services amounted to UAH 18,503 million, in 2019 it increases to UAH 31,949 million, or 72.7%. Revenues from excursion activities also doubled. Individual entrepreneurs also provided an increase in income by 44.6% – from 519.6 to 751.5 million UAH.

Thus, the data of official statistics of Ukraine show that the income from the provision of services in the field of tourism is growing every year, while the tourism business is an industry that generates the development of related industries – hotel and restaurant business, small business in arts, sports, entertainment and recreation, contributes to rural development. Therefore, attracting investment in tourism, in our opinion, should be considered in terms of the relationship with these industries (Table 2).

Despite the positive dynamics in terms of growth of capital investments in Ukraine as a whole, in the activities of travel agencies, tour operators, the provision of other booking services, unfortunately, there is a decrease in investment. However, the tourist sphere should also include a set of hotels and other accommodation, restaurants, vehicles, recreation and entertainment facilities, catering facilities. Given the dynamics of investment in the above objects, it is possible to conclude that in most categories there is an increase in investment.

Table 2

Structure and dynamics of used capital investments in the tourism sector, thousand UAH

Indicators	Years			2019 in % to 2017
	2017	2018	2019	
Capital investments (total in Ukraine)	448461518	578726385	623978935	139,1
1. Activities of travel agencies, tour operators, other booking services and related activities	104087	236640	79566	76,4
2. Temporary accommodation and catering (total), including:	2133519	2675101	2832178	132,7
- temporary accommodation	1380054	1473043	982887	71,2
- activities of hotels and similar temporary accommodation	1231268	1231042	837322	68,0
- activity of accommodation facilities for the period of vacation and other temporary residence	131053	223910	117700	89,8
- food and beverage activities	753465	1202058	1849291	245,4
- activities of restaurants, provision of mobile food services	664385	1091217	1710057	257,4
- delivery of ready meals	77213	80226	40736	52,7
- beverage service	11867	30615	98498	830,0
3. Art, sports, entertainment and recreation (total), including	1649225	3663168	4146160	251,4
- functioning of libraries, archives, museums and other cultural institutions	321736	601399	605129	188,0
4. Activities in the field of sports, recreation and entertainment (total), including:	1062982	2636470	3065792	288,4
- activities in the field of sports	563434	1820718	1658461	294,3
- organization of recreation and entertainment	499548	815752	1407331	281,7
5. Provision of other types of services	637612	571579	672504	105,4

Ukraine has significant potential in the development of tourism, but a low level of image in the global investment market. In most rankings, the country ranks last in terms of investment attractiveness. Therefore, an important task of increasing investment in the tourism business is to increase investment attractiveness.

Investment attractiveness of tourism is a set of micro and macro factors that form the general idea of a potential investor about the state and level of development of the tourism industry in the country and give him the opportunity to determine how attractive and profitable the country can be to invest in this area. In Ukraine, the tax and administrative burden on business, high inflation, the unstable political situation, and hostilities in eastern Ukraine significantly hinder the improvement of the investment attractiveness of the regions.

The investment attractiveness of the territories acts as a determining factor in choosing the object of investment. Indeed, given the resource needs of some market participants and the availability and desire to invest temporarily free funds in others, when concluding an agreement, investment attractiveness should be considered as a key category. Based on the statements of scientists about the essence of the investment potential of the region, it is possible to conclude that the formation involves the following components: natural resource potential, geographical location, economic status, infrastructure, institutional formations, staffing, scientific and technical potential, consumer component, production component.

The use of investment resources should be based on a reasonable choice of investment project. To ensure the right choice of solutions, organizations involved in tourism activities need to independently or with the help of experts to develop an effective sample of a new model, transform obsolete one and introduce new facilities. Modernization is crucial to increase economic efficiency through more efficient use of production factors, along with the introduction of new technologies and innovations. The economic result from the implementation of investment activities is estimated by increasing the income of business structures, optimizing costs and reducing the cost of services, increasing profits, which ultimately increases its competitiveness.

There are two main problems in assessing the investment component of tourism development:

1. Lack of a single information base for the implementation of investment projects. That is, it is the inadequate provision of data that allows an objective assessment of the investment security of the tourism industry, including statistics. There is also a single information base that would allow a potential investor to get acquainted with the materials needed for investment projects: area plan, business plan, master plan for tourist facilities that require investment, information on resource capacity.

The solution to this problem can be the creation of a single site and register that will reflect current official data of the tourism industry, public discussions and projects of proposals from investors and stakeholders to improve the development of tourism in Ukraine.

2. Insufficiently favorable investment climate. That is, the existing requirements for starting and developing a tourism business sometimes do not allow investors to start construction of facilities for several years – this period of time is spent on the coordination of various decisions and paperwork. The way to eliminate this problem may be the adoption of regulations that help attract investment in economic development, the introduction of tax benefits, reducing the time to agree on decisions, the development of infrastructure networks.

Insufficient level of information support significantly reduces the interest of potential investors to join the financial support of tourism. Information that is freely available (the number and cost of tours sold by tour operators and travel agents, inbound and outbound flows, etc.) does not reflect all aspects of tourism development and is not able to interest potential investors.

Ukraine has created a legal framework in the field of investment regulation to achieve a greater inflow of investment and increase the efficiency of their use. However, the need to harmonize documents and permits in various government agencies creates temporary and other barriers to the implementation of investor plans.

Despite the high tourist and recreational potential in Ukraine, the development of tourism is quite slow. Investments in tourism are carried out mainly in regions where tourism is identified as one of the priority areas of economic development – the western region and the south. For the implementation of investment projects in the field of tourism it is necessary to conduct an economic justification for attracting investment funds, to provide solutions with clear calculations of profitability, payback period of the project, to develop a business plan for its implementation.

Thus, the formation of a favorable investment climate in Ukraine should be facilitated by large-scale comprehensive measures to improve the working conditions of investors, expand the mechanisms and tools for investment and implementation of investment projects. Increasing investment in Ukraine's economy will accelerate the socio-economic development of regions and priority industries.

2. Prospects of development of tourist business of Kherson region

The formation of competitive advantages of tourism entities is constantly in the focus of scientific and practical research. The problem of realization of the effective mechanism of formation of competitive advantages and, as a

result, increase of competitiveness of domestic subjects of tourist business acquires special urgency in the period of European integration of economy of Ukraine and expansion of competition in the domestic market of tourist services.

The competitiveness of the region largely depends on a number of factors, namely the level of development of material production, non-productive sphere and, in particular, from such an important socio-humanitarian industry as recreation and tourism. Therefore, to change the situation for the better it is necessary to improve the mechanisms of economic regulation taking into account the experience of countries with developed tourism, the formation of new socio-economic approaches to the strategy of national tourism and tourism management system at both state and regional levels.

Significant attention to the development of tourism in the Kherson region is paid by such domestic scientists as Yu. Kirilov, V. Granovska, G. Zhosan, I. Dotsenko[78]. However, many issues remain unexplored in full.

The Strategy for the Development of Tourism and Resorts for the period up to 2026 states that for the rational and efficient use of tourist, natural, medical and recreational resources of Ukraine it is necessary to form a tourist and recreational space by creating and ensuring the development of tourism and resorts and develop, implement and propose competitive national tourist product.

In the Development Strategy of Kherson region for the period 2021–2027 in the field of tourism in the implementation of the strategic goal "Local economic development taking into account digitalization and innovation and investment processes" as an operational goal is "Tourism and recreation industry for health, recreation and intellectual and spiritual enrichment". The development of recreational opportunities in the Kherson region is expected to develop harmoniously – both the Azov and Black Sea coastal regions. Also, due to the development of green tourism, the provision of services in the Lower Dnieper National Park will be expanded. The development of the tourism sector will take into account the maximum allowable level of anthropogenic pressure on the territory. The development

[7] Kyrylov, Y. Hranovska, V. Zhosan, H. and Dotsenko, I. (2020). "Innovative Development of Agrarian Enterprises of Ukraine in the Context of the Fourth Industrial Revolution", Solid State Technology, vol. 63, issue 6, pp. 1430–1448.

[8] Kyrylov, Y.Ye. Hranovska, V.G. and Alieshchenko, L.O. (2020). Ekonomichnyi mekhanizm formuvannia konkurentnykh perevah subiektiv turystychnoi haluzi [The economic mechanism of the formulation of competitive transfers of tourist services]. International scientific and practical magazine "Economics of the agro-industrial complex", vol. 5, pp. 45.

of tourism will be based on the use of cultural and recreational potential of the region[9].

The goal will be achieved by extending the tourist season in recreational areas, improving the quality of tourist services through the introduction of certification of services based on international standards, development of new tourist complexes, creating conditions for the promotion of tourist products.

An important component will be the accessibility of tourist facilities through the introduction of a multilingual system of marking and navigation in the Kherson region, marking routes of active tourism, arranging landmarks of history and culture of the Steppe Black Sea coast, providing them with infrastructure for tourists.

Expected results:

– there will be a network of information support for the tourism industry;
– a system of standardization of accommodation establishments will be introduced;
– it is planned to mark tourist routes;
– extension of the tourist season from May to October;
– a training base should be created for the development of the tourism industry, namely the younger generation, which will be able to bring it to a new level.

The advantages of the Kherson region for the development of tourism businesses include:

1. Natural and climatic:

– unique climatic conditions that are attractive for tourists from the northern and western regions;
– the considerable duration of the frost-free period allows to attract more tourists during the year;
– the opportunity to develop gastronomic types of tourism on the basis of unique products that are produced only in the region;
– wide access to the Dnieper waterway;
– access to 2 seas at the same time – the Black sea and Azov sea;
– the only natural desert in Europe – Oleshkiv sands;
– the world's largest man-made forest;
– unique mountain landscapes in the middle of the steppe "Stanislavsky steppe".

[9] Pro skhvalennia Stratehii rozvytku turyzmu ta kurortiv na period do 2026 roku. Rozporiadzhennia Kabinetu ministriv Ukrainy (2017). [Order of the Cabinet of Ministries of Ukraine No. 168 "About the strategy for the development of tourism and health resorts for the period until 2026]. URL: https://zakon.rada.gov.ua/laws/show/168-2017-%D1%80

2. Resort and recreational:

– 12 resort settlements;

– more than 450 km of sea coastline, of which 200 km are equipped with sandy beaches;

– the longest sand spit in the world – Arabat Split;

– more than 70 deposits of healing balneological resources (mineral and thermal waters, therapeutic muds, brines of salt lakes), including the unique Lemurian Lake, the therapeutic mud of which has undergone clinical trials, certified and approved for use as a therapeutic and cosmetic product;

– the city of Skadovsk, which is a resort of national importance, a center for children's health and recreation;

– more than 1000 objects of rest, improvement and accommodation, from them 49 children's, 60 estates of green tourism, 51 hotel complex;

– total bed capacity of more than 100 thousand seats.

3. Nature reserve fund of national, international and local significance:

– UNESCO-protected Black Sea and Askania-Nova Biosphere Reserves;

– National Nature Parks: "Azov-Sivasky", "Oleshkiv Sands", "Dzharilgatsky", "Lower Dnieper" and the recently established "Kamyanska Sich"[10].

More than 90 tourist routes have been developed for the services of tourists in the territory of Kherson region of different directions and for different age categories, the most popular of which are: scientific and educational routes in the Askania-Nova Biosphere Reserve, walking routes in one of the largest sandy deserts in Europe "Oleshkiv Sands", visiting the shrine of the Ukrainian Cossacks, a monument of history of national importance Kamyanska Sich, objects of historical and cultural heritage of the regional center and other historical places.

Also water tourism, rural green, wine, environmental, historical and cultural, gastronomic tourisms are actively developing in the region.

Tourist offers meet the demand for atmospheric tours for every taste and for any age group, and at any time of year. These include kiting and yachting, kayaking, quad biking, fishing, hunting, open-air theater, visiting the "Tulip Valley", traveling the Cossack trails and many other tourist attractions.

Tourism, recreation, treatment and rehabilitation are becoming increasingly important in the socio-economic development of Kherson region. However, a significant part of natural areas, cultural heritage sites and tourist

[10] Stratehiia rozvytku Khersonskoi oblasti na period 2021–2027 rokiv [Strategy for the development of the Kherson region for the period 2021–2027 years], URL: https://khoda.gov.ua/strateg%D1%96ja-rozvitku-2021-2027

infrastructure are not adapted to international requirements for tourist visits, and tourist services in all sectors of the tourism industry mostly do not meet the requirements for quality of service[11].

Provision of tourist services in the region is provided by 14 tour operators, more than 100 travel agents and about 60 guides who serve visitors to museums, reserves, cultural and historical complexes. The analysis showed that this is more than not enough for the active development of tourism, so this area can become a priority for the development of youth entrepreneurship.

Therefore, for the active and successful development of tourism business and youth entrepreneurship, we consider it necessary to introduce the following measures:

1. Create conditions for the promotion of tourist products:
– brand formation and promotion, marketing policy;
– promotion of Kherson tourist region;
– creation of a network of regional tourist information center;
– development of the tourist brand of the Kherson region.
2. Improve the quality of the tourist services:
– improving the quality of training in the field of hospitality;
– promoting the implementation of state and international standards in the tourism sector;
– promoting the development and implementation of a multilingual system of marking and navigation in the Kherson region;
– assistance in marking routes of active tourism;
– arranging of landmarks of history and culture of the Steppe Black Sea coast, providing them with infrastructure for tourists.
3. Extend the tourist season:
– extension of the holiday season;
– support for rural green tourism;
– providing organizational, informational and promotional support for existing festivals and events that do not take place in the summer.
4. Create conditions for the development of domestic tourism:
– infrastructural provision of recreational territories of the region;
– ecological trails of Kherson region;
– formation and promotion of cases of tourist proposals (magnets) focused on domestic tourists (Clusters “Salt Road”, “Tavria Ecological Health”, Projects “Tavria SPA Resort”);
– development of enogastronomic tourism.

[11] Vidpochynok i turyzm u Khersonskii oblasti u 2019 rotsi: statystychnyi biulleten [Recreation and tourism in the Kherson region in 2019: statistical bulletin]. Holovne upravlinnia statystyky u Khersonskii oblasti, 2020. 54 s.

5. Support for craft industries:

– implementation of projects for the production of craft products (cheese, dried fruits and vegetables, marinades, jams, wine, fruit and vegetable snacks, tobacco, spices, oysters, snails, crickets, etc.);

– health food based on oilseeds;

– creation of an agrotourism map of the region;

– creating incentives for growing environmentally friendly products and abandoning GMOs;

– introduction of organic farming.

6. Promote the development of entrepreneurship, including in rural areas:

– financial support for youth businesses by compensating for interest rates on loans;

– popularization of socially responsible business (implementation of measures to increase the level of tax discipline; introduction of effective innovative tools for communication with business, which will increase the level of respect for it).

The analysis of preconditions and tendencies of development of subjects of tourist business of the Kherson area allows to state that the area has considerable opportunities to enter the most developed regions of Europe in the tourist relation: favorable geopolitical location, comfortable microclimatic conditions, various landscape, unique flora and fauna, historical cultural, architectural heritage, developed transport network, sufficient human, material, including natural health resources.

At the same time, the tourism and resort industry needs active support from the state, attracting significant investments in the development of tourist and recreational infrastructure of the region and bringing it in line with international standards, increasing attention to the development of domestic inbound tourism.

CONCLUSIONS

Based on the research, it is determined that in the tourism industry there are processes of competition development based on the activities of tourism entities. The development of innovative priority types of tourism at the regional level is an important condition for their competitiveness in the market of tourist services. Qualitative factors of competitive advantages include natural-climatic, ecological, economic component, socio-cultural, image component. We believe that the unique characteristics of each region can be part of the implementation of the strategy of effective tourism development at the level of price and quality factors.

The analysis of preconditions and tendencies of development of subjects of tourist business of the Kherson area allows to state that the area has considerable opportunities to enter the most developed regions of Europe in

terms of tourism: favorable geopolitical location, comfortable microclimatic conditions, various landscape, unique flora and fauna, historical, cultural, architectural heritage, developed network of transport links, sufficient human, material, including natural health resources.

At the same time, the tourism and resort industry needs active support from the state, attracting significant investments in the development of tourist and recreational infrastructure of the region and bringing it in line with international standards, increasing attention to the development of domestic inbound tourism.

SUMMARY

The purpose of the study is to determine the priorities for the development of tourism business in Ukraine in general and in the Kherson region in particular, and its role in realizing the tourism potential of the country.

The abstract-logical method (substantiation of theoretical positions, systematization of development factors), statistical analysis (characteristics of the state of the analyzed business sector) is used.

The potential of tourism entrepreneurship is a dynamic and creative response to the challenges of the external environment, the implementation of socially responsible business ideas, the propensity to innovate. Its activation in the tourism business involves creating conditions for the promotion, diversification and improvement of the quality of tourism products, stimulation of craft industries, state financial, legal and information support.

REFERENCES

1. Moroz, A.M. (2002). *Bankivski operatsii* [Banking operations]. 2 nd ed, KNEU, Kyiv, Ukraine.

2. Zakon Ukrainy “Pro investytsiinu diialnist” (1991). [The Law of Ukraine “On Investment Activity”], URL: https://zakon.rada.gov.ua/laws/show/1560-12#Text

3. Sharko, M.V. Mushkova-Kravchenko, N.V. and Radkevich, O.M. (2016). *Ekonomika pidpryiemstva* [Economy of the Enterprise]. Oldi-plus, Kherson, Ukraine.

4. Malska, M.P. (2008). Mizhnarodnyi turyzm i sfera posluh [International tourism and the sphere of services]. Znannia, Kyiv, Ukraine.

5. Shuplat, O.M. (2016). Finansuvannia investytsiinoi diialnosti pidpryiemstv sfery turyzmu: teoretychnyi aspekt [Financing of investment activity of enterprises in the sphere of tourism: theoretical aspect]. *Investytsii: praktyka ta dosvid*, vol. 15, pp. 28–33.

6. Tretyak, N. (2013). Faktory formuvannia investytsiinoho klimatu v Ukraini [Factor for the formulation of the investment class in Ukraine]. *Finansovyi prostir*, vol. 3, pp. 165–170.

7. Kyrylov, Y. Hranovska, V. Zhosan, H. and Dotsenko, I. (2020). “Innovative Development of Agrarian Enterprises of Ukraine in the Context of the Fourth Industrial Revolution”, *Solid State Technology*, vol. 63, issue 6, pp. 1430–1448.

8. Kyrylov, Y.Ye. Hranovska, V.G. and Alieshchenko, L.O. (2020). Ekonomichnyi mekhanizm formuvannia konkurentnykh perevah subiektiv turystychnoi haluzi [The economic mechanism of the formulation of competitive transfers of tourist services]. *International scientific and practical magazine “Economics of the agro-industrial complex”,* vol. 5, pp. 45.

9. Pro skhvalennia Stratehii rozvytku turyzmu ta kurortiv na period do 2026 roku. Rozporiadzhennia Kabinetu ministriv Ukrainy (2017). [Order of the Cabinet of Ministries of Ukraine No. 168 “About the strategy for the development of tourism and health resorts for the period until 2026]. URL: https://zakon.rada.gov.ua/laws/show/168-2017-%D1%80

10. Stratehiia rozvytku Khersonskoi oblasti na period 2021–2027 rokiv [Strategy for the development of the Kherson region for the period 2021–2027 years]. URL: https://khoda.gov.ua/strateg%D1%96ja-rozvitku-2021-2027

11. Vidpochynok i turyzm u Khersonskii oblasti u 2019 rotsi: statystychnyi biulleten [Recreation and tourism in the Kherson region in 2019: statistical bulletin]. Holovne upravlinnia statystyky u Khersonskii oblasti, 2020. 54 s.

Information about the author:
Aleschenko Liudmyla Oleksandrivna,
Assistant at the Department of Management
and Information Technologies
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0002-7119-2922

DOI https://doi.org/10.36059/978-966-397-239-8-2

CURRENT STATE AND PERSPECTIVE FOR THE DEVELOPMENT OF THE BEEKEEPING MARKET IN THE WORLD AND UKRAINE

Averchev O. V.

INTRODUCTION

Articulation of issue. Beekeeping is an industry that has the potential for development. In Kherson region the production of honey and the regional union of beekeepers are actively developing.

Beekeeping is a long sought tradition of the people and only in the early 19th century it became a branch of agriculture. At the present time, beekeeping as an industry is engaged not only in the breeding of bee families and the production of products of their own origin, but also in the use of bees for the plant pollination of entomophilic crops. Ukraine is a country of intensive agriculture, where almost half of crop cultivation requires cross-pollination. Bees give us honey, wax, flower pollen, milky milk, bee-glue, bee poison, drone larvae homogenate. Moreover, recently Apis Mellifera has been used in medicine (bodies of dead bees).

Actual scientific researches and issues analysis. The development of the market for agricultural products and the improvement of the efficiency of their production are the subject of attention in the work of many domestic scientists. Research for the efficient functioning of the beekeeping industry and development of the beekeeping market at various historical stages was carried out by A.N. Yatsenko, V.L. Gritsenko, D.B. Juchenko, A.A. Christenko and others. However, despite the scientific advances that have been made, today the questions of establishing organizational prerequisites and economic mechanisms for the functioning of the beekeeping market in Kherson area and the realization of Ukraine's European integration aspirations; It is the above that determines the relevance of the study.

Purpose of the article. Conduct a comprehensive analysis of the current situation and prospects for the development of the beekeeping market in Ukraine and Kherson region. To make a detailed analysis of the main problems of the Ukrainian beekeeping sector, which need to be solved immediately and to define future directions of development.

1. The current state of beekeeping development in Ukraine and the world

In recent years Ukraine has become a reliable stakeholders in the world market of beekeeping products.

In the area of honey production, Ukraine ranks first in Europe and fifth in the world, officially producing almost 70,000 tons of honey. The producers themselves account for more than 100,000 tons. This represents 5–6 per cent of world production. Our country ranks third among world exporters, behind only China and Argentina. The objects of beekeeping are worker bees, queen bees, drones, bee families, which are bred on tribal and commodity bees (Law of Ukraine "On beekeeping").

The following are subject to beekeeping irrespective of their form of ownership:

1) tribal and commercial apiaries and hive broods chamber;
2) factories producing equipment and beekeeping equipment;
3) enterprises, establishments and organizations for the production, processing and sale of beekeeping products and preparations therefrom;
4) the Beekeeping Certification Laboratory;
5) scientific institutions, educational institutions, research farms that deal with beekeeping. (Art. 4 of the Law of Ukraine "On beekeeping")[1].

The subjects of beekeeping also include unions, associations and other associations whose activities are related to beekeeping, as well as agricultural producers who produce and process beekeeping products. The inhabitants have every chance of merging into public beekeeper organizations of their own free will, in order to satisfy their collective interests in the development of beekeeping.

Ukraine has a extensive feeding base which is not yet fully used. The medospheres are unstable, the productivity of beekeepers remains low, and most bees lack mechanization of labour-intensive production processes. In order to increase the marketability and profitability of bee herders, it is necessary to have theoretical knowledge and practical skills in the care of bee families and to keep them during wintering. Farm specialists play a leading role in increasing the profitability of the industry. Unlike most farm animals, bees not only collect food for themselves in nature, but also process it for long-term storage, vigorously guard against pests and enemies, and regulate their consumption in summer and winter. Beekeepers can live and reproduce in tree hollows without human intervention[2].

[1] About beekeeping. URL: https://zakon.rada.gov.ua/

[2] Halimov S.M. (2019). Technology of production of the beekeeping produces. Mykolaiv: MNAU, 107 p.

World honey production is 1,500,000 tons per year, and Ukraine accounts for 5 per cent. Since 2008, Ukraine has ranked first among European countries for honey production (with a gross levy of 75 thousand tons) and fourth after world leaders such as China (367 thousand tons), Turkey (81,4 thousand tons) and Argentina (81 thousand tons). The total number of people who raise bees and produce honey is about 700,000 this is 1.5 per cent of the population of the country[3]. Honey consumption in Ukraine is 1.2 kg per year, which is one of the highest rates in the world. Also among the leaders are Australia (1.6 kg per year), Greece (1.4) and Germany (1.1 kg)[4].

Ukraine is on the list of leading countries in the production and export of honey along with such countries as the USA, China, Argentina, and India. However, despite this fact, it is beekeeping in the country that is in a better position than a full-fledged agricultural sector.

President of Ukraine Leonid Kuchma signed the Law of Ukraine "On beekeeping" The Act was signed on February 22 , 2000[5]. The regulatory activity of the industry is more ensured by other normative acts than by this Law, including "Rules of importation into Ukraine and exportation of bees and beekeeping products"[6], "Procedure of registration of bees"[7], "Procedure for issuing an apiary veterinary-sanitary passport" etc.

Beekeeping is important as an effective means of increasing yields and improving the quality of fruits, vegetables, legumes, technical crops and other crops. It can therefore be seen as a significant environmental and economic factor in agricultural production.

The main market for Ukrainian honey is the European Union. Among the main exporters are Germany, Poland and Belgium. According to Ministry of Agrarian Policy and Food of Ukraine, in 2018 exports of honey from Ukraine fell by more than 25 per cent and as a result, Ukraine lost the position of the third country – exporter of honey in the world.

Recently, thanks to the creation of public organizations introducing modern developments and the latest technologies among beekeepers, which in turn help to increase the profitability of the apiary, the popularity of beekeeping in Ukraine is rapidly gaining momentum.

---

[3] The World Honey Market and Ukraine. URL: http://www.souz-inform.com.ua/index.php?language=ukr&menu=article/honey_market_review

[4] Vitalii Kuksa (2006). If in Ukraine there will be no fat, we will eat honey «Mirror of the Week», № 31

[5] About beekeeping. URL: https://zakon.rada.gov.ua/

[6] Regulations on the import into and export from Ukraine of bees and bee products. URL: https://zakon.rada.gov.ua/

[7] The procedure for the registration of apiary. URL: https://zakon.rada.gov.ua/

The Public Union "All-Ukrainian Public Association" Union of Beekeepers of Ukraine ", has made a great contribution to the development of the industry in this direction.

Thanks to the hard work of such organizations, it is hoped that in the near future there will be large industrial apiary in Ukraine that will be able to compete with the leading industrial apiary of the world.

Due to low economic profitability, most players in the market are losing money, and the excess production of sunflower honey has a negative impact on the development of beekeeping.

The main problems of cooperation with agronomists are related to the treatment of chemicals that poison bees. Agribusiness often disregards plant treatment regulations that are established by law and does not inform beekeepers of the use of herbicides and other additives during the pollination process.

When collecting nectar, the beekeeper receives from 50–200 UAH / 1 hectare. However, in the case of poisoning of bees, it is only possible to prove the truth and obtain compensation from the farmer, provided that they are pre-registered and have a veterinary passport[8].

Kherson region has all conditions for development of beekeeping – geographical location, natural and climatic conditions, abundance of honey in forests, steppes and fields of Kherson area. Southern honey has special taste and delicate structure. Well-organized bee pollination increases by 30–60 per cent yields of fruit and cucumber crops, sunflower, rapeseed, etc.

In order to protect the rights and legitimate interests of beekeepers of the Kherson region in 2017 public organization "Union of Beekeepers of the Kherson region" was established.

The most apiary is in the farm "Tavriiskyi pasichnyk", which is also engaged in honey processing. There are about 200 bee families. However, the production of honey in this farm isn't important. It is the only one in the region of apiary that is engaged in breeding tribal bees of the Ukrainian steppe breed and selling bee packets – and it is the main business of this farm. And here they develop craft production – make honey souffles[9].

2. Building economic resilience of beekeeping enterprises

2017 Ukraine exported about 68 thousand tons of honey. 2018 it decreased to 49,4 thousand tons. The main reason for this was the poisoning of bees by plant protection agents. This applies in particular to the violation of

[8] The major problems of the beekeeping. URL:https://aggeek.net/

[9] Beekeeping of the Kherson area. URL: https://khoda.gov.ua/

technological requirements for plant protection treatment and the failure of bees to communicate about such treatment[10].

Exports of honey from Ukraine rose by 12,7 per cent in 2019, to 55,6 thousand tons. Total exports for the first quarter of 2020 amounted to 14,9 thousand tons exceeded those for 2019 and 2018 by 16 per cent and 47 per cent respectively[11].

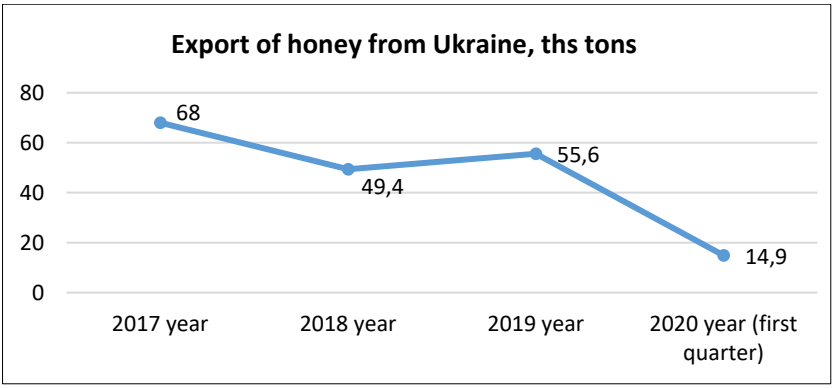


Fig. 1. Export of honey from Ukraine

As of the State Statistics Service of Ukraine and the State Fiscal Service of Ukraine.

The export of honey from Kherson area in 2019 amounted to 2599,5 tons, which is 0,11 per cent of the total export of agro-industrial products from the area in the said period. In 2018, Kherson honey was exported to 8 countries, and in 2019 – to already 11 countries, 8 of which are EU countries: Austria, Belgium, Bulgaria, Estonia, Spain, Germany, Poland and Czech Republic. In addition, Kherson honey was exported to Norway, the United States and Canada in 2019. The largest volume of honey (78,4 per cent) was exported to Spain – 846,2 tons.

Exports of honey from Kherson region in the first half of 2020 amounted to 1582,2 tons. In comparison with the volume of exports of honey for the corresponding period 2019 (1356,2 tons), the trend is positive, with exports of honey increasing by 16,7 per cent in the first half of the current year.

Honey was exported this year to three EU countries: Estonia, Germany, Czech Republic. The largest volume of honey (88,8 per cent) was exported to Germany – 1405,4 tons.

[10] Beekeeping of the Ukraine. URL: http://naas.gov.ua/
[11] Economic truth. URL: https://www.epravda.com.ua/

Ukraine produces about 70–80 thousand tons of honey per year, exceeds the volume of exports and consumption of this product on the domestic market and leads to stockpiling. About this stated director of development "Askania-Pak" Viktor Ivanchenko, informs "Interfax-Ukraine".

According to Viktor Ivanchenko, the estimated volume of honey production in Ukraine is 70–80 thousand tons per year. Ukraine produces more honey than it can absorb in the domestic market and sell for export, and these residues are transferred from year to year. According to calculations, the beekeepers still have a total of 35 to 40 thousand tons.

For the first half of 2020, the forecast for sending honey for export was 20 to 25 thousand tons and 15,000 tons were to be shipped for the following year.

Besides, according to the estimates of "Askania-Pak", the volume of honey production in Ukraine has been decreasing by 5 per cent in the last two years due to bad weather conditions.

In addition, since the start of the season, purchase prices for honey in Ukraine have fallen by almost 22 per cent – to 32 UAH / kg honey.

Today, it is not exporters who influence the price decline, but beekeepers. More honey is produced in Ukraine than can be exported or accepted on the domestic market. Ukraine started the season 2019/20 year with a purchase price of 32 UAH / kg honey, then the price fell to 25 UAH / kg. The purchase price is close to the production cost of honey. Therefore we can see a crisis in the production of honey[12].

In March of this year, the first of a series of planned forums was held on the theme: "Development of the beekeeping industry. Interaction of beekeeper-agrarian-power under the leadership of Deputy Minister of Economic Development, Trade and Agriculture of Ukraine Taras Vysotsky and Sergey Glushchenko. Representatives of State Service of Ukraine on Food Safety and Consumer Protection (SSUFSCP) Professional Associations, Business and International Experts took part in the event.

Current issues in the beekeeping industry were considered, in particular:

1) characteristics of the 2020 season;
2) state support for the sector;
3) simplifying the registration of beers and hygienic requirements for them;
4) state supervision and control of plant protection and veterinary medicine;
5) the export of domestic honey;
6) providing scientific expertise and training for the beekeeping industry;
7) legislative changes.

[12] Honey overproduction in Ukraine. URL: https://agropolit.com

From the business side, there was a need to strengthen legislative controls on pesticide trafficking, the use of PPP (plant protection products) to prevent pesticide poisoning of bees and the preservation of the environment, and the importance of effective communication between beekeepers and agribusinesses has also been emphasized.

Ukraine has a budget programme called "Financial support for agricultural producers", which provides for support for the beekeeping sector in the following areas: compensation for the cost of tribal bees and beekeepers; up to 50 per cent of the cost, but not more than UAH 500 per beekeeper and UAH 100 per female bee. A special budget subsidy of 200 UAH per bee family is also provided to the owners of bees with 10 to 300 beekeepers.

In October, during a meeting with the Deputy Minister of Economic Development, Taras Vysotskyi and representatives of regional departments responsible for the development of the agro-industrial complex of Ukraine considered the expected results of applications by farmers for State support in the areas of beekeeping and gardening.

Now under the program "State support for the development of animal husbandry and processing of agricultural products" according to information of areas adopted documents and can be charged a subsidy for maintenance of beekeeping (200 UAH per bee family) for the amount of almost 240 million UAH.

According to Deputy Minister Taras Vysotskyi, 110 million UAH were planned to support the beekeeping industry. The number of applications exceeds the amount planned by more than twice. This shows that in Ukraine at least 10,000 beekeepers that are officially registered work transparently and can benefit from State support[13].

The Ministry of Economic Affairs has submitted to the Government a programme of support for the sector for 2020, which includes a grant of 200 UAH per bee family.

The grant is granted, on a non-refundable basis, to natural persons and economic entities that own bees, for cash in the current year from 10 to 300 bee-keepers at a rate of 200 UAH per bee family.

If the beekeeper is more than 300, the maximum subsidy is 60,000 UAH is one recipient.

In order to receive the grant for beekeeping, individuals had to register the apiary with the local authorities before the end of September and go to the State Veterinary Medicine Hospital to obtain the apiary veterinary passport. It was also necessary to register with the State Register of Capacity as a market operator and open an account at any bank institution[14].

[13] Apiary is strong. URL:https://pasika.pp.ua/

[14] Resolution of the Cabinet of Ministers of Ukraine. № 107. URL: http://search.ligazakon.ua/

Table 1

Number of bee colonies in Kherson regions

Regions	Number of bee colonies
BERYSLAVSKYI	1525
BILOZERSKYI	1385
VELYKOOLEKSANDRIVSKYI	3870
VELYKOLEPETYSKYI	2811
VERKHNOROHACHYTSKYI	427
VYSOKOPILSKYI	1803
HENICHESKYI	1879
HOLOPRYSTANSKYI	1656
HORNOSTAIVSKYI	367
IVANIVSKYI	719
KALANCHATSKYI	1027
KAKHOVSKYI	2153
NOVA KAKHOVKA	466
KHERSON	757
NYZHNOSIROHOZKYI	1928
NOVOVORONTSOVSKYI	1975
NOVOTROITSKYI	2092
SKADOVSKYI	315
OLESHKIVSKYI	1515
CHAPLYNSKYI	1190
ALL	**29860**

As of the State Statistics Service of Ukraine and the State Fiscal Service of Ukraine.

The honey market is particularly important for the Ukrainian economy, as it is the largest producer of honey in Europe and the fifth largest exporter in the world. Since 2010, exports of honey have increased sevenfold, resulting in higher export earnings and higher incomes for people engaged in honey production and processing. The European Union is the largest market for Ukrainian honey, accounting for about 75 per cent of its exports.

In 2019, exporters noted a glut in the market due to a significant increase in the production of honey, resulting in pressure from importers to lower prices. Thus, while the US imports 9 per cent more honey in the first six months of 2019 than in the same period last year, the total value of imports fell by 7 per cent, indicating a decline in import prices. This is due to increased supplies from China.

Fig. 2. Number of bee colonies in Ukraine 2019 year

As of the State Statistics Service of Ukraine and the State Fiscal Service of Ukraine.

The main advantages of beekeeping are:

1) The provision of honey, which is a valuable food;

2) The provision of beeswax, which is used in many industries, including cosmetics, polishing, pharmaceuticals and others;

3) Honeybees the best pollinators that help to increase the yield of several crops;

4) According to recent studies, honey bee venom contains a mixture of proteins that could potentially be used as a prophylactic agent to destroy HIV (human immunodeficiency virus).

At the same time, there are several problems with the market entry of honey. The EU`s institutions of food safety authorities often return honey or issue warnings to exporters, in particular, because of antibiotics contained in honey, lack of food safety certificates, or improper packaging. In addition, many importers, both in Europe and elsewhere, face honey fraud. Many market participants, as well as the International Federation of Beekeepers' Associations "Apimondia" have raised this issue.

For example, in the first half of 2019, the price of light amber honey (the main US import category) from major suppliers (such as Argentina and India) declined, while the price of Chinese honey remained very low, at around $1.1 per kg. This is significantly lower than other suppliers.

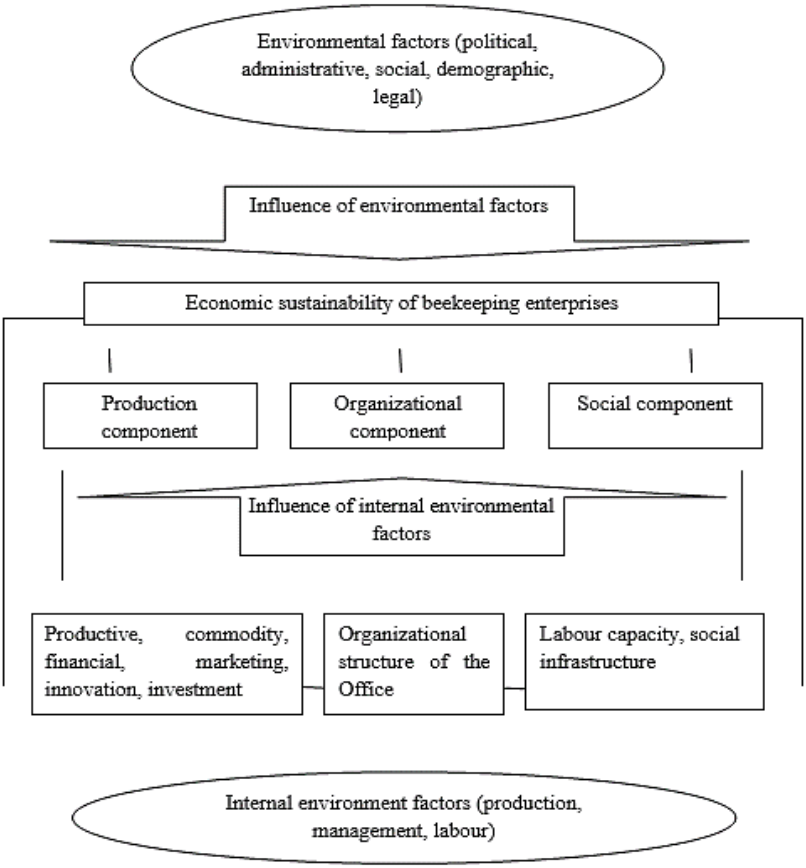


Fig. 3. Components of building economic resilience in beekeeping

3. The main problems in the beekeeping industry of Ukraine, which require immediate solution

1) The low technological culture of product production, processing and packaging, and the lack of industrial technology;

2) Decrease in entomophilic crops cultivation and insufficient use of bee pollination;

3) Environmental degradation and non-compliance with technological requirements for the treatment of entomophilic crops with pesticides and pests, resulting in the mass poisoning of bees;

4) Insufficient veterinary care leading to the uncontrolled spread of bee diseases;

5) Lack of harmonized legislation on the production and quality of the products of the industry, and as a consequence of the difficulty in realizing the export potential of the industry.

Achieving an optimal balance between the desired economic growth rate and the reproduction capacity of beekeeping enterprises is a major challenge in managing economic sustainability in modern market conditions. At the same time, it is directly manifested in the enterprise's response to externalities and its ability to perform core functions effectively in a changing external environment[15].

Determining the level of economic sustainability of beekeeping enterprises must take into account the depth of internal structural changes arising in response to external influences and the costs incurred in overcoming their negative impacts. The sustainable development of beekeeping enterprises is constantly being managed in the process of undermining the economic sustainability of each such enterprise, which is characterized by specific characteristics of the natural and climatic conditions of production, the location of the occurrence, depth, and duration of crisis events, the causes and possible consequences of the realization of external threats.

In general, however, the management of economic sustainability in the event of a disturbance in an enterprise's equilibrium (external and internal influences) can be described in two different ways:

1) the loss of economic viability of an enterprise occurs suddenly as a result of extraordinary events and is usually accompanied by a significant loss of assets, resulting in inconsistent financial flows, the profit of production is sharply reduced and internal conflicts and relations with business partners are exacerbated. The size of the destabilizing factors is such that the enterprise is unable to adapt to the new conditions for a long time, which increases the likelihood of its near-term bankruptcy;

2) the decline in economic stability is reflected in a relatively gradual increase in deviations from the greatest values of the main performance indicators of the enterprise and is reflected in a decrease in the volume of production, in the share of the market, in a decrease in the profitability of assets, the constant decline in the level of equity due to the emerge of permanent losses, the creation of an unsatisfactory balance sheet structure, and the fall in the market price of shares. The process begins slowly and discreetly, so it cannot be detected by traditional diagnostic methods. The lack of a rapid response to early signs of crisis in an enterprise over time leads to unregulated declines in returns and even direct losses from operations.

[15] Astakhov V.P. (1995). Analysis of a firm's financial sustainability and procedures relating to bankruptcy. Os-89. 80 p.

Deepening of crisis processes increases the failure of an enterprise to pay its current liabilities on time and in full, increasing its debt burden and dependence on external sources of financing. The reversibility of change leads to a strategic crisis, the absence of long-term success factors, and the loss of the social and economic purpose of the enterprise, which invariably leads to bankruptcy[16].

In order to carry out measures to improve the economic sustainability and efficiency of bee-keeping enterprises in the future, it is necessary to set up market-appropriate economic relations and intersectoral linkages.

In order for Ukraine to participate in the international agricultural market with the production of beekeeping enterprises, it is necessary to bring domestic organizational and economic measures to develop market relations in beekeeping in line with international requirements. This is linked to the increasing role of the State as a guarantor of the exit of enterprises from the crisis and the creation of conditions for their sustainable further development. The economy of domestic beekeeping enterprises is directly related to the level of their investment. Under market conditions, only competitive enterprises, which are relatively few in numbers, can operate successfully. Foreign and domestic experience in the development of beekeeping enterprises demonstrates the high efficiency of cooperation in the sector in the complex use of bee families. In this case, depending on natural and economic influences, beekeeping companies specialize in more than one or two products.

Over the last 10–15 years, the use of bee families has been common in most countries with advanced beekeeping (USA, Australia, Japan, China, Canada, Romania, France, Ireland, etc.). Each economic actor has its own complex interrelationships. The inter-industry linkages of beekeeping are reflected in the flows of wealth – the output of each individual sector and of the social product. The cross-sectoral (vertical) links of beekeeping are characterized by a system of economic relations with a large number of different branches of the economy: industrial, processing, marketing of goods and services. The number is steadily increasing. The success of commercial firms in the production of food additives, medicines and cosmetics based on beekeeping products is particularly evident. Horizontally, these linkages encompass the relationship of beekeeping within the agricultural sphere. They are particularly close to agriculture, horticulture, vegetable production, flax cultivation, alopecia, floriculture and the like.

[16] Baranivska Kh.S. (2011). Features of a diagnostic system for economic sustainability as a business property. Pp. 104–110.

The geographical differences in the natural conditions for the produce of beekeeping products determine the scope and direction of the links with their import and export, as well as the needs of beekeeping enterprises for production equipment. Favorable natural conditions and the presence of honey-bearing vegetation determine the nature of economic relations and intersectoral linkages in beekeeping enterprises. The involvement of beekeeping enterprises in the development of an interregional food market depends directly on their location and specialization. The intensity and scale of the formation of zones of specialized beekeeping enterprises should be determined by the influence of the State on price, tax and credit policies and on the development of market infrastructure. In the context of emerging markets, the principle of rational location and the combination of regional specialization in the produce of selected products, both for export and for self-sufficiency, is becoming increasingly important. The latter provides cooperation[17].

4. Influencing factors for the effective management of the economic sustainability of beekeeping enterprises

Beekeeping is a production and biological system that goes hand in hand with natural resources, in which case the efficiency of management of production processes in beekeeping is determined by comparing the income generated with the biological, and natural and labor resources allow making sure a certain level of economic sustainability of enterprises. In our view, the level of use of the biological and natural resources used, taking into account the ecological part, determines the efficiency of production processes in the enterprises of beekeeping. The characteristics features of beekeeping, like other branches of agriculture, much influence the efficiency of management and management in enterprises, they are divided into natural, economic, organizational, social, and environmental (fig. 3)

The production activities of beekeeping enterprises are a set of interrelated processes that depend on many components. Changes that distort the ideal structure of their interrelationships entail risks of loss of expected results, both quantitative and qualitative. The impact of these components is often sharply focused and manifests itself in performance: some elements improve performance, while others hurt the economic sustainability of beekeeping enterprises.

[17] Kravchenko M.V. (2015). Ensuring the economic sustainability of the beekeeping enterprises. Dnipropetrovsk: DDAEU, 205 p.

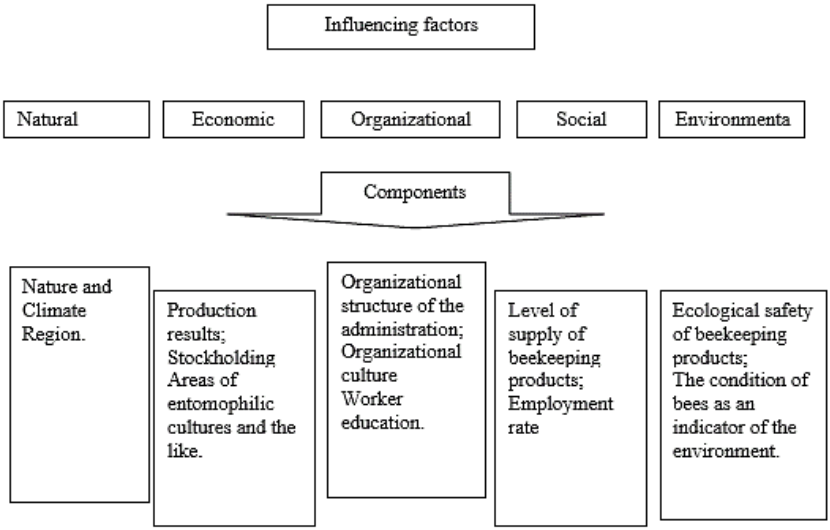


Fig.4. Influencing factors for the effective management of the economic sustainability of beekeeping enterprises

Looking at the sustainability of the enterprise itself, we note that it depends on the constituents that make the sustainability of the enterprise itself and directly or indirectly affect the sustainability of the production activities. The state of bee-keeping enterprises, where the cost, material structure of production, and sales of products offer high economic efficiency, characterizes internal sustainability. These goals can be achieved when the enterprise makes rational use of external (State policy towards agrarian law and support for beekeeping; market conditions; market infrastructure; environmental uncertainty and economic risk) and domestic (integration of the beekeeping enterprise in production and market relations expressed competence of the enterprise, level of ecological safety of production; technical and technological development of the enterprise on innovative basis; most organizational structure, the quality, and structure of production resources; the social and psychological environment in the enterprise) of the components that make it possible to get sustainable and efficient production results. The level of external sustainability is ensured by sound State regulation of the production of bee products while ensuring increased reproduction[18].

[18] Kozachenko H.V., Voronkova A.E., Medianyk V. Iu., Nazarov V.V. (2003). Small business: sustainability and compensatory opportunities. 328 p.

Considering that the aim of the production and economic activity of a beekeeping enterprise is to increase or keep up its productivity, as a prerequisite for a stable position in the selected market segment, and the efficient use of the resources involved, Development and expansion of activities, sustainability is regarded as the main instrument for regulating enterprise productivity, The need for continuous management of economic sustainability requires means and techniques to influence the sustainability components to raise their level. The most effective way to support an adequate level of economic sustainability is to continuously monitor changes in the external and internal environments of beekeeping businesses. The aim is to detect changes in influencing factors in time to prepare or adapt an enterprise to them.

The bees make many foods, among them: honey, propolis, wax, royal jelly, bee poison, pollen, beebread, comb capping and dead bees.

Honey is very rich in chemical composition. It has up to 300 substances and elements. The main ones are carbohydrates. Their number depends on the botanical origin of the bees, the conditions of collection and processing of the nectar. High-quality honey varieties contain up to 75 per cent of simple sugars. From nitrogen, up to 2,0 per cent of the proteins are in honey. The water content of honey is up to 18 per cent, and the water content of more than 22 per cent is called immature (table 2).

Table 2

Indicators by which the quality of honey is measured

Rate	Top grade honey	Grade I honey
Scent	Natural, pleasant, from weak to strong	
Mass fraction of water,%	18,5	21,0
Renewable sugar content,%	80,0	70,0
Weight share of sucrose,%	3,5	6,0
Diastasis number (until free of substance)	15,0	10,0
Content hydroxymethylfurfural.	10,0	25,0
Active acidity, miliequivalent sodium hydroxide	40,0	50,0

The standard allows 2.5 per cent sucrose in honey. Vitamins are small, but very beneficial to the body. The compos of mineral substances depends on the type of honey. The most important are in the honey dark color. With enzymes, honey contains invertase, amylase, catalase, diastase, peroxidase, and others.

When honey is heated to high temperatures or falsified, the enzymatic activity is reduced or completely lost[19].

Honey is used in medicine, cosmetology and cooking. Propolis is a mixture of various substances, most commonly collected from kidneys (birch, poplar, alder, willow, and chestnut), stems and leaves of resins and balms. Bees bring adhesive mass in pollen baskets of hind feet. They are accompanied by wax, flower pollen or balm pellets of pollen grains, as well as by the secretion of the maxillary glands of bees. When removed from the nest, the propolis is infested with wood particles, insulating materials, and the bodies of bees.

Bee propolis is used as a building material for polishing wax cells, gluing frames, hulls, coating slots, narrowing flying holes, sifting through the inner surface of the beehive, etc. Due to its specific effect on micro-organisms, the nest's sanitary condition is maintained. Propolis is harvested for medical, veterinary and industrial purposes.

Bees build a nest of wax in the form of two-sided honeycombs. The honeycomb consists of hexagonal cells returned to each other by the bottom. The cells are in a nearly horizontal position, with their edges slightly raised upwards.

The wax in the form of freshly threaded honeycomb (wax) is white, and the wax produced after processing is from light to dark yellow. The wax becomes hard, fragile in the cold, and when heated it becomes soft and melts. Wax is lighter than water. It is soluble in turpentine, chloroform, gasoline and other organic substances.

The beeswax is used in medicine. It's part of some patches, ointments, creams. Wax is well absorbed by the skin and gives it a smooth and gentle appearance, so it is widely used in cosmetic medicine.

The royal jelly is the secret of honey bees that they use to feed the larvae.

The royal jelly contains essential amino acids and vitamins, but some of its benefits are lost at room temperature and by sunlight. Royal jelly from pharmacies must be kept in a cool, dark place. It is recommended to adults in hypertension, digestive disorders, stress, postpartum, skin seborrhea. It is also used to improve appetite after severe diseases as a general reinforcement agent to control blood pressure. Under the supervision of a physician, it is possible to use the preparation of a royal jelly not only for adults, but also for children and newborns.

The use of bee poison for therapeutic purposes is based on its anti-inflammatory, anti-pain and desensitizing action. The healing effect of it is

[19] Halimov S.M. (2019). Technology of production of the beekeeping produces. Kurs lektsii. Mykolaiv : MNAU, 107 p.

complex. It stimulates metabolism, the formation of red blood and cardiovascular activity, reduces blood pressure and cholesterol in the blood, improves sleep, appetite, healing wounds, ulcers, and acts as painkillers and anti-inflammatory; has strong bactericidal properties.

The bee poison and its preparations are used in the treatment of rheumatism, neuralgia, hypertensive disease, atherosclerosis, myocarditis, based disease, allergic and trophic diseases and lesions of the peripheral nervous system.

Thr beebread is pollen from flowers and other plants that bees have collected and treated with their enzymes. When it hits an insect, it's called a pollen load. Its value lies in the fact that the nutrient content of this beekeeping product is several times higher than that of honey. For example, in pollen load, the protein content can reach 30 per cent, which consign it to milk and meat. The beekeeper, in order to collect pollen, builds special obstacles in the hive, by which the insects shake part of the pollen into a tray.

As with any apiary product, aphids have a number of healing properties that help to overcome such serious ailments as anaemia, hypertension, nerve diseases, and endocrine-related problems[20].

It restores gastrointestinal tract, liver, thyroid, improves blood circulation, reduces intoxication, and slows tumor growth. The pollen grain is absorbed as much as possible by the body, and it enhances the nutrient effect, thereby normalizing the functioning of organs. This is a unique product because it is produced by bees in limited quantities. Pollen grain cannot be artificially cultivated or counterfeited.

The pollen grain is better absorbed and more effective in the human body because of their balanced presence of biologically active substances. Pollen grain also lasts longer without losing its healing properties. Pollen grain has significantly more vitamins than pollen, especially A, B, E, K. Allergens are also destroyed by bee conversion.

The comb capping has high medicinal properties. Scientists have found that the enzyme in comb capping honey is four times larger than in regular honey and twice as large as a comb honey. Comb capping contains substances that inhibit the growth of many types of pathogens and have an antibiotic effect. It improves the metabolism of the organism, positively acts on hematopoietic, increases immunity, does not induce addiction of the pathogen to itself and is different from medicines.

The sniffles, inflammation of the nose and throat, stomatitis, tracheids, bronchitis, pneumonia, angina are treated two to three times faster with proper use than with normal medication.

[20] Family and home. URL: https://simya.com.ua

In fact, every hundredth Ukrainian is a beekeeper. However, the efficiency of production remains very low. For example, there are 7,000 bees in Canada. They produce 29,000 tons of honey. There is 400,000 tons of honey in Ukraine. Only 80,000 tons of honey is produced. They produce only 400,000 tons of honey. The productivity of a beekeeper in Canada reaches 50 kilograms of honey per year, and we have between 12 kilograms and 20 kilograms. This difference in numbers is due to the fact that in Canada honey production is at an industrial level and in Ukraine it is at an amateur level.

Putting bees in cooperatives would increase the production of honey. Apiary in 3–10 beehives can only provide honey to the farmer's family. At this level, it's more of a hobby. Beekeeping becomes profitable starting with 100 beekeepers. Also, the hives themselves need to be changed. Beekeepers mainly use "Dadan" -type beehives, which are difficult to transport, and an industrial bee has to change the honey base periodically. To do this, we need to move to multi-cellular beehives, which have proven to be effective in the United States and Canada.

Moreover, the transition to an industrial level requires an improvement in quality. Therefore, beekeepers should be informed about EU quality standards. This will help reduce the use of antibiotics, shift to biodynamical production, and stop the harvesting of immature honey.

Another important factor is the regularity of the business. The EU requires that the export of honey can be traced back from its origin before indicating the apiary. All products should be have the necessary documents and standard packaging. Therefore, beekeepers should soon regularize their activities in terms of formal regulations.

Beekeeping is totally ecologically dependent. While its transformation from a hobby to an industrial business is a matter of profitability, preserving its ecosystem is a matter of industry as such.

The main reason here is plant farming, which directly affects beekeeping. Without a fertile honeybee base – plants rich in nectar and pollen – the bees will have nothing to pollinate from and where to make honey.

In addition to conserving and increasing the quantity of honey, it is also necessary to monitor the processing of their chemicals. With the pollen that they pollute, you get poor-quality honey, which will not pass certification. In addition, the bees themselves are dying because of the excessive use of chemicals.

The situation could be remedied by addressing the issue of crop pollination and chemicals treatment between the agricultural sectors. In addition, environmental authorities should start to maintain and develop the honey base.

Ukrainian beekeeping is clearly going through a period of recovery. However, if this success is short-lived, beekeepers and the State must take

systemic steps. The former should adopt European production standards, the latter to protect the industry[21].

In modern times, the country's beekeeping is greatly influenced by: State policy and its measures to regulate the agrarian market; socio-economic, environmental and some other factors. In economic literature, it is common to divide all the variety of factors into natural, material (man-made), labour and financial. Factors of production are considered to influence its status and development. The following factors of production are distinguished: structural and functional, static and dynamic, natural and monetary, natural and unnatural (artificial), industrial but not industrial. They all have a certain influence on the health and development of beekeeping enterprises. Their resources are at the heart of factors of production. In beekeeping, the most important are beekeeping, the presence and composition of honey-bearing plants, and the availability of labour, material and financial resources.

The effectiveness of beekeeping is determined by the motivation of the work, the interest of the employees of the enterprises, and is aimed at meeting the needs of society. It depends directly on the combination of production factors and the extent to which they are used in management practices. In the area of production and beekeeping, factors are a set of material, labour and social values that can be used to create labour products. Land, as an essential factor of production in bee-keeping enterprises, is represented, first, as a source of honey-bearing resources and, second, as a material substance of production and a subject of economic management. In the pre-reform methodology for bee-keeping, some economists noted the secondary importance of land, giving preference to other natural factors. So L.V. Prokofieva believes that "… the distinctive feature of beekeeping and that the land does not act here as the main means of production"[22].

In beekeeping enterprises, land is both an object and a means of work, a production base for the planting of bees and the main means for the growth of honey vegetation. The topsoil is also used to grow crops, many of which feed bees, and for beekeeping is the basis of production. Land, when used wisely, has the capacity to improve its fertility.

Bee pollination, combined with the quality of other agrotechnical interventions, has an impact on the yields of entomophilous crops. The different profitability of the land is a source of differential rent I and II (by fertility and place). The servicing of crop production sectors of bee-farming is also determined by the remoteness of areas from settlements, the condition

[21] Beekeeping in Ukraine. URL: https://bakertilly.ua/

[22] Protsenko N.B. (2008). Institutional and economic mechanisms for long-term economic sustainability of industrial enterprises : avtoref. dys. … kand. ekon. nauk, 20 p.

of roads, the development of infrastructure, the social development of the territory and other factors. In a multi-unit economy, land as an object of ownership can be owned by different actors who can take part directly in the production process and can indirectly by granting their land rights to other land users. This is possible in land sharing, land leasing, etc[23].

The improve of the economic and organizational mechanism for economic management and the saturation of the food market with the products of beekeeping is inextricably linked to the enhance of the investment attractiveness of enterprises and the development of their production and social infrastructure, as well as increasing the solvency and quality of life of the population. It has been estimated that the market-dynamic farms include large beekeeping enterprises using innovative production technologies for the integrated use of bee families. At the same time, many of the provisions of modern innovative enterprise development contain tested pre-reform periods and rational approaches to the creation of a multi-sector bee economy.

The following scientific advances for the effective use of bee families are used as the basis for the economic and mathematical modelling of prospective forms of management: apiary and integrated systems, providing for the acquisition of beekeeping season from one bee family: 20–50 kg of honey, 0.3–0.5 wax, 3–5 kg of pollen, 2–3 kg of beebread, 200–300 g of propolis, 300–500 g of royal jelly, 4–6 g of bee poison, 0.5 bee packet , The required number of fruit (sterile) bee utensils and other products (discharge of bee uterus is determined by the domestic needs of the farm and market conditions). It is also provided that bee families may be contracted to pollinate entomophilic crops. Depending on the breeding technology used and the content of the bees, the output of the final product is determined by expert judgement in the study. Nomadic beekeeping (2–3 nomads per season) significantly increases the strength of bee families and multiplies the output of bees. The compilation of best management practices makes it possible to substantiate promising models of commercial organizational structures in beekeeping that are more resistant to market relations. In our opinion, three types of beekeeping enterprises and their bees are considered and have increased competitiveness.

Each of these production types is represented by a model farm (apiary), which is the most appropriate for a certain level of economic activity. Three levels of management were considered in the formulation of medium-term development prospects for the country's beekeeping (2020).

[23] Kravchenko M.V. (2015). Ensuring the economic sustainability of the beekeeping enterprises. Dnipropetrovsk : DDAEU, 205 p.

The first includes the most promising model of commercial bees optimal that their size and production structure, ensuring its owners competitive, self-sufficient development under market conditions.

It is located in the territory of the administrative district for the purpose of obtaining guaranteed volumes of production, beekeeping pollination of crops and saturation of the local market with beekeeping products. The size of the apiary (100–150 bee families) provides for the most rational use of working beekeepers and apicultural assistants throughout the calendar year, as well as the use of modern mechanization devices. The second model bee is a farm that takes advantage of high-tech production. A peculiarity of the organizational mechanism of this type of production is the possibility of combining production, primary processing of products, raw materials and marketing activities into a single whole. It is expected that the beekeeping products of model farm will be sold independently in rural or regional markets, as part of harvesting and trade organizations that participate in the interregional market. Bees on farms can be used successfully to pollinate large areas of entomophilic crops on crop farms, as well as to produce themselves as a relatively large commercial production on the territory of the region. In the long run, a limited number of such bee farm can make efficient use of the honey resources of a particular area.

The third is represented by a model integrated system comprising the which includes the main enterprise and a network of apiary of various sizes and organizational and legal forms of management, as well as enterprises and organizations in the agricultural economy and other branches of the national economy, which interesting in joint activities for the production, processing and marketing of beekeeping products. The system can be territorially integrated a beekeeping area, a region and, in the long run, a representative of interregional beekeeping organizations and can act independently in the international market.

As noted by Eduard Krichfalushay, Vice President of the Association of Processors and Exporters of Honey, after the quarantine imposed by the coronavirus pandemic, falling incomes will lead to a decrease in the consumption of goods and services not of basic necessity. So the demand for honey will go down, because honey is not a necessity. First and foremost, people will be shutting down basic needs that have been delayed by the pandemic. The demand of the industry has already decreased – we already have reduced orders of industrial buyers due to the fall of sales of confectionery, cosmetics.

He said that the recovery of sustainable demand would not be instantaneous and that reaching previous levels would depend heavily on addressing the overall economic situation in the major consuming countries of these goods and restoring the logistics chains.

It has been found that the situation in the domestic market for beekeeping products depends primarily on external trends. The global economic crisis has significantly unbalanced the market, but it remains one of the most dynamic and globalized today. The beekeeping market has a number of features, and in recent years there has been an active redistribution among major producers. Ukraine is among the countries that have developed bee production and are among the top five producers of honey in terms of per capita consumption and gross production. This development has been facilitated by the country's natural and climatic conditions, the large areas of honey-rich land, the traditions of the population in keeping bees, etc. Among European countries, it ranks first, but only 6 per cent of domestic honey is exported[24].

An analysis of statistical data on the development of domestic beekeeping during the reporting period shows that the production of honey in all categories of farms increased by 44,9 per cent, mainly on the part of the population. The private sector accounted for 78,7 per cent in 1990. In 2013, it accounted for 98,2 per cent of the total. A negative trend can be observed in the beekeeping enterprises, where the figures were 21,3 per cent of – 1,8 per cent respectively, and the number of bees and their productivity declined. The production of honey in these enterprises declined by 87,8 per cent over the study period. The relative importance of bee-keeping enterprises in the production of honey during the period under study is insignificant, which indicates that they play a small role in the develop of production of these products and in general, the reduce of production in agricultural enterprises of production as such.

An analysis of the dynamics of honey production by beekeeping companies in the various regions of Ukraine shows that Dnipropetrovsk, Vinnytsia and Kirovograd regions are in the first place in terms of production volumes. A study of the state and efficiency of the production of the main types of beekeeping products in enterprises in Dnipropetrovsk oblast confirms that, despite the growth in natural indicators, the growth of economic efficiency indicators for the period 2009–2013 has increased. Only observed in beekeeping and wax (profitability increased by 24,2 and 15,7 respectively), In the case of the main type of product, such as honey, the profitability decreased by 0,1 per cent. The level of profit from the sale of products doesn`t significantly affect the overall efficiency of production in the enterprises of beekeeping in the Dnipropetrovsk region, which requires appropriate measures to be taken: in particular an integrated State approach to regulating the prices of such products, supporting and stimulating producers.

[24] Kravchenko M.V. (2015). Ensuring the economic sustainability of the beekeeping enterprises. Dnipropetrovsk : DDAEU, 205 p.

Ukrainian honey is not processed and pasteurized because after six to eight months it sugars again and becomes solid. They like to consume liquid honey abroad, and our solid honey is not in demand there. It is in demand in the food industry – for the production of beer, confectionery and other products. This is one of the reasons for the conflict: beekeepers want to sell expensive at 40–45 UAH for 1 kg, while the price for our honey based on its qualities averages from $0,9 to $1,25 (25–35 UAH) for 1 kg[25].

Among the organizational and economic measures taken to implement the strategy for the sustainable development of beekeeping enterprises, public and investment support is important. Modern machinery and equipment needed for innovation are expensive and not always accessible to the majority of such enterprises. Therefore, one of the most important areas for the development of beekeeping enterprises is the coordinating role of the State in the area of concessional lending to various forms of cooperation: production, consumer, procurement, supply, credit and others forms[26].

CONCLUSIONS

Ukraine ranks first in Europe and fifth in the world in honey production. Almost all beekeeping products are used in medicine.

One of the main problems of beekeeping is that honey is exported from Ukraine in large volumes at a low price. This can be addressed in the following ways:

1) processing honey into sweets, natural cosmetics and medicines, selling products in Ukraine and exporting abroad;

2) to use apiotherapy to treat diseases with live bees and bee products. Bees are used to pollinate crops.

As a result of the pollinate of bees, sunflower, buckwheat, fruit berries, vegetables, essential-oil and other crops, there yields increase by an average of 25–30 per cent. The cost of additional products from the pollination of crops exceeds the cost for the upkeep of the apiary.

Specialization and concentration of beekeeping are developed on the basis of interfarm cooperation. There are more than interfarm bee enterprises in Ukraine specializing in the produce of honey and other beekeeping products, as well as pollination of entomophilic crops and perennial plantations. These enterprises will determine the further development of beekeeping through the introduction of the latest science, technology, and advanced experience.

[25] Beehive of «facility». URL: http://day.kyiv.ua/

[26] Kravchenko M.V. (2015). Ensuring the economic sustainability of the beekeeping enterprises. Dnipropetrovsk : DDAEU, 205 p.

SUMMARY

Purpose. To carry out a comprehensive analysis of the current state and perspective for the development of the beekeeping market in Ukraine and particularly in Kherson region. Perform a detailed analysis of the main problems of the Ukrainian beekeeping industry, which require an immediate solution and the identification of future directions for development.

Methodology/approach. The methodological basis of the research is the regulations of the economic theory, institutional theory and systemic analysis. Empirical research on the functioning of the bee market was conducted using comparative analysis, expert opinion and an evaluation procedure.

Results. The dynamics of the world output honey production were evaluated and it was established that Ukraine is included in the list of five largest honey production countries in the world. We've established an increase in the number of honey exporters. On the basis of a comparative analysis, the development of the market for bee-keeping products in various regions of Ukraine was evaluated. We have identified factors that have positive and the negative impact on the development of the beekeeping market. We have also formed a matrix of strategic choices for further development.

Originality/scientific novelty. The author's interpretation of the market of beekeeping products is presented as a system of institutions and economic relations, ensuring processes of production, exchange and consumption of foodstuffs, use of raw materials, as well as providing services the beekeeping industry.

Practical value/implications. Ecological factor need to be taken into account in order to improve the organizational and economic framework for the operation of the bee market. The determinants of development are: the skills of the personnel; the quality of domestic production and the public's confidence in it; the profitability of production; its diversification and geographical position in Ukraine; and the constraints: the ability of the population to pay; lack of reliable and statistical information. The need to develop cooperation as an important organizational and economic measure for the realization of promising areas for the development of the beekeeping market and improving its quality; provide confidence external consumers of responsible meeting their obligations; supporting the image of domestic producers.

REFERENCES

1. Pro bdzhilnytstvo [About beekeeping]. URL: https:// zakon.rada.gov.ua/

2. Halimov S.M. (2019). Tekhnolohiia vyrobnytstva produktsii bdzhilnytstva [Technology of production of the beekeeping produces]. Kurs lektsii. Mykolaiv : MNAU, 107 p.

3. Svitovyi rynok medu ta Ukraina [The World Honey Market and Ukraine]. URL: http://www.souz-inform.com.ua/index.php?language=ukr&menu=article/honey_market_review

4. Vitalii Kuksa (2006). Yakshcho v Ukraini ne zalyshytsia sala, yistymemo med “Dzerkalo tyzhnia” [If in Ukraine there will be no fat, we will eat honey “Mirror of the Week”], № 31.

5. Pravyla vvezennia v Ukrainu ta vyvezennia za yii mezhi bdzhil i produktiv bdzhilnytstva [Regulations on the import into and export from Ukraine of bees and bee products]. URL: https://zakon.rada.gov.ua/

6. Poriadok reiestratsii pasik [The procedure for the registration of apiary]. URL: https://zakon.rada.gov.ua/

7. Osnovni problemy bdzhilnytstva [The major problems of the beekeeping]. URL:https://aggeek.net/

8. Bdzhilnytstvo Khersonshchyny [Beekeeping of the Kherson area]. URL: https://khoda.gov.ua/

9. Bdzhilnytstvo Ukrainy [Beekeeping of the Ukraine]. URL: http://naas.gov.ua/

10. Ekonomichna Pravda [Economic truth]. URL: https://www.epravda.com.ua/

11. V Ukraini – perevyrobnytstvo medu [Honey overproduction in Ukraine]. URL:https://agropolit.com

12. Sylna pasika [Apiary is strong]. URL:https://pasika.pp.ua/

13. Postanova Kabinetu Ministriv Ukrainy [Resolution of the Cabinet of Ministers of Ukraine]. №107 (zi zminamy). URL:http://search.ligazakon.ua/

14. Astakhov V.P. (1995). Analyz fynansovoi ustoichyvosty fyrmi y protseduri, sviazannie s bankrotstvom [Analysis of a firm`s financial sustainability and procedures relating to bankruptcy]. Os-89. 80 p.

15. Baranivska Kh.S. (2011). Osoblyvosti systemy diahnostyky ekonomichnoi stiikosti yak vlastyvosti pidpryiemstva [Features of a diagnostic system for economic sustainability as a business property]. Stratehiia ekonomichnoho rozvytku Ukrainy. Spets. vyp. 28. Pp. 104–110.

16. Kravchenko M.V. (2015). Zabezpechennia ekonomichnoi stiikosti pidpryiemstv bdzhilnytstva [Ensuring the economic sustainability of the beekeeping enterprises]. Dnipropetrovsk : DDAEU, 205 p.

17. Kozachenko H.V., Voronkova A.E., Medianyk V. Iu., Nazarov V.V. (2003). Malyi biznes: stiikist ta kompensatorni mozhlyvosti [Small business: sustainability and compensatory opportunities]. 328 p.

18. Simia i dim [Family and home]. URL: https://simya.com.ua

19. Bdzhilnytstvo v Ukraini [Beekeeping in Ukraine]. URL: https://bakertilly.ua/

20. Protsenko N.B. (2008). Orhanizatsiino-ekonomichnyi mekhanizm zabezpechennia dovhostrokovoi ekonomichnoi stiikosti promyslovykh

pidpryiemstv [Institutional and economic mechanisms for long-term economic sustainability of industrial enterprises] : avtoref. dys. … kand. ekon. nauk, 20 p.

21. Vulyk “mozhlyvostei” [Beehive of “facility”]. URL: http:// day.kyiv.ua/

Information about the author:
Averchev Oleksandr Volodymyrovych,
Doctor of Agricultural Sciences,
Professor at the Department of Agriculture
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0002-8333-2419

DOI https://doi.org/10.36059/978-966-397-239-8-3

GLAMPING AS A PROMISING NICHE IN TOURISM AND HOTEL BUSINESS

Boiko V. O.

INTRODUCTION

Modern tourism and hotel industries are popular dynamic areas, considerably affecting economic development of every country, suffered a significant financial loss during the crisis of COVID-19. The Ukrainian hotel market saw the first half of 2020 off without a big regret. A lack of business tourists, a 50% reduction in hotel occupancy rates in almost all the segments, a decline in average check have become main problems for hoteliers. In spite of certain conservatism in hotel and tourism business, everyone had to adapt quickly to changeable circumstances and observe leading tendencies, generate new ideas and reformat their business.

To cope with the crisis, hoteliers had to adapt their product to a new reality. For instance, global hotel chains, such as Radisson and Accor, practice combination of hotels with office centers and co-workings. Ribas Hotels Group has suggested such an option for the Ukrainian market as well. There are tens of kinds of lodging for those who search for rural luxury and immaculate nature, ranging from tents and tipis for glamping to cabins, nomad's tents та houses in trees.

1. Glamping as a new type of environmentally-friendly business in Ukraine's economy

The word "glamping" originated in English and means a glamorous camping, realized as light comfortable houses or tents. It is a relatively new format of leisure oriented towards those who want to be nearer to nature and enjoy hotel comfort. The first glampers, without exaggeration, were medieval kings, who arranged large tents in military campaigns. Definitely, such tents had everything necessary for the comfort of a king and his escort. The format of tent leisure with comfort enjoyed the greatest popularity in the 19th century among rich lovers of hunting who set off for the expeditions to Africa and South America. In their temporary accommodations there were not only comfortable beds, but also true libraries and cast iron baths. Glamping in a modern form became popular in the middle of the 2000s in Great Britain where organizers of summer festivals began arranging comfortable camps for fastidious visitors. This movement started developing and currently there are

many places in the world where one can stay in original glamps. This type of leisure is just coming to Ukraine[1].

The global glamping is developing quite actively. Nowadays the largest markets are the USA, Great Britain and Australia, the total volume of the market being $3 billion. There are over 5 million people who have already enjoyed leisure in glamps. There are people who cannot even imagine any other type of tourism. It is forecasted that the global glamping market will have reached the volume of $4.3 billion by 2025[2].

The modern trends of social development are an increase in the interaction with the environment, a rise in the clothes made of natural textiles, organic food etc. Due to awareness and ecological responsibility, most people direct their activities towards "natural" area to organize running environmentally-friendly business. Currently the development of tourism business, eco-hotel and glamping enterprises in particular, is a promising trend for Ukraine's economy[3].

Glamping implies outdoor leisure, even in nature reserves, but with all the necessary conditions for lodging. Unlike hotels, glampings can be installed anywhere and moved from one place to another, even to the places where any other construction is prohibited that is obviously impossible with hotels. The advantages of a glamping are as follows: firstly, it is repaid much more quickly than hotels – for 2–3 years. Secondly, the installation of a glamping does not require any allowance documentations. In terms of legislation, a glamp is classified as a usual tent, therefore it can be placed almost anywhere, however, it is necessary to agree it with a forestry if this glamping is in a forest or a nature reserve, or with an enterprise owning it. In some cases, certain payments can be charged for the installation of a glamp. In addition, the installation of a glamping does not damage the environment. A glamp is a construction made of metal, wood and tent fabrics PVC[4].

---

[1] Shcho take hlempinh ta de yoho shukaty v Ukraini [What is glamping and where it can be found in Ukraine]. URL: https://veterdoit.com/shcho-take-hlempinh-ta-de-yoho-shukaty-v-ukraini/ (Accessed 20 March 2021).

[2] Namet z kondytsionerom ta Wi-Fi: shcho take hlempinh ta chy ye vin v Ukraini [A tent with an air-conditioner and Wi-Wi: what is glamping and if it is available in Ukraine]. URL: https://shotam.info/namet-z-kondytsionerom-ta-wi-fi-shcho-take-hempinh-ta-chy-ie-vin-v-ukraini/

[3] Hranovska, V. H. & Boiko, V. O. (2020), Funktsionuvannia ekohoteliv v Ukraini yak chynnyk aktyvizatsii pidpryiemnytskoi diialnosti [Functioning of eco-hotels in Ukraine as a factor of activization of entrepreneurial activity]. Ekonomika APK, 3, pp. 57–65. [In Ukrainian] DOI: https://doi.org/10.32317/2221-1055.202003057

[4] Glemping: v Ukraine poyavilsia novyy biznes generiruyushchiy pribyl' [Glamping: a new business has appeared in Ukraine that generates profits]. URL: http://derevo.ua/articles/details/glemping-v-ukraine-poyavilsya-novyj-biznes-generir-99.

Over the past few years “glamping” has become one of those popular brands of tourism industry which enjoys great popularity among tourists. The combination of the words “glamour” and “camping” has contributed to an increase in this tendency, since the growth of mass tourism has made more people keep ecological atmosphere of responsible journeys. According to Oxford Dictionary, glamping is “a form of camping involving accommodation and facilities more luxurious than those associated with traditional camping “. This word was used for the first time in the United Kingdom in 2005, and was added to the Dictionary in 2016.

There are about a thousand working glampings in the world. Currently the largest markets are the USA, Great Britain and Australia, and the total volume in the global market is $3 bilion. According to the data of the British Tourism Bureau “Campingselection”, the market of glampings grows by 21% annually, and according to the forecasts its volume will have reached about $4 billion by 2021. A glamping is much more than a nice tent, all over the world there are a variety of incredible trends ranging from popular eco-glampings, trailer glampings to Antarctic luxury-tents on a glacier[5].

The southern part of our country is one of the places having substantial resources and labor potential to develop all types of tourism. The issues of developing hotel and tourism business in Kheron region, in our opinion, are very important, eventually, they are oriented towards external and internal social and economic development. Kherson region is a unique territory for tourism, leisure and recreation, since it has many benefits for the formation and development of a powerful resort and tourism complex. The region has a wide access to the Dnipro water main, ant it is the only region in Ukraine with the access to two seas – the Black sea and the Azov sea. The only natural dessert in Europe – Oleshky sands – is the largest artificial forest in the world and even the unique mountain landscapes in the middle of the Steppes – the Stanislav mountains are located in Kherson region[6, 7].

The Covid-19 pandemic has made considerable changes to the plans for holidays of many people not only in terms of external, but also internal

[5] Namet z kondytsionerom ta Wi-Fi: shcho take hlempinh ta chy ye vin v Ukraini [A tent with an air-conditioner and Wi-Wi: what is glamping and if it is available in Ukraine]. URL: https://shotam.info/namet-z-kondytsionerom-ta-wi-fi-shcho-take-hempinh-ta-chy-ie-vin-v-ukraini/ (Accessed 20 March 2021).

[6] Boiko, V.O. (2020), The development of green tourism in the southern region. *Entrepreneurship in the agrarian sector: global challenges and effective management: Proceedings of the 1st International scientific practical conference in 2 parts,* (pp. 65–68). 12–13 liutoho 2020, Zaporizhzhia, Ukraine : ZNU.

[7] Boiko, V. O. (2020), Green tourism as a perspective direction for rural entrepreneurship development. Scientific approaches to modernizing the economic system: vector of development : collective monograph. Lviv-Toruń : Liha-Pres, 2020. pp. 1–18.

tourism. The citizens of Ukraine, for whom the prices for leisure at the sea and the Carpathian mountain resorts are too high, travel around picturesque places, familiar to them, by their own or rental cars, having their tents for leisure and home food instead of hotel rooms, restaurants and cafes[8, 9, 10, 11, 12]. Comfortable glampings not inferior to hotels by their facilities can be an alternative to traditional forms of recreation and lodgings for the night. But unlike hotels, glampings have considerable advantages, because they can be installed anywhere, moved from one place to another without filling in any bureaucratic papers, just having allowances from local authorities. Glampings can be installed in the places, where any other construction is prohibited, that is impossible for hotels and resorts.

The Ministry of environmental protection and natural resources of Ukraine together with the Association of local authorities "The Carpathian Euro-region – Ukraine" and the national nature parks prepared the project "Glampings – creation of an exclusive tourism product in nature reserves". The specificity of the project is the development of tourism in the territories of the nature reserve funds that will not have a negative impact on natural ecosystems. And glampings, as it was mentioned by the Ministry, will become that combination of traditional campings with comfortable conditions of hotels for tourists.

According to the project, comfortable camps are planned to be created in the Regional Landscape Park "Kramatorskyi" (Donetsk region), the National Nature Park "Synevyr" (Zakarpattia region), the National Nature Park "Skolivski Beskydy" (Lviv region) and the Regional Landscape Park "Dnistrovskyi" (Ivano-Frankivsk region). This project stipulates that efficiency of using tourism potential of nature reserves should be increased and an exclusive product for tourism – arranging glamping-locations –

[8] Boiko V.O., and Drahota I.P. Glamping is an exclusive tourism product of the present. *The 1st International Science Conference on Multidisciplinary Research*, January 19–21, 2021, Berlin, Germany, pp. 208–210.

[9] Romanenko, Y. O., Boiko, V. O., Shevchuk, S. M., Barabanova, V. V., & Karpinska, N. V.(2020). Rural development by stimulating agro-tourism activities. International Journal of Management, № 11(4), С. 605–613. doi:10.34218/IJM.11.4.2020.058.

[10] Kyrylov, Y., Hranovska, V., Boiko, V., Kwilinski, A., & Boiko, L. (2020). International Tourism Development in the Context of Increasing Globalization Risks: On the Example of Ukraine's Integration into the Global Tourism Industry. *Journal of Risk and Financial Management*, 13(12), 303. DOI: https://doi.org/10.3390/jrfm13120303

[11] Boiko, V. (2020), "Rural green tourism in Ukraine: problems and prospects", *Agrosvit*, vol. 22, pp. 58–65. DOI: 10.32702/2306-6792.2020.22.58.

[12] Boiko V.O., Kliuchnyk A.V., and Pivnova L.V. (2020), "Increasing competitiveness of enterprises of ecological (green) tourism". *Bulletin of Kherson National Technical University*, vol. 3, pp. 213–222. DOI: https://doi.org/10.35546/kntu2078-4481.2020.3.28

in picturesque places of Ukraine should be created, that will be an incentive for a considerable increase in its competitiveness among leading tourism countries.

Nowadays there is a global tendency for conserving natural resources, since they are limited and non-renewable. Therefore, the development of eco-hotel industry in the form of glampings, whose main activity is aimed at conserving natural resources, is highly profitable business, capable of making a considerable contribution to the growth of the gross domestic product with relatively low costs and a short period of repayment.

In comparison with other types of tourism, eco-tourism has a more distinct social and economic direction. It can play an important role in the economy of any region and provide nature territories and local people engaged in this area with new economic prospects.

Recently ecological tourism has started occupying an important position in the global tourism industry. According to the evaluation of the experts of the World Tourism Organization (WTO), ecological tourism is going to develop at such high rates. In the first place, it will have a positive impact on economic development of the countries which still have valuable natural resources at their disposal. According to the definition of scientists, ecological tourism involves unforgettable journeys whose main aim is to study and conserve cultural environment, the main mission of which is to protect and preserve valuable nature landscapes showing their beauty to tourists. This is its essential difference from other types of tourism, which involuntarily damage the environment. In order to eliminate negative consequences of the functioning of the global tourism industry, it is necessary to use nature and cultural-historical monuments more efficiently and carefully in order to make them available for future generations.

Eco-tourism as one of the types of tourism originated in the 70's of the past century in the USA and developed countries of Europe. The main reason for the emergence of ecological tourism at the current stage is loads on natural and cultural-historical resources, increasing inversely to the number of tourist arrivals. The contradiction between meeting tourism demands and using natural resources efficiently becomes obvious.

The main components of eco-tourism are:

– "learning nature", i.e. journeys imply the elements of examining nature, acquiring new knowledge and skills by tourists;

– "conserving ecosystems" involves appropriate behavior of a group in the route and participation of tourists and tour operators in the programs and events aimed at protecting the environment;

– "respecting interests of local population" means compliance with local rules and customs and also a contribution of tourism to social and economic development of tourism centers.

The main tasks of the development of ecological tourism in Ukraine are:

– legislative and regulatory execution of eco-tourism activities;

– implementation of en economic mechanism of charging a tourism service fee, creating self-sustained recreation structures in Ukraine on the basis of self-sufficiency, self-financing and self-repayment;

– financial and organizational support for recreation-tourism infrastructure in compliance with international standards (conditions of tourist lodging, transport etc);

– formation of an intellectual-humanistic worldview and a patriotic attitude towards natural and cultural heritage of the country in holiday-makers;

– creation and arrangement of scientific-informative tourism routes and ecological-educational excursion paths according to the parameters of internal and external landscape diversity of natural terrains;

– substantiation of the mechanism of determining acceptable volumes of recreation loads on landscape complexes of nature reserves used for leisure, tourism and treatment;

– inventory, quantitative and qualitative evaluation of natural recreational (balneology, climate, forests, landscapes) and historical-cultural (museums, architectural monuments, fortifications) resources available in nature reserves[13].

Ecological tourism in Ukraine has started developing recently, but nowadays many participants of the tourism market are offering their products with the prefix "eco". However, it is necessary to acknowledge that not everyone is aware of the classical understanding of the term "eco-tourism", implying not only outdoor leisure, but also an educational component, consciousness of tourists and the key role of local cultures[14].

A positive effect of the factors on the formation and development of eco-tourism allows the country to achieve high economic results: steady development of economic activity and successful solutions to social problems. However, the process is slowed down by complicated logistics – the road quality in Ukraine is known to leave much to be desired. The situation is getting more complicated because officials, tourism agencies and other representatives of the industry consider the concept of eco-tourism not accurately regarding any outdoor leisure as ecological tourism.

[13] Petruk V.H. et al. Ekoheohrafiia ta ekoturyzm: pidruchnyk [Eco-geography and eco-tourism : textbook / V.H. Petruk, O.V. Bondarchuk, I.A. Trach, O.Yu. Panasiuk, Yu.I. Tsaruk, V.D. Vakoliuk. Vinnytsia : LLC "Nilan-LTD», 2016. 178 p.

[14] Ekoturyzm u sviti [Eco-tourism in the world]. URL: https://we.org.ua/rizne/ekoturyzm-u-sviti/

Following the example of the European tourism practice, new forms of eco-tourism are emerging in the country: nature parks, eco-resorts, eco-cottages, eco-paths, glampings etc.

– The standard model of an eco-complex has well-trained personnel and professional guides who communicate with its guests. Eco-complexes are located in immaculate nature territories. They are of great ecological importance and have powerful programs for the environmental protection. They support ethical practices of employment and contribute to the development of local economies. The best technologies are used to save energy and handle wastes efficiently.

– Eco-resorts are similar to the standard model in visual characteristics and construction solutions, however, they differ by purposes, usually located near water bodies and oriented towards offering entertainment services and other personal services (natural health-improving spa-centers, yoga practices etc.).

– Eco-cottages and camps are small houses, located in nature territories, with picturesque sceneries, usually built relatively long ago and for certain purposes, not related to tourism. Many of them are adapted and kept for lodging. Over the past several years "glamping" has become that popular brand of tourism industry that enjoyed great popularity among travelers. The combination of the words "glamour" and "camping" has led to an increase in this tendency since a boom in mass tourism has made more people feel ecological spirit of responsible journeys.

– Rural eco-complexes are simple private dwellings, located in rural territories or in small villages near nature reserves. Maintenance staff and guides are local people without professional skills. They offer opportunities to see exotic wildlife, not isolated from civilization.

– Eco-farms are rural projects using farm houses and other farm constructions. Some of them are adjusted or constructed for a particular purpose. These projects are aimed at earning additional income for farmers and small communities.

The global strategies of social-economic and ecological development determine a significant role of tourism industry as one of the most important areas of life activities. Green tourism is getting more popular and widespread among people during the period of the world economic crisis caused by the Covid-19 pandemic. After Ukraine's adoption of the principles of self-government and self-sufficiency, as a result of the processes of decentralization, green tourism will become a stimulating factor of an increase in the efficiency of economic development of rural areas.

The development of green tourism leads to social welfare, it is considered to be a priority sector in diversification of the agrarian sector of economy and support for the well-being of rural dwellers, but it requires special measures

during long-time restrictions for movement of internal and external tourism flows. Under conditions of the quarantine, the so-called micro-locations are about to become the main tourism trend , the essence of which consists in short holidays nearer to home and far from popular tourism routes, that will allow saving money and reducing the impact of travelling on the environment.

The development of green tourism is a proven world practice as a way of raising the incomes of rural people. There is currently no systemic national policy in this area in Ukraine. It is necessary to make extensive use of the European practice and to create the necessary legislative environment as soon as possible to overcome the problems hampering the development of rural green tourism based on personal husbandries and farm enterprises.

2. Types of glampings as an exclusive tourism product

The current rhythm of life causes permanent stress to a human organism and almost does not leave time for leisure, therefore the state of health and working capacity in the following year depend on a short period of holiday. Healthy food and daily routine, availability of fresh air, and, majorly, its length are important factors in planning holidays. Such conditions are extremely important under conditions of the COVID-19 pandemic, therefore most people prefer short-time tourism (1…5 days). It proves that consumers of hotel services will have higher requirements to the conditions for their leisure and it will be necessary for glamping owners to search for additional benefits of such lodgings. The duration of leisure time mainly depends on a person's mental state, long-time leisure will not be good for workaholics and they will start counting days to coming back to work, and also on travelling companions – they should be compatible for a successful holiday[15].

Most travelers suffer from stress caused by the COVID-19 and regulations require maintaining social distancing. In the new world leisure in the style of glamping is a fantastic variant which can be offered to tourists and which should be necessarily considered by hoteliers. Isolated leisure outdoors is perfectly suitable for travelling during the COVID-19 pandemic. Glamps can accommodate a small number of people and therefore their business model is based of exclusiveness. A traveler has full comfort in the place of natural beauty without overcrowding and social stress.

The global market of glamping is developing actively. The most interesting part of this business is the idea of houses, i.e. glamps. Stationary

[15] Oliinyk O.V., Mostetska T.L., Tarasiuk H.M., Chahaida A.O. Perspektyvy rozvytku hoteliv u styli hlempinh v Ukraini [Prospects for the development of hotels in the style of glamping in Ukraine]. *Ekonomika, upravlinnia ta administruvannia [Economics, management and administration],* № 4(90), 2019. P. 38–46.

glamps can be of different sizes and forms. When determining the location, it is important to consider the target audience of potential clients. The location of glampings can be oriented towards:

– seaside leisure near or far from resorts and settlements;
– family leisure at weekends in the countryside;
– tourism flows, including those on holiday routes;
– road leisure, as a more comfortable type of motels;
– places for fishing and hunting;
– arranging corporate and family parties;
– thematic glamping-camps: sports, musical, in the places of regular historical reconstructions and holidays.

There is a variety of types (forms) of glampings. Here are some of them:

– The Glamp "Stodola" (the village Dolynivka, Lviv region). This space was arranged in the village to hold different events, mainly for weddings and birthday parties. There is a huge white tent in the territory. One can have a holiday in the style of glamping there, and it is very aesthetical and civilized. This wigwam is made of waterproof eco-friendly cotton. Therefore Carpathian rains will not hamper cozy leisure. In the territory, not far from the tent, there is a shower with hot water, toilet, kitchen and grill. The tent is designed for two adults and a child younger than 6 years old. In the territory there is also a house where three persons more can be accommodated.

– The glamping "Shatro" (the village Ulianyky, Kyiv region). A true glamping is situated only 80 kilometers from Kyiv. Its guests can expect leisure outdoors without noise, in the place very similar to the Carpathians. In each tent, designed for 2–4 persons, there is everything for cozy leisure: comfortable beds and furniture, a shower, toilet, air-conditioner, mini-kitchen, terrace and a barbecue zone. In "Shatro" one can also order meals or cook food on their own in the mini-kitchen – all the necessary equipment is available in each glamp. One can also buy products of local producers: wines from the family winery of Hryhorii Kulinichenko from Kaharlyk and cheese from Bukrynsk creamery.

– The glamping "Mandra" (Zatoka, Odesa region). The glamping "Mandra" is located in Zatoka, on the shore of the estuary. There are three glamps for lodging: one glamp on the water for two persons, a VIP glamp for two persons with a kitchen and terrace and a Basic glamp – for three persons with a terrace. Each glamp has a toilet and everything necessary for comfortable leisure. In the territory there is a sports ground for volleyball, a place for campfire, braziers, kayaks and a common leisure zone. It is available all year round.

– The glamping in the hotel "ShyshkiNN" (the village Snovianka, Chernihiv region). Two-story glamps with all conveniences will attract adults and children. In addition to romantics of passing the night in a tent in the pine

forest, one can be offered services of a hotel level here. The rooms have two double beds, a bathroom, conditioner, mini-kitchen and hair-dries. In the territory of the hotel there is a restaurant, parking lots for cars, playgrounds, and also a SPA-center and an outdoor swimming pool. One can also hire a bicycle, go fishing or shoot a bow. And there is a path to the scenic shores of the river Snov.

– Serfclub&bechotel (Berdiansk, Zaporizhzhia region). The dome hotel of a glamping type offers comfortable leisure with the seascape and the sunset views. The glamps have everything for minimum comfort: an air-conditioner, fridge, TV-set, micro-wave stove and a kettle. There are also bathrooms in the rooms. In winter comfort is provided by heaters and warm floors.

– Gm Eco Bubble (Yablunytsia, Ivano-Frankivsk region). The glamping offers comfortable lodging in semi-transparent spheres. All the glamps have double beds, a conditioner, electric stove, mini-bar, stove and access to Internet. The glamping has a favorable position near the resort Bukovel.

– The eco-glamping in the Carpathians (the village Kryvopillia, Ivano-Frankivsk region). One can pass the night in the glamp paying a reasonable price in the village Kryvopillia in the Carpathians. One can rent domes in Dzvin Space. There is an option for 2–4 persons, with single, double and two-tier beds. The conveniences are minimum in the tent: the toilet and shower are located outdoors.

– The eco-glamping "Sfera 365" (Bila Tserkva). Its visitors can be offered to pass the night in a transparent spherical house showing the panorama of the starry night and the lake. Guests are served continental breakfast and offered a free bicycle hire. In the territory there is a sauna, barbecue zone and a terrace. In summer an outdoor swimming pool is available[16].

Glamping is a good idea for creative entrepreneurs, this business has benefits because it can be created as a pleasure for the soul, developed gradually allowing the realization of brave ideas. And though foreign tourists are a good way to develop business to the international level, it is necessary to start orienting towards internal tourism. It is also important to remember the specificity of the climate and use the nature potential, peculiarity and uniqueness of the territory, where glamps are planned to be located, to the fullest extent.

[16] Shcho take hlempinh ta de yoho shukaty v Ukraini [What is glamping and where it can be found in Ukraine]. URL: https://veterdoit.com/shcho-take-hlempinh-ta-de-yoho-shukaty-v-ukraini/ (Accessed 20 March 2021).

3. What is necessary to know to start your own glamp-business

Modern people who have got used to numerous conveniences of urban life and want to enjoy out-of-town leisure, are not ready to stay without a warm bed, shower and electricity. Therefore, a new type of leisure is for them – glamping that combines nature benefits and civilization conveniences.

The advantages of this type of business are low competition, and a lack of it in some regions; quick repayment despite a considerable volume of investments; relative resistance of the project to unfavorable economic trends, and also the possibility to change a concept quickly; the prospects for expanding business due to involvement of foreign tourists. The probable risks are selection of a wrong location; equipment breakdown; an increase in the share of permanent costs; unfavorable climate; a change in the legislative base and stronger regulation in this area of activities.

The target audience of glamping is families with children who want to stay in nature territories, couples who arrange romantic trips or those who decide to organize a wedding ceremony outdoors, large groups of friends, who need to leave an urban vanity, foreign tourists, investigating Ukraine, and corporate clients who organize events out of town for their employees.

There are many women who like to spend time outdoors with comfort. As a rule, they are companies of young girls or women who prefer uniting by interests. From the point of view of marketing, they share information being active users of social networks, often post their photos, write about their impressions and give recommendations to other people.

Such a type of leisure is more practiced by family couples of older age, who have been married for several years. They think it is better to take children with them, use grounds for picnics actively, hire bicycles and boats[17].

Currently there are not many glampings in Ukraine, however, each of them has its own specificity and offers unique services. Firstly, they are glampings, located in the southern regions (Odesa and Zaporizhzhia regions) near the seas or rivers. They are visited by lovers of active leisure at the seaside, as a rule, for a week. Secondly, the camps, situated in the mountain regions.Their clients can walk in the mountains under supervision of experienced guides, go snowboarding or skiing and practice in climbing. Not only glampings but also houses in the cliffs can be built there, such a variant is very popular in Canada and Mexico. Thirdly, thematic glampings, located in the places with interesting history. It concerns the territory of the Western Ukraine where tourists can see unique landmarks and enjoy picturesque sceneries. Fourthly, therapeutic glampings are an absolutely new trend that can be developed in

[17] Biznes-plan hlempinha [A business-plan of glamping]. URL: https://www.beboss.ru/bplans-glamping.

Kherson region near the famous pink lakes or warm geysers. People can come to such places to find spiritual balance, go in for yoga and meditation and take a course in restoration massage.

In terms of legislation, business is started with the state registration of an entity of entrepreneurship – a physical person-entrepreneur or a juridical person.

Running business without registration is illegal and can lead to the penalty of 17–34 thousand UAH with probable confiscation of equipment, goods and profit. If its owner breaks the law for the second time, the penalty will reach 85 thousand UAH. Moreover, running business without licenses is also punished (if they are envisaged by the law).

Entrepreneurs usually acknowledge the necessity to legalize their business sooner or later. Almost all more or less known internet-sites require documents concerning business registration, and big counteragents do demand them ant it is also necessary for participating in different tenders.

Thus, business must be registered. Nowadays it is not difficult to register business – it can be done online. In any case, the development of business without its state registration is impossible.

One can search for an investor for business or start business on their own, but a business-plan is necessary in any case. It outlines aims, presents estimates, evaluates competitors, considers weaknesses and strengths, assesses risks and predicts profitability and time of repayment.

A business-plan will help find investors and persuade them to believe in the idea. It is necessary for an entrepreneur to understand their product and its value for the market. It presents all the characteristics, details and aspects of your business, since it contains financial calculations, things necessary for launching, describes the product, its strengths and weaknesses, characterizes the target market, provides estimates, considers costs and profits, and also indicates a juridical type of the company and includes necessary documents.

To understand what you should start with (a PE (private entrepreneur) or a juridical person), it is necessary to think about:

– possible annual business turnover;
– approximate amount of costs (goods, services, equipment, buildings etc.);
– evaluation of potential counteragents;
– determination of types of activities;
– possibility of involving partners or investors;
– prediction of probable risks and tenant responsibilities.

The most popular types of running business in Ukraine are a PE and a LLC (Limited Liability Company).

Each type of business has its advantages and disadvantages. Therefore, it is necessary to consider aspects which are more appropriate for a certain activity.

It is easier to register a PE and make its financial statements. It can be in the first, second or third group of a simplified taxation system. But in case of entrepreneurial risks a PE is liable to creditors by the property they own (in particular, accommodation, cars etc.), and answers for their activities to inspectors, law bodies and other authorities. A PE cannot employ a director and delegate these authorities to him/her. In addition, a PE cannot share authorized capital with a partner or an investor. It does not allow them to participate in business. Another disadvantage of a PE is the impossibility to sell it as an independent business.

A LLC is the most widespread type of a juridical person in Ukraine. It is possible to involve partners and investors, share authorized capital and profits, build a certain structure with the distribution of functions between different management bodies. The advantage of juridical persons is the possibility to sell them as an independent business with all its assets. The disadvantage of a LLC is a complicated procedure of closing it, more costs to register and serving it when compared to a PE.

The list of documents for registering a LLC: its name; address of registration (location); types of activities (codes of CTEA); passports and identification codes of promoters and directors; the amount of authorized capital and its distribution between promoters (if there are more than one); taxation system; the type of a foundation document (statute). All these data are referred to the solution to start a LLC, signed by its promoters. If they have not chosen a model status, that solution also confirms the statute. The signatures of the promoters must be certified by a notary.

Only a passport and an identification code are necessary to register a PE. An entrepreneur should also decide on the types of activities (codes of CTEA) and a taxation system in the future.

The activity can be started immediately after the state registration. At first an entity of entrepreneurial activity will be in a common taxation system and a single tax or a VAT can be applied, for instance, in the following month. Registration of a book for incomes and expenses can also be important for PEs. Tax authorities can do it up to two weeks. It does not correspond to such slogans as “the state is in your smartphone”, but no alternative to it has been offered yet. To perform operations with non-cash payments, it is necessary to open a bank account. But it does not usually take much time[18].

[18] Yak vidkryty svii biznes: instruktsiia z reiestratsii ta pidvodni kameni [How to start a business: the instruction on registration and pitfalls]. URL: https://thepage.ua/ua/exclusive/yak-vidkriti-svij-biznes-instrukciya-z-reyestraciyi

The main problem for glamping in Ukraine is a novelty of the concept for the legislation (there is no glamping in any regulatory acts) and for the Ukrainians who do not understand what they are offered. There are no such words as "glamping" and "glamp" in the legislative base of Ukraine. When receiving a certificate of compliance, glamps are classified as tents. It causes misunderstanding between entrepreneurs and inspectors. When an inspector sees that a tent has been registered, but it is a true construction, though it is light, but big enough when compared to a tent, – there is some dissonance.

Currently the project on creating the glamping "Aktove" is being realized. This project is an attempt to apply a mechanism of social entrepreneurship in the village Aktove in Mykolaiv region which has huge tourism potential since it is located near the National Park "Buzk's Gard". Actove canyon is a unique complex of forest and water ecosystems with an ensemble of cliffs and granite boulders, a natural phenomenon that has no analogues in Europe. By its geological-landscape characteristics Aktove canyon is similar to the world-famous canyons of North America with the depth of more than 70 m and the area of 250 ha. The nature complex is a part of the National Nature Park "Buzk's Gard", which became one of the winners of the national contest "Seven Wonders of Ukraine" in 2010.

However, in the territories adjacent to the Park there is an acute problem of the development of rural areas. The problems of unemployment, a lack of public welfare and the development of the territory by means of investments or grants are the main ones in the villages. The location of these settlements near attractive nature objects has considerable tourism potential, but very often village communes are not capable of taking such opportunities efficiently to attract additional finances and further use them for developing villages and improving living conditions and leisure of their dwellers[19].

In the west of Ukraine there are certain plans to develop a new type of leisure. For instance, in Ivano-Frankivsk region there is a project "Glampings – creation of an exclusive tourism product in nature reserves", which was submitted to the program of the sector budget support of the EU. This project implies the creation of a chain of glampings in Ivano-Frankivsk, Zakarpattia and Lviv regions. Suitable sites are selected in the national nature parks. It is one of the most high-quality and advanced projects, submitted to the sector support. It is expected that each region will receive about 5–6 million UAH within the framework of the project.

[19] Davydenko I.V. Hlempinh yak perspektyvna forma rozvytku ekoturyzmu [Glamping as a promising form of eco-tourism development]. URL: http://www.vestnik-econom.mgu.od.ua/journal/2017/26-1-2017/4.pdf

CONCLUSIONS

It is necessary to understand that a new format of tourism will add a social component, expand possibilities for local entrepreneurs and also assist in creating new jobs. Such an enterprise must be unique, unusual and original and have all the characteristics of comfortable life.

The possible risks are a choice of a wrong place; equipment breakdown; an increase in the share of fixed costs; unfavorable climate; change in a legislative base and stricter regulation in this area of activity. The main problems for glamping development in Ukraine are novelty of the legislation concept (it is not included in any regulatory document) and the fact that Ukrainians are not aware of what they are offered. Ukraine' legislative base does not contain such words as "glamping" and "glamp".

SUMMARY

Modern people are accustomed to numerous conveniences of city life and want to enjoy out-of-town leisure, they are not ready to stay without a warm bed, shower and electricity, therefore there is a new type of leisure for them – glamping which combines advantages of nature and modern conveniences. The benefits of this type of business are low competition and a lack of it in some regions; rapid repayment, in spite of a considerable volume of investments; relative stability of the project to unfavorable economic tendencies, and also a possibility of a fast change in the concept; prospects for expanding business due to involving foreign tourists.

The purpose of the study is to substantiate the prospects of developing hotels in the style of glamping as a new trend in hospitality industry under conditions of a market economy. The monograph presents theoretical generalization of the preconditions and approaches to the development of glamping in Ukraine at the present stage; to identify and analyze the main factors that have the most significant impact on the current state of glamping development; to determine the role of this business and its function in the development of the national economic complex of the country under conditions of market relations.

REFERENCES

1. Shcho take hlempinh ta de yoho shukaty v Ukraini [What is glamping and where it can be found in Ukraine]. URL: https://veterdoit.com/shcho-take-hlempinh-ta-de-yoho-shukaty-v-ukraini/ (Accessed 20 March 2021).

2. Namet z kondytsionerom ta Wi-Fi: shcho take hlempinh ta chy ye vin v Ukraini [A tent with an air-conditioner and Wi-Wi: what is glamping and if it is available in Ukraine]. URL: https://shotam.info/namet-z-kondytsionerom-ta-wi-fi-shcho-take-hempinh-ta-chy-ie-vin-v-ukraini/ (Accessed 20 March 2021).

3. Hranovska, V. H. & Boiko, V. O. (2020), Funktsionuvannia ekohoteliv v Ukraini yak chynnyk aktyvizatsii pidpryiemnytskoi diialnosti [Functioning of eco-hotels in Ukraine as a factor of activization of entrepreneurial activity]. Ekonomika APK, 3, pp. 57–65. [In Ukrainian] DOI: https://doi.org/10.32317/2221-1055.202003057

4. Glemping: v Ukraine poyavilsia novyy biznes generiruyushchiy pribyl' [Glamping: a new business has appeared in Ukraine that generates profits]. URL: http://derevo.ua/articles/details/glemping-v-ukraine-poyavilsya-novyj-biznes-generir-99 (Accessed 20 March 2021).

5. Boiko, V.O. (2020), The development of green tourism in the southern region. *Entrepreneurship in the agrarian sector: global challenges and effective management: Proceedings of the 1st International scientific practical conference in 2 parts*, (pp. 65–68). 12–13 liutoho 2020, Zaporizhzhia, Ukraine : ZNU.

6. Boiko, V. O. (2020), Green tourism as a perspective direction for rural entrepreneurship development. Scientific approaches to modernizing the economic system: vector of development : collective monograph. Lviv-Toruń : Liha-Pres, 2020. pp. 1–18.

7. Boiko, V.O., and Drahota, I.P. Glamping is an exclusive tourism product of the present. *The 1st International Science Conference on Multidisciplinary Research*, January 19–21, 2021, Berlin, Germany, pp. 208–210.

8. Romanenko, Y. O., Boiko, V. O., Shevchuk, S. M., Barabanova, V. V., & Karpinska, N. V.(2020). Rural development by stimulating agro-tourism activities. International Journal of Management, № 11(4), С. 605–613. DOI: 10.34218/IJM.11.4.2020.058

9. Kyrylov, Y., Hranovska, V., Boiko, V., Kwilinski, A., & Boiko, L. (2020). International Tourism Development in the Context of Increasing Globalization Risks: On the Example of Ukraine's Integration into the Global Tourism Industry. Journal of Risk and Financial Management, 13(12), 303. DOI: https://doi.org/10.3390/jrfm13120303

10. Boiko, V. (2020), "Rural green tourism in Ukraine: problems and prospects", *Agrosvit*, vol. 22, pp. 58–65. DOI: 10.32702/2306-6792.2020.22.58

11. Boiko, V. O., Kliuchnyk, A. V., and Pivnova, L. V. (2020), "Increasing competitiveness of enterprises of ecological (green) tourism". *Bulletin of Kherson National Technical University*, vol. 3, pp. 213–222. DOI: https://doi.org/10.35546/kntu2078-4481.2020.3.28

12. Petruk, V.H. et al. Ekoheohrafiia ta ekoturyzm: pidruchnyk [Eco-geography and eco-tourism: textbook / V.H. Petruk, O.V. Bondarchuk, I.A. Trach, O.Yu. Panasiuk, Yu.I. Tsaruk, V.D. Vakoliuk. Vinnytsia : LLC "Nilan-LTD", 2016. 178 p.

13. Ekoturyzm u sviti [Eco-tourism in the world]. URL: https://we.org.ua/rizne/ekoturyzm-u-sviti/ (Accessed 22 March 2021).

14. Oliinyk, O.V., Mostetska, T.L., Tarasiuk, H.M., Chahaida, A.O. Perspektyvy rozvytku hoteliv u styli hlempinh v Ukraini [Prospects for the development of hotels in the style of glamping in Ukraine]. *Ekonomika, upravlinnia ta administruvannia [Economics, management and administration],* №4(90), 2019. P. 38–46.

15. Biznes-plan hlempinha [A business-plan of glamping]. URL: https://www.beboss.ru/bplans-glamping (Accessed 22 March 2021).

16. Yak vidkryty svii biznes: instruktsiia z reiestratsii ta pidvodni kameni [How to start a business: the instruction on registration and pitfalls]. URL: https://thepage.ua/ua/exclusive/yak-vidkriti-svij-biznes-instrukciya-z-reyestraciyi (Accessed 22 March 2021).

17. Davydenko, I.V. Hlempinh yak perspektyvna forma rozvytku ekoturyzmu [Glamping as a promising form of eco-tourism development]. URL: http://www.vestnik-econom.mgu.od.ua/journal/2017/26-1-2017/4.pdf (Accessed 22 March 2021).

Information about the author:
Boiko Viktoriia Oleksandrivna,
PhD, Associate Professor,
Associate Professor at the Department of Tourism,
Hotel and Restaurant Business and Foreign Languages
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0002-8032-5731

DOI https://doi.org/10.36059/978-966-397-239-8-4

DEVELOPMENT OF TERRITORIES USING MODERN MANAGEMENT AND MARKETING TOOLS IN THE CONDITIONS OF GLOBAL CHALLENGES AND THREATS

Bolila S. Yu.

INTRODUCTION

Today's realities have demonstrated the unpreparedness of modern economic systems for global challenges and threats due to large-scale adverse events such as pandemics, global warming and climate change, natural disasters, depletion of natural resources, environmental pollution and, as a result, adverse environmental externalities. This has quite serious consequences for entire industries and leads to a redistribution of competitive positions, both at the global and national levels. This also applies to issues of territorial development. At the same time, some territories have the opportunity for sustainable development due to flexibility, ability to adapt quickly to change, form positive image characteristics and create conditions for attracting consumers of various goods and services that can provide a particular area or region. This raises the issue of regional marketing management as a specific type of public management activities carried out to identify and promote the interests of the population and the territorial community to address specific challenges of regional development by creating competitive advantages, attracting investment based on the brand of the territory. Today, society is faced the need to move to a model of socio-economic development, when meeting the vital needs of the current generation does not deprive them of a chance to meet the needs of future descendants, save resources for future generations and ensure environmental quality and ecological regeneration. If the regions pay enough attention to these issues, they have every chance to form a positive image, to be in trend, in condition that the values of consumption in society and in the minds of each customer change.

Achieving sustainable development of the region is possible when it meets the socio-economic criteria: economic efficiency, environmental sustainability, and social prosperity. Indicative in this direction is the development of the region through tourist destinations that focus on the rational use of nature and which directly or indirectly affect not only the

economy of the region, but also its social policy, culture, traditions, lifestyle, health of the nation, natural environment, etc[1].

Therefore, tourism, and especially ecological and green should be considered as one of the tools that contribute to the development of the region and form the brand of the territory.

Branding technologies for shaping the region's image are an effective means of growing its reputational capital, they increase investment attractiveness and help strengthen competitive positions in the fight for limited financial resources between territories, so they are important in today's global challenges and threats.

1. Modern aspects of management of territories and territorial communities to increase their competitiveness

Today, in market conditions, taking into account the best practices of management and marketing becomes especially important for the development of territories and territorial communities.

The modern system of views on governance was formed under the influence of changes in world social and economic development. New opportunities for business growth have emerged, especially in industries that focus on meeting the immediate needs of people. In these conditions, such characteristics of business as flexibility, dynamism, adaptability, which is relevant in the management of both territories and local communities, have become essential.

There is a need for new management methods that would take into account modern realities, be based on systemic and situational approaches to management and would be result-oriented. Today, the leadership of the region and the leaders of territorial communities in the countryside face serious challenges.

A modern manager in modern conditions must be a qualified manager and know well: general theoretical foundations of management and legal disciplines to the extent necessary for professional management in the field of regional government and local self-government, strengthening the rule of law and impeccable performance of their duties; general, specific and practical problems in the field of social and humanitarian policy that take place in territorial communities; the content of the main economic processes at the level of territorial communities (region) in the conditions of economic transformation; general theoretical and legal principles of management of territorial communities and distribution of spheres of activity in the process of

[1] Lanza A., Markandya A., Pigliaru F. (2005) The Economics of Tourism and Sustainable Development. Cheltenham, UK; Northampton, MA, USA. P. 8.

their management; ethics and culture of business and political communication; functions of the region in the field of financial and budget management; organization, forms and methods of work of territorial self-government bodies; problems of social protection of members of the territorial community; basic legislative provisions on state-church relations, issues of national minorities and population migration; basics of rational nature management and environmental protection; basic measures to prevent emergencies and reduce their losses in the event of their occurrence; basics of personnel policy; management decision-making mechanisms; basics of organizational and legal work; basics of office work; basics of operation of digital technologies and modern means of telecommunication.

The head of the territorial community must demonstrate the skills of a professional community manager, namely: determine the priorities of the development of the territory; achieve the effectiveness and efficiency of management decisions; promptly and effectively process information and at the appropriate level to prepare draft decisions and ensure effective control over their implementation; systematically improve their professional skills; resolve conflict situations and manage communication technologies; be a leader[2].

Leaders of territorial communities, especially in rural areas, are characterized by an expanded range of skills and knowledge of analytical, forecasting and coordination activities, which is due to the development of strategies and tactics of local governments under their control. Relevant skills and knowledge of organizational and support functions include the ability to create and implement mechanisms of regulatory, logistical, economic, financial and other types of ensuring the functioning of the structures managed by them. Coordination and control functions require a set of skills and knowledge that come with professional experience, the ability to properly use the existing legal and regulatory framework[3].

The set of listed functions requires certain levels of competence of the head of the territorial community. The first level of competence, which regulates the implementation of standard operations and certain procedures, is no longer enough for a modern head of a territorial community. There is a need for professional leaders who are interested in developing their own style of

[2] Bilenchuk P.D., Kravchenko V.V., Pidmogilny M.V.(2000) Mistseve amovriaduvannia v Ukraini [Local self-government in Ukraine].*Munitsypalne pravo* [Municipal law]. Kyiv : Atika, 304 p.

[3] Chemeris A.O., Shevchuk P.I., Gural P.F. (2002) Mistseve samovriaduvannia : monohrafiia. Kn. 1. Orhanizatsiia roboty silskoho, selyshchnoho holovy. Lviv : [Local government: Monograph. Book 1. Organization of work of the village, settlement head]. Lviv : Liha-Pres, 390 p.

problem solving, and consequently in expanding their knowledge, and leaders – creative individuals who demonstrate the art of management.

The head of the second level of competence focuses on forming a personal attitude to what is happening. In the process of solving problems, the leader of this level may have creative ideas; he can apply fundamentally new approaches to solving old and new problems. Factors such as personal standards, values, and moral norms begin to take full effect in the manager at the third level of competence.

Quite often personal values are in conflict with those that exist in the community. To solve these issues, community leaders must make every effort to unite community members, to make them aware of the importance of unity. Bringing together active and conscious members of the community, its leader must take care of cultural, educational and patriotic work among the population on a daily basis. With high spirituality of community members, it is easy to overcome any difficulties that arise in the process of their life. In conditions of unity and harmony, the territorial community will be able to solve complex economic issues on the way to the development of the territory. In our country there are isolated successful examples of territorial communities that are able to support the development of peasant unions, farms, entrepreneurs, innovative technologies and more.

Knowledge of the latest management concepts in management and marketing can be useful for the leaders of the territorial community: technocratic management; modern behaviorism, the product of which was the theory of human capital; goal management (strategic management); quality management according to the TQM system; "kanban" systems; entrepreneurship, reengineering, the concept of internal markets of corporations, the theory of alliances, modern institutionalism, socio-ethical marketing, partnership marketing, holistic marketing, etc.

In addition, for a modern leader it is important today to increase the competitiveness and development of local communities to proceed from the position of territorial marketing.

Territorial marketing is an advanced idea, a philosophy of territory development that will meet the needs and expectations of target markets. The main task of marketing of the territory is to determine what resources are available to competing regions, and to find ways to differentiate and position their region in such a way as to stand out in the minds of target groups. Territory marketing is not just about promoting the region in the market. Promotion alone does not benefit the depressed region, but instead helps potential buyers identify its plight as soon as possible. According to scientists, marketing of the territory is a special type of public management activity carried out in order to identify and promote the interests of the population of the territory to solve specific problems of development, creation, maintenance

and / or change of relations and behavior of residents and nonresidents, other business entities and management structures in relation to a specific area[4]. Continuing the idea, regional marketing is a certain way of thinking and actions of regional leaders, a new business philosophy of active entrepreneurship in the region, based on the desire to meet the identified needs of specific people, consumer groups, businesses in the region and beyond its borders (action in selected markets) in the relevant goods – finished products, technology, services, information, etc[5].

It should be noted that the region as a territorial and organizational unit in terms of marketing approaches is a special object, which differs in a set of initial marketing factors, marketing actors and even target groups.

The need for further development of regional marketing as a basic theory of territorial marketing is explained primarily by the fact that this requires dynamic processes of regionalization, increasing the role of the region as an independent market entity and changing its position in the socio-political environment. The main goals of marketing for the development of the territory are: increasing/maintaining the competitiveness of enterprises located in the region; improving the degree of identification of citizens with their territory of residence; attraction of new enterprises to the region; increasing the level of popularity of the territory outside it.

Marketing of the region, acting as an integral part of regional economic policy; includes the development and implementation of a long-term concept of integrated economic and social development of the territory.

An extremely important task for the development of territories and territorial communities, taking into account the strategic marketing approach, is to determine their potential and ways of its effective implementation. The following means should be used: system approach (consideration of the territorial community as a system that is a set of interconnected elements); analysis of various elements of the system; identification of opportunities and threats that exist in the system and in the external environment; survey of residents of the settlement (or points that are part of the community); monitoring the views, interests and attitudes of residents; modeling the prospects for the development of the territorial community and the territory in which it is represented.

---

[4] Chemeris A.O., Shevchuk P.I., Gural P.F.(2002) Mistseve samovriaduvannia: Monohrafiia. Kn. 1. Orhanizatsiia roboty silskoho, selyshchnoho holovy. Lviv : [Local government : monograph. Book 1. Organization of work of the village, settlement head]. Lviv : Liha-Pres, 390 p.

[5] Bozhkova V.V. (2005) Zastosuvannia nekomertsiinoho marketynhu na munitsypalnomu ta rehionalnomu rivniakh [Application of non-commercial marketing at the municipal and regional levels]. *Marketynh i reklama* [Marketing and advertising]. № 9, pp. 38–43.

The potential of the territorial community is a complex concept, its components are: geographical, demographic, economic, environmental, social (including cultural), management. Their combination creates a unique situation for each community and is the basis for further development. The description of the potential is performed on the basis of documented data and contains information on separately defined indicators for each component.

Generalization of information makes it possible to justify promising areas of development of the territorial community. The transformation of certain types of potential should be planned on the basis of a population survey.

For the development of territories it is important to define strategic guidelines, examples of which today are:

– solving the problems of preserving the natural resource potential of the territories, namely: ensuring constant control over the compliance of subsoil users with development projects and technological schemes in the development of mineral deposits; development of protected areas for biodiversity conservation, expansion of existing and creation of new nature reserves; financing of activities on limitation, placement and disposal of waste; prevention of pollution of rivers, lakes, reservoirs and other hydrological objects and maintenance of their favorable hydrological condition; introduction of modern technologies of forestry; reproduction of indigenous stands and indigenous faunal complexes; introduction of ecological and economic levers of rational use of natural resources; formation of environmental funds to finance environmental activities; development of agro-environmental monitoring to preserve and restore land resource potential; development of green tourism and health services, which will be a significant source of income in the budgets of rural households and local governments;

– introduction of the system of organic agricultural production, namely: standardization of principles and standards of organic agricultural production; advocacy measures for the spread of organic production; coordination of work in the production system with natural cycles and living systems of soils, flora and fauna; preservation and improvement of soil fertility and biological activity with the help of local cultural, biological and mechanical methods; application of organic fertilizers; preservation of agro;

– and biodiversity in enterprises, their environment through the use of a sustainable system of production and protection of wildlife; promoting the responsible use and conservation of water resources with all their living organisms; formation and development of social responsibility of commodity producers in solving problems of modern land use and increase of social orientation of agro-industrial production on the basis of development of cluster systems on production of agricultural products with deepened specialization and concentration of agro-industrial production according to

features of rural territories; bringing the production of plant and animal protection products, biological products, compound feeds and quality control in line with international standards, for which to organize appropriate laboratories that will assess the quality of these drugs; introduction of a product quality management system, which should be based on the international system of standardization and quality improvement of crop and livestock products; control of field clogging by quarantine weeds – ragweed; bringing the production of plant and animal protection products, biological products, compound feeds and quality control in line with international standards, for which to organize appropriate laboratories that will assess the quality of these drugs; introduction of a product quality management system, which should be based on the international system of standardization and quality improvement of crop and livestock products; control of field clogging by quarantine weeds – ragweed; stimulation of local and regional production and movement of products to consumers; creating a harmonious balance between crop production and animal husbandry; introduction of ecological logistics in the agro-sphere: optimization of transportation for the purpose of rational use of resources; introduction of quality management systems, environmental management of the use of economically feasible materials and methods of product delivery to the consumer; use of biofuels and renewable energy sources, cost and quality control in supply chains, etc.; providing such conditions in which domestic animals show natural behavior; use of packaging materials that are subject to recycling or biodegradable; compliance with the optimal size of agricultural production, which will make possible a significant (25–30%) reduction in production costs and increase productivity; providing information and consulting assistance by agricultural advisory services on scientific achievements in the field of organic production technologies, on the market of products, access to foreign markets of organic products, plant protection, arrangement of different types of proper crop rotations, agricultural techniques and compliance with organic fertilizers; organization of sales cooperatives of organic producers; agro-insurance of ecological agricultural production through the creation of a state agricultural insurance company and the creation of insurance companies on a cooperative basis, where the founders and shareholders will be producers, processors and sellers of ecologically clean agricultural products.

Thus, the assessment of the potential of the territory and prospects of territorial communities is based on the approaches used in strategic management, marketing and quality management, adapted to the conditions of the basic level of local government and allow determining strategic directions of regional development.

2. Formation of the image of the destination as a component of regional development

One of the tools of marketing the territory, the purpose of which is to raise the image of the territory, raise awareness, increase the number of attracted investments, increase the participation of the territory in regional and state programs, is territorial branding. Its aspects and problems have been considered in the works of a number of scientists: S. Anholt[6], S. Anholt[7], F. Kotler, K. Asplund, D. Haider and I. Raine[8], B. Baker[9], K. Denmark[10], R. Hovers and F. Go[11], T. Moilanen and S. Rainisto[12], S. Paik[13].

Today, territorial branding is the most effective tool for active positioning of the region, the process of building, developing and managing a brand, the purpose of which is to create a strong and competitive region.

There is a steady tendency to consider the brand of the territory as a set of enduring values that reflect the unique original consumer characteristics of the territory and community, such that are widely known and publicly recognized and enjoy stable consumer demand. The brand is formed on the basis of a pronounced positive image of the territory, which is based on the unique ability to meet certain demands of its consumers, and which is the highest manifestation of emotional consumer preferences. At the same time, it acts as the most important factor of competitive advantages and revenues of the territory, a valuable asset of the economy.

Territory branding allows solving the problem of limited resources of the region and increase its competitiveness by informing the target audience about the competitor's identity and uniqueness of the territory.

---

[6] Anholt S. Competitive Identity: The New Brand Management for Nations, Cities and Regions. 1-st edition. Palgrave Macmillan, 2007, 160 p.

[7] Anholt S. Places: Identity, Image and Reputation. Palgrave Macmillan, 2009, 256 p.

[8] Kotler F., Asplund K., Raine I., Haider D.(2005). Marketynh mest. Privlechenie investiczij, predpriyatij, zhitelej i turistov v goroda, kommuny, regiony i strany Evropy [Place marketing. Attracting investments, enterprises, residents and tourists to cities, communes, regions and countries of Europe]. SPb. : «Stokgolmskaya shkola ekonomiki», 382 p.

[9] Baker B.(2007) Destination Branding for Small Cities. [1st edition]. Creative Leap Books, 192 p.

[10] Dinnie K. (2011) City Branding: Theory and Cases. [1 edition]. Palgrave Macmillan. 2011, 256 p.

[11] Govers R., Go Fr.(2009) Place Branding: Glocal, Virtual and Physical Identities, Constructed, Imagined and Experienced. Palgrave Macmillan. 2009, 256 p.

[12] Moilanen T., Rainisto S.(209) How to Brand Nations, Cities and Destinations: A Planning Book for Place Branding. Palgrave Macmillan, 2009, 230 p.

[13] Pike St. (2008) Destination Marketing: An Integrated Marketing Communication Approach. Butterworth-Heinneman, 424 p.

The brand of the territory is a complex concept; it is not only a territorial symbol, a visual image of its perception by the consumer, but also a complex of goods and services, arts and talents demonstrated by the population, its authenticity, features of life and culture, social and infrastructural objects, specifics of small towns and rural areas with represented agricultural production, attractiveness for investors, mechanisms of public-private partnership and interaction to achieve the effect of synergy.

The competitive advantage of the territory is associated not only with its product offer, which consists of territorial products, relationships and structures of producers, intermediaries and consumers of these goods and services, but also with skillful and effective marketing. Characterization of distribution methods in the marketing of the territory is quite a difficult task, because the "place" of sale of goods (the territory) is virtually unchanged. In addition, there are almost no intermediaries in the pure form of the marketing of territories. These include some conditionally: authorities and public organizations, associations of the highest territorial level and their representatives; chambers of commerce and industry, centers of business and international trade, exhibition centers, fairs; transnational and other territorial business entities; various inter-territorial network organizational structures; mass media and communication; travel agencies; tourist information centers; vocational education institutions. The content of measures of this element of the marketing complex of the territory is to provide business information to businesses, concluding contractual relations with other territories, organizing exhibitions and fairs, informing potential and existing tourists who want to visit attractive places, etc. An important factor component of the marketing complex of the territory is promotion, which is associated with a set of marketing communications, creating an image, increasing the attractiveness of the territory, brand development and promotion. Experts note that the complex of means of marketing communications of the territory includes: traditional commercial advertising; means of accelerating and strengthening the positive reaction of government agencies and economic agents; public relations and relevant organizations for the development of territories and communities; propaganda and personal contacts.

The tourism industry is extremely important for the development of the territory, which allows ensuring the inflow of funds to solve the problems of the local population in a service economy. Therefore, the formation of the brand of the tourist destination is part of the strategy to support the brand of the territory. The research of destinations is devoted to the works of many scientists, some of them connect this concept with a specific territory that

has administrative boundaries or has a unique character[14], some emphasizes the resource capacity of the territories to provide the necessary set of services and facilities to meet the needs of visitors[15]. V. Framke, in his analysis, notes that the destination is a set of interests, different activities, services, infrastructure of attractions that form the identity of the place[16]. The researcher emphasizes that the destination has a static aspect – a place, territory and a dynamic aspect – a set of different agents, products and services that vary depending on demand.

For a marketing policy to be successful in a regional market, it cannot be pursued in one direction, such as advertising. Prerequisite for successful destination branding is diagnosis and planning, which should be carried out in cooperation with local authorities and the business community.

Precedes the branding of tourist destinations, their positioning, which can be formed: as the identity of the territory, as a well-established environment with a developed technological infrastructure that is compatible with the natural environment; as a provider of appropriate quality services that meet the needs of business and society (protection of people and property, social protection and education, medicine and health); as a recreation and entertainment area that has a number of values and offers for its own residents and tourists. In the marketing of places, a tourist destination should be considered from the standpoint of a consumer who is looking for new experiences, interesting events and entertainment, and in a pandemic, also the opportunity to turn the attention and get a safe vacation.

Let's consider these questions on an example of the Kherson area. Kherson region is a very attractive tourist destination in Ukraine. Due to its importance in today's conditions, due to the annexation of Crimea, it can be attributed not only to the regional type, but also to the national, because according to recent years for the summer holiday season, there were flows of visitors from all over Ukraine. In addition, the safety factor is also important, because the situation in the region is relatively favorable in terms of epidemiological morbidity. Kherson region has a huge number of natural complexes with diverse flora and fauna, rocks, soils, climate and water, has about 80 objects of nature

[14] Ritchie B., Crouch. G.(2003). The competitive destination: a sustainable tourism perspective. Cambridge: CAB International, 291 p.

[15] Cooper C., Fletcher J., Gilbert D., Shepherd R., Wanhill. S.(2005). Tourism: Principles and practices l. Harlow : Pearson, 736 p.

[16] Framke W. (2002).The Destination as a Concept: A Discussion of the Business-related Perspective versus the Socio-cultural Approach in Tourism Theory. Scandinavian Journal of Hospitality and Touris, № 2(2).

reserves of national, international and local importance[17]. The region is washed by the Black and Azov Seas, as well as the Kakhovka Reservoir and Lake Sivash. Unique natural highlights on the territory of the destination are biosphere reserves: Black Sea Biosphere Reserve – the epicenter of nesting, migratory and winter clusters of birds of the Black Sea coast; Askania-Nova Biosphere Reserve – the only primary steppe in the world that has never been used for agriculture and where American bison, camphor buffaloes, saigas, llamas, Scottish ponies, wild horses, mouflons, ostriches and camels, antelopes, deer, pheasants, peacocks, pink pelicans, black-headed gulls, swans and other rare representatives of fauna and flora can be found. In addition, there are five national nature parks in the region: Azov-Sivasky, Oleshkivsky Pisky, Dzharilgatsky, Nizhnedniprovsky and Kamyanska Sich (which is in the process of being created).

The unique objects of Kherson region are thermal springs: a healing geyser in the village of Obloi of Holoprystan district, Lemuria lake in the village of Hryhorivka, Chaplynskyi district and a hot spring on Arabatska Strelka. They are rare in their natural and medicinal properties and attract many tourists from all regions of Ukraine as well as foreign tourists.

Among the most attractive parts of the Kherson region is ecologically clean Delta of the Dnieper, the world's largest man-made forest – 100 thousand hectares. Today, two European-class yacht clubs "Maxim-Marine" and "Katrin" operate in the waters of the Dnieper in the city of Nova Kakhovka. On the territory of Kherson region there are a number of tourist infrastructure facilities that promote the development of green tourism, such as: fishing and recreation complex "Delta Dnieper", green tourism base "Seagull", recreation center "Zburyivsky Kut", the suburban complex "Grand Prix", Green estate "Fairy Tale Oleshsha", estate "Trophy", restaurant "Pan Ataman", winery of Prince Trubetskoy, etc. Every year more than 3.5 million guests visit Kherson region. More than 1000 objects of rest, improvement, accommodation (among them – 53 for children, 62 estates of green tourism, 51 hotel complex) are involved in process of rendering of tourist services to clients.

The richness of the region is also enhanced by the rich festival calendar of Kherson region – the international festival of theatrical premieres "Melpomene of Tavria", "Tavria Farms", "Black Sea Games", "Kupalski Stars", "Ukrainian Watermelon – Sweet Miracle" and many others.

[17] Official web-site of the Kherson regional state administration. Turystychnyi ta rekreatsiinyi potentsial. [Tourist and recreational potential]. URL: https://khoda.gov.ua/turistichnij-ta-rekreacijno-kurortnij-potencial/ (accessed: 11 March 2021).

The current Internet resources also contribute to the promotion of tourist services and the formation of the image of the territory: Official site of the Department of Tourism and Resorts of the Kherson Regional State Administration; Official tourist portal; Tourist guide to Kherson; Travel through the Kherson region; Everything about tourism, souvenirs, entertainment; Kherson Tourist Region; Virtual Kherson; Internet portal (vacation on the Black and Azov Seas).

Today the region is actively developing health, water, wine, historical and cultural tourism. Thus, considering the destination according to the available tourist potential, it is possible to position the region by specialization as multifunctional, which has significant resources of different types and attracts tourist flows with different chains. At the same time, the Kherson region should take into account the trends in the development of ecological and green tourism around the world, which is associated with the exacerbation of environmental problems. Increasingly, promotional events and eco-tours are held, which include recreation and spending time in the natural environment, without polluting it and without causing harm. This problem also applies to Ukrainian tour operators at both the national and regional levels. With this in mind, we investigated the need of consumers in ecological and green tourism for consumers in the Kherson region. Despite the favorable position of the destination for tourism, rest, health and recreation, the potential of green (eco-tourism) of Kherson region is not used to full capacity and needs development. This is due to a number of difficulties and certain obstacles that have arisen as a result of the pandemic and, as a result, the fears of tourists. At the same time, the development and promotion of individual (in microgroups) green routes and presenting them to consumers as a means of recreation and isolation from the noisy city, from large crowds is a promising direction and can bring significant profits to tour operators and promote development of the territory.

To develop measures to intensify the “green routes”, we found out the opinion of customers in relation to eco-tourism and studied their preferences for the services provided by tour operators in the Kherson region. Field research continued during September-October 2020 through a structured questionnaire. The opinion of the residents was represented by respondents who were part of the formed one-stage probabilistic non-repeated quota sample (n = 100 people, accuracy 10%). Gender, age, education, field of activity, income level and family size of the respondents were chosen as the criteria of the target client from among the characteristics of the consumer. Of the total sample (100 people), we interviewed 52% of women and 48% of men; by age characteristics, we interviewed 45% of people aged 18–30, 25% of people aged 46–60, 18% aged 31–45 and 12% aged 61 and older; 52.8% of the respondents had an income level of UAH 6001–8000, 20% – UAH 4001–7999, 22% – UAH 8001 and more, 5.2% – UAH 18,000–3999;

The largest share in the field of activity among respondents were technical performers (34%) and specialists (25%), managers (11%), retirees (4%) and students (26%). According to the survey, eco-tourism services, in contrast to traditional ones, are preferred by 44.4% of respondents, a certain share of whom (20.2%) choose them as a means to isolate themselves from crowds and the hectic pace of urban life; 9.4,% – due to the possibility to combine recreation with active amateur travel; 6.1% – due to the desire to relax in nature and communicate with the living world; 4, 2% – for the rest of the family; 3% – for the purpose of sports tourism and the use of a cheaper accommodation; 1, 5 – with other priority goals. But the majority (55.6%) of respondents said that they have used eco-tourism services only a few times, because their priority is safety, leisure and quality of service. Problematic points were identified: the lack of marked routes; poor preparation of rural roads for the passage of ecological bicycle paths; lack of equipped places for rest and service workshops in the territories through which "green routes" pass; insufficient advertising support based on health, safety, involvement, self-affirmation, which is an important tool in the geomarketing of eco-tourism.

In view of this, tour operators today should pay more attention to the ecological walking zone "wildlife": to arrange eco-tourist trails, places of observation and recreation, to develop active sports, even extreme and adventure; to arrange elements of life and sanitation; to develop marketing of eco-tourism, increasing advertising support and finding the necessary form of delivery to the addressee of the advertising appeal through the formation of his social responsibility and demand for eco-tourism. Solving these issues will increase the attractiveness of eco-tourism services for customers and will promote the development of tourist and recreational potential of Kherson region.

The development of the destination brand program must be based on the unique resources and values of the area or events that have occurred or are planned to occur over a period of time. The measures that can be presented in the program are: research and analysis of the tourism market by tracking feedback from consumers and assessing their response to a range of goods and services provided to customers in the region; organization of events for the presentation of the region both nationally and internationally; popularization of a tourist destination by developing and implementing promotional campaigns for key segments, promotion in the channels of information and sales used by tourists – media, airlines, tour operators, bloggers, Ukrainian missions abroad, international organizations, partner cities, etc.; development, production, purchase of tourist information, promotional printing and souvenir products, video and photo materials; promoting the creation and promotion of new competitive tourism products, tourism topics; increasing the attractiveness of public space, breeding tourist flows, expanding the

boundaries of the tourist center; development of business hospitality; reception and service of representatives and delegations of the tourism industry and mass media from Ukraine and abroad; raising the level of awareness of residents and tourists about tourist services and activities through the placement of information in the media; assistance in holding a competition of socio-cultural projects of public organizations in the field of tourism and support of other initiatives of representatives of the tourism cluster; promoting the exchange of social advertising with other cities, towns, regions in Ukraine and abroad[18].

When developing a destination brand development program, it is necessary to take into account certain changes that have occurred in the moods, values, priorities, behavior of consumers to offer them new, or changed, relevant products and services. In today's reality, consumers are more selective in spending time and being active, which allows them to behave freely, focusing on what they really want and what they get functional and psychological satisfaction from.

If consumers used to rely on a particular brand or professional source of information to get what they wanted, now companies need to constantly innovate, lower prices and optimize offerings to attract customers. This trend is based on the obsessive need of people to absorb and share information, including through social networks. It is no longer possible to hide important information about a product or service from consumers; everything is subject to doubt and verification. This necessitates the use of other modern marketing tools in addition to branding technologies: Internet marketing, content marketing, event marketing, neuromarketing, etc., which will form the consumer's commitment to the brand's perception of the region.

Thus, taking into account the established trends, local authorities should involve as many interested stakeholders as possible in the formation of the Kherson region brand: producers of wines and food products, both traditional and craft, souvenirs and creative handmade products, representatives of relevant associations such as Public Association "Association of Kherson Watermelon Producers", Association "Regional Tourist Organization "Tourism of Kherson", civil organization "ChefsClub" Association of Chefs of the South, tour operators and agencies, farmsteads of rural green tourism, educational and scientific institutions, catering and accommodation. Possible potential ways to unite the participating partners need to be explored, which

[18] Muzychenko-Kozlovska O.V. (2016) Metodyka otsiniuvannia turystychnoho brendynhu destynatsii [Methods for evaluating tourist branding of destinations].*Visnyk NU : Lvivska politekhnika. Lohistyka* [Bulletin of Lviv Polytechnic National University. Logistics]. № 846, pp. 120–125.

will expand and improve the system of geographical indications and help attract tourists, as well as the overall economic, cultural and social development of the Kherson region. To consolidate the partners, the regional leadership needs to establish consulting and methodological support and provide practical assistance in the formation, promotion and sale of competitive goods and services provided by producers of the region and form the image of the region. Interaction is extremely necessary in the following key areas: marketing technologies (marketing research, branding of the territory, digital marketing, video content, exhibitions, events, production of printed promotional materials, social marketing, co-branding, etc.); high quality of products and services through the introduction and observance of quality systems that meet world and European standards; raising the level of knowledge and professionalism of staff (organization of trainings and training programs on world best practices; seminars, conferences and round tables, organization of competitions, participation in grants, youth and human capital development programs, support for youth entrepreneurship, cooperation with higher education institutions, publications professional literature and translation of foreign sources); statistics (collection and analysis of static data, sociological research in the region); networking (representation of business interests in relations with the authorities, organization of business meetings and events, internal cross-business communications of various industries in the region and cross-cultural communications with business stakeholders, formation of regional networks by areas); measures of people's diplomacy (involvement of the local population in the development of the region, creation of a loyalty program (Brand Kherson region – the steppe southern pearl of Ukraine).

CONCLUSIONS

Thus, the analysis of the experience of management and marketing in the field of business allows drawing certain conclusions for other areas, including in the field of territorial management. In our opinion, strategic planning plays a significant role in the development of the territory as an important tool to increase its competitiveness.

The methodology of work on the development of a strategic plan to increase the competitiveness of the territory should include the following stages:

– organizational work (determination of geographical boundaries of the settlement; creation of a strategic development committee, the composition of which should adequately reflect the structure of the region and all stakeholders: authorities, private companies, research institutions, etc.; coordination of strategy development schedule, which is a management tool and developed to ensure the timely implementation of the project);

– analytical work (conducting a thorough analysis of the development of major industries and sectors of the economy; compiling the economic profile of the region; conducting a survey of entrepreneurs and government officials and the public; identifying the main sectors of the economy, areas of development and their analysis; determination of priorities of settlement development (main sectors (industries) and directions of economic development; SWOT, PEST – analysis in terms of directions of development and selected sectors; determination of strategic vision of the settlement and its mission);

– planning work (drawing up an action plan in terms of areas of development and the main sectors of the economy of the settlement; determining the list of projects);

– work on the implementation of the plan (determination of bodies responsible for the implementation of the strategic plan; development of the budget for the implementation of each project; approval of the plan by the territorial community; creation of bodies to manage the implementation and monitoring of the strategic development plan).

Thus, the main thing in ensuring effective management of territories is to study the specific conditions of their activities and their leaders as professional managers, modern techniques and methods of management and effective tools of marketing management that will promote regional development and increase their competitive potential.

For the formation and development of the brand of the territory it is necessary to take into account the material and technical component and attract investment for system-forming objects; to develop a scheme of perspective location of transport and logistics infrastructure; to provide the necessary means to create a modern hotel and service system for accommodation and meals for visitors, a network of tourist complexes, recreation areas and create conditions there that meet international standards; resort to branding technologies and the latest tools of digital marketing in order to promote the region and form a favorable image of the territory in the minds of consumers.

SUMMARY

The article examines the theoretical and practical aspects of regional development based on modern approaches to management and marketing in the face of global challenges and threats. The main competencies that a professional manager should possess when determining the strategic directions of territorial development and making decisions on the formation of the brand of the region are considered. The main stages of developing a strategic plan to increase the competitiveness of the territory are identified. An assessment of the potential of the tourist destination of Kherson region is presented and the main measures for its development to strengthen the brand of the region are outlined.

REFERENCES

1. Lanza A., Markandya A., Pigliaru F. (2005) The Economics of Tourism and Sustainable Development. Cheltenham, UK; Northampton, MA, USA. P. 8.
2. Bilenchuk P.D., Kravchenko V.V., Pidmogilny M.V.(2000) Mistseve samovriaduvannia v Ukraini [Local self-government in Ukraine]. *Munitsypalne pravo* [Municipal law]. Kyiv : Atika, 304 p.
3. Chemeris A.O., Shevchuk P.I., Gural P.F.(2002) Mistseve samovriaduvannia: Monohrafiia. Kn.1. Orhanizatsiia roboty silskoho, selyshchnoho holovyLviv: [Local government: Monograph. Book 1. Organization of work of the village, settlement head]. Lviv : Liha-Pres, 390 p.
4. Rehionalne upravlinnia: pidruchnyk /za zah. red. Yu.V. Kovbasiuka, V.M. Vakulenka, M.K. Orlatoho ta in. (2014) [Regional management: a textbook/for general. ed. Yu.V. Kovbasyuk, V.M. Vakulenko, M.K. Orlatogo and others]. K. : NADU, 740 p.
5. Bozhkova V.V. (2005) Zastosuvannia nekomertsiinoho marketynhu na munitsypalnomu ta rehionalnomu rivniakh [Application of non-commercial marketing at the municipal and regional levels]. *Marketynh i reklama* [Marketing and advertising]. № 9, pp. 38–43.
6. Anholt S. Competitive Identity: The New Brand Management for Nations, Cities and Regions. 1-st edition. Palgrave Macmillan, 2007, 160 p.
7. Anholt S. Places: Identity, Image and Reputation. Palgrave Macmillan, 2009, 256 p.
8. Kotler F., Asplund K., Raine I., Haider D.(2005). Marketynh mest. Privlechenie investiczij, predpriyatij, zhitelej i turistov v goroda, kommuny`, regiony` i strany` Evropy [Place marketing. Attracting investments, enterprises, residents and tourists to cities, communes, regions and countries of Europe]. SPb. : "Stokgol`mskaya shkola e`konomiki", 382 p.
9. Baker B.(2007) Destination Branding for Small Cities. [1st edition]. Creative Leap Books, 192 p.
10. Dinnie K. (2011) City Branding: Theory and Cases.[1 edition]. Palgrave Macmillan. 2011, 256 p.
11. Govers R., Go Fr.(2009) Place Branding: Glocal, Virtual and Physical Identities, Constructed, Imagined and Experienced. Palgrave Macmillan. 2009, 256 p.
12. Moilanen T., Rainisto S.(209) How to Brand Nations, Cities and Destinations: A Planning Book for Place Branding. Palgrave Macmillan, 2009, 230 p.
13. Pike St. (2008) Destination Marketing: An Integrated Marketing Communication Approach. Butterworth-Heinneman, 424 p.
14. Ritchie B., Crouch. G.(2003). The competitive destination: a sustainable tourism perspective. Cambridge : CAB International, 291 p.

15. Cooper C., Fletcher J., Gilbert D., Shepherd R., Wanhill. S. (2005). Tourism: Principles and practices l. Harlow: Pearson, 736 p.

16. Framke W. (2002).The Destination as a Concept: A Discussion of the Business-related Perspective versus the Socio-cultural Approach in Tourism Theory. *Scandinavian Journal of Hospitality and Touris*, No2(2).

17. Official web-site of the Kherson regional state administration. Turystychnyi ta rekreatsiinyi potentsial. [Tourist and recreational potential]. URL: https://khoda.gov.ua/turistichnij-ta-rekreacijno-kurortnij-potencial/ (accessed: 11 March 2021).

18. Muzychenko-Kozlovska O.V. (2016) Metodyka otsiniuvannia turystychnoho brendynhu destynatsii [Methods for evaluating tourist branding of destinations]. *Visnyk NU :Lvivska politekhnika. Lohistyka* [Bulletin of Lviv Polytechnic National University. Logistics]. № 846, pp. 120–125.

Information about the author:
Bolila Svetlana Yuriivna,
PhD in Agriculture,
Associate Professor at the Department of Management
and Information Technologies
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0002-9689-6774

DOI https://doi.org/10.36059/978-966-397-239-8-5

THE METHODOLOGY OF ACCOMPLISHING OF ASSESSMENT OF EFFICIENCY OF REGIONAL INVESTMENT POLITICS OF THE AGRICULTURE FORMATION

Borovik L. V.

INTRODUCTION

To the determination of efficiency of the investment politics influence on the development of agriculture were dedicated many scientific works of such prominent scholars as: V.T. Andrijchuk, S.O. Hutkevych, M.V. Zubetsj, M.I. Kisilj, M.J. Kodensjka, P.T. Sabluk, V.P. Sytnyk and others. Taking into account particular relevance of investment resources in the development of separate branches and the improvement of their investment appeal, V.M. Grynjova, V.O. Kojuda, T.I. Lepejko, O.P. Kojuda offered to estimate the investment potential, applying the level of perceptivity that displays the significance of field in economy, sustainability of the industry to the decline of production, security of prospects of growth of its own financial resources and degrees of state support of the development of the branch.

While the estimation of investment attractiveness of the branch, V.I. Polyshakov and N.V. Tkalenko recommend assessing the market factors, the technological factors, the level of competitiveness, the raw material base, the social level of branch development, the barriers of admission and exclusion of the enterprise to the branch (Polshakova V.I. 2009)[1]But the conclusions made by them relate mostly to economic and social problems. There is no modern methodology, which could give an opportunity to estimate the efficiency of agrarian investment politics depending on the cumulative impact of economic, social and ecological factors, which makes the implementation of rational management of investment processes impossible in the agrarian sector of economy. Herewith, as in previous case, are not considered natural, ecological and other important components of the investment potential that significantly influence the competitiveness of agrarian sphere (Goncharenko I.V., Tanklevska N.S. 2010)[2], (Orlovskaya Y.V. (2006)[3].

[1] Polshakova V.I. (2009). *Investment management*. «Kondor». Ukraine.

[2] Goncharenko I.V., Tanklevska N.S. (2010). Methodical approaches to the implementation of the budgeting system at enterprises. *Bulletin of Sumy National Agrarian University*. 5/2 (40). 64–68. Ukraine.

[3] Orlovskaya Y.V. (2006). *Strategy of investment management in regional development*. Knowledge of Ukraine.

To determine and justify methodical approaches to comprehensive assessment of efficiency of investment politics in the agriculture.

The modern methodical approaches do not provide the distinct reply to the estimation of the efficiency of regional investment politics of the agriculture development. This is explained by the fact that the agrarian branch is a complex system that consists of many sub-branches and is characterized by the utilization of land resources potential as the main mean of production. The land productivity is determined by the amount of received output from the unit of land area, on what influence the economic, social and ecological factors.

Till this moment among the scientists there is no common thought concerning the determination of the factors, which have the biggest influence on the formation and usage of the investment potential of the agriculture. The scholars offer different methodologies of determination of the estimation of investment appeal of the sector, but not accounted are regional peculiarities, natural, ecological and other significant components of the investment potential, which considerably influence the competitiveness of the agrarian sphere.

1. The peculiarities of the investment politics of the regional development of the agriculture

Considering the particular importance of investment resources in the development of separate branches and the improvement of their investment attractiveness, V. M. Grynyova, V. O. Koyuda, T. I. Lepeyko, O. P. Koyuda offered to estimate the investment potential, applying (Grinyova V.M., Koyuda V.O. 2004)[4]:

– the level of profitability that considers all spent and their own assets, the product distribution and the expenses for its production;

– the level of prospects that displays the relevance of the branch in economy, the stability of the branch before the production recession, the prospects security of growth of their own financial resources and the levels of state support of the branch development;

– the level of investment risks that consider the level of competitiveness, the inflation steadiness of output and the level of social tension.

It is also necessary to encourage the population more actively to the investment of environmental programs (planting of trees around the water bodies and along the roads, the formation of dust protecting woodland belts, cleaning of the flood draining sewers from the garbage, the use of soil protecting technologies at the individual farms, etc.). The local authorities,

[4] Grinyova V.M., Koyuda V.O. (2004). *Finance of enterprises* (2nd ed). Knowledge. Press.

applying the administrative leverages, should collaborate with the charity organizations and direct the funds for social needs, the improvement of life quality of population. First of all, this concerns those territories that suffer from the environmental pollution by industrial enterprises, flooding of localities, in consequence of the inefficient and unreasonable use of water resources and deforestation, the destruction of woodland belts around the water bodies. Such risky and dangerous territories are not left without the attention of big investors who do not wish to invest the funds in the agrarian industry because of the risk of shortening of planned profit. The size of ecological risk influences the amount of possible loss directly. While estimating the level of ecological risks on this or other territory, the investor defines the losses which he can get in the future. Mostly, such ecologically dangerous territories do not attract the investors and lag behind in their economic and social development. Taking this into account, the state and the regions should realize the permanent monitoring of problem territories, stimulate the utilization of ecologically safe technologies in the agriculture, invest the funds in the revitalization works, preventing the premature decommissioning of agrarian lands, carry out the social protection of population from the undesirable consequences of irresponsible intervention of a human in the nature.

Considering that the harmony of influence of the regional investment politics of the agriculture development on the economic, social and ecologic factors, the decrease of influence of investment threats and the effective formation are the base of attainment of the political aims, it is necessary to estimate its efficiency, following the next principles:

– the components of investment potential should have the characteristics typical for all forms of ownership of the subjects of the economic activity on which the economic efficiency of the branch depends the most of all;

– while analyzing the components of investment potential, it is necessary to receive the maximum of information not only about the economic and financial state of the branch but also about the social and ecologic ones;

– the components of investment potential should reveal the peculiarities of economic activity of the branch as fully as possible;

– the components of investment potential should be analyzed in the dynamics with the aim of obtaining of information which is going to indicate the changes of the state of attractiveness of the agrarian investment market;

– the analysis of components of the investment potential should form the base of measures, aimed at the increase of the level of investment attraction of the branch, the efficiency of the formation of investment potential and the improvement of the level of livelihood of the countryside citizens.

The harmony of influence of regional investment politics of the agriculture development on the formation of economic, social and ecological potentials

will determine its effectiveness (performance). Based on the fact that the formation of investment potentials takes place on the background of threats and opportunities, and their physical indexes of measurement have different meanings and need the transfer to one-dimensional, the estimation of efficiency of regional investment politics of the agriculture development requires such sequence of tasks performance:

– the analysis of economic, social and ecological state of the branch;

– the division of investment potential to "stimulants", namely those that stimulate the development of agriculture and "destimulants", which throughout many years reduce their activity and are the threat for the agriculture development. The average meanings of these indexes (points) during the years of research are lower than those which were on the initial stage of researches;

– the rating assessment of the influence of investment politics of the agriculture development on every factor of economic, social and ecological development;

– the determination of integral assessments of the efficiency of investment politics influence on the formation of investment potential and investment climate in the agriculture;

Taking into account the above mentioned, the assessment of the efficiency of regional investment politics influence on the agriculture development will be carried out on the base of build algorithm (fig. 1), and also the combination of methodic of the rating assessment of investment potential of the branch, methodic SWOT – the analysis (for detection of opportunities of the formation of investment potential and the reduction of the level of threats) and mathematically – the geometric model of determination of integral assessments of the efficiency of regional investment politics influence on the formation of investment potential and appeal of investment climate of the agriculture.

At the first stage of our research we will apply the methodic of rating assessment of investment potential of the branch and investment threats, it provides the formation of the system of indexes according to the main directions of mission of agrarian investment politics; the mathematical processing of estimating factorial indexes; the formation of scale of determination of rating estimation of every factor of assessment; evaluation of factorial indexes for every year and for the whole term of research. While conducting of the rating assessment we will use only quantitative statistical indexes, which give the opportunity to apply the method of standardization, suggested by V.E. Shvets.

The rating assessment of every factor – is its complex characteristics, which is carried out by the analysis of components of economic, social and

ecological state of the branch and can be estimated, using actual standardized meanings of every separate factor by ten points scale.

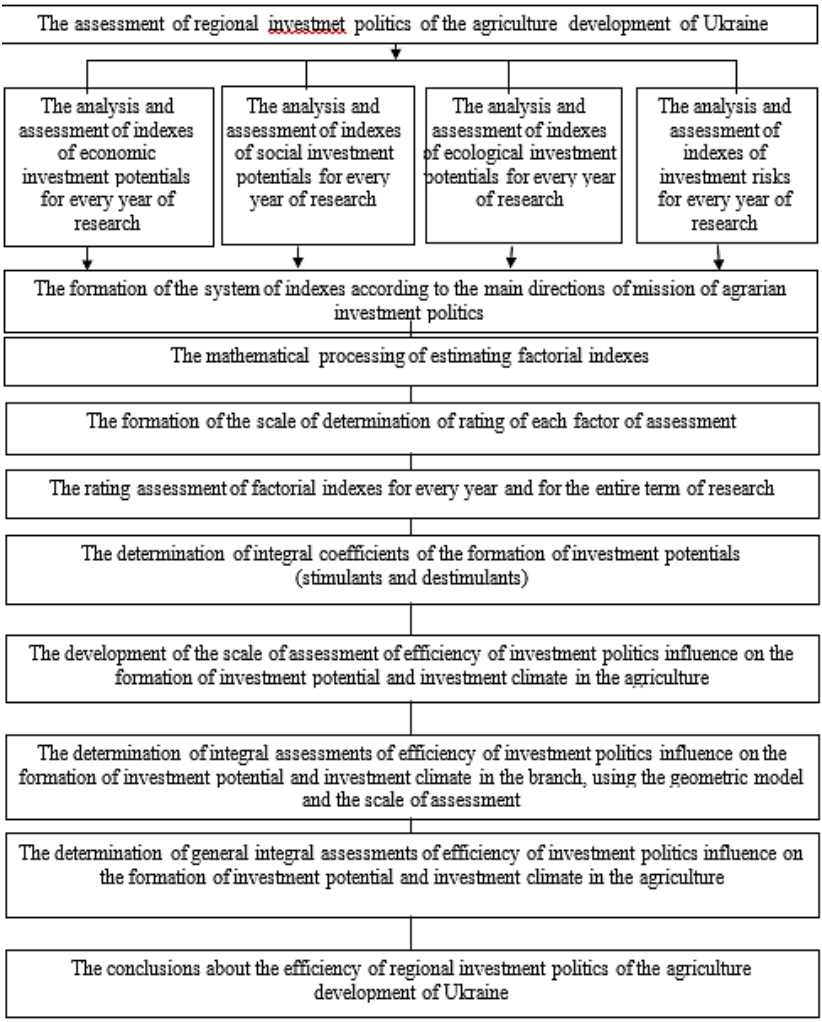


Fig. The algorithm of determination of assessment of efficiency of regional investment politics influence on the agriculture development of Ukraine

*Developed by the author

Each index of standardized meaning will be estimated as low, medium and high in accordance to the determined parameters and points, which will be received by the results of conducted analytical calculations. By the analogical method, namely the method of standardization, the assessment of investment risks will be accomplished.

The point of this method consists in that at first the arithmetic mean of factorial index is found – x, and further the root-mean-square deviation of index is determined – $(x_i - x)^2$, where x_i – the actual meaning of *i* – factorial index (in our case the meaning of one of investment potentials). Afterwards the standardized deviation of index of the formation of investment potential usage is calculated according to the formula:

$$S = \sqrt{\frac{\sum (xi - \bar{x})^2}{n}}, \tag{2.1}$$

where S – the standardized deviation of index;

n – the quantity of researched objects (potentials).

While determining the standardized meaning of *i* – factorial index ($x^1 i$), it is necessary to use the formula:

$$x^1 = \frac{Xi}{S}. \tag{2.2}$$

Substituting the formula (2.1) in the formula (2.2) we will receive the final formula for determination of the standardized meaning of i – factorial index of the formation (usage) of investment potential:

$$X_i^1 = \frac{xi}{\sqrt{\frac{\sum (xi - \bar{x})^2}{n}}} \tag{2.3}$$

The meaning of analytical index for each separate factor of the formation (usage) of investment potential will be determined as the arithmatic mean of standardized factorial indexes. Here with, the weight of indexes will not be considered, which is going to enable to prioritize and introduce to the calculations those indexes, which are necessary for the conduction of research.

After accomplishing of the assessment of formation of investment potential and reduction of the threat level, we will determine the efficiency of formation of economic, social and ecological potentials of the branch in the background of real opportunities and threats of the agriculture development.

We will determine the efficiency of formation of investment potential of the branch, using the methodic SWOT – the analysis, which can be applied either on the level of separate regions or branches, creating the appropriate matrix. Carrying out the analysis of efficiency of formation of investment potential of the agriculture we will characterize strong points (strength), weak points (weaknesses), possibilities (opportunities) and threats (threats).

The obtained results of research give an opportunity to determine the efficiency of formation of economic, social and ecological investment potentials of the agriculture according to the formula:

$$Ceff. = \sum^{n} In : \sum^{n} I3,$$

where *Ceff.* – the coefficient of efficiency of the formation of investment potentials of the branch;

$\sum^{n} In$ – the sum of points of factorial indexes of investment potentials (stimulants) of the branch;

$\sum^{n} I3$ – the sum of points of indexes of investment threats (destimulants) of the branch.

The parameters of assessment of the efficiency of formation of investment potential of the branch have to be:

- high level (*Kin >1);*
- medium level (*Kin=1);*
- low level *(Kin <1).*

At the second phase of research accomplishing, using the geometrical model and the scale of estimation, we will determine the integral assessment of the level of efficiency of the regional investment politics influence on the formation of the investment potential and investment climate of the branch in such sequence:

1. We will determine the integral coefficients of economic, social and ecological investment potentials [stimulants and destimulants (threats):

$$C = \sqrt{Pp}\,, \qquad (2.4)$$

where C – the integral coefficient of factorial potential;

Pp – the index of rating assessment of factorial potentials.

2. We will accomplish the assessment of efficiency of investment politics influence on the formation of social, economic and ecological factorial potentials [stimulants and destimulants (threats):

$$Ieff. = \frac{\sqrt{CP_1 x CP_2 x ... CPn}}{CT_1 x CT_2 x ... CTn}, \quad (2.5)$$

where *Ieff.* – the integral index of the assessment of efficiency of investment politics influence on the formation of, separately, economic, social and ecological potentials;

CP – the coefficient of investment potentials – stimulants;

CT – the coefficient of investment potentials – destimulants (threats).

3. The average meaning of integral index of efficiency of investment politics influence on the formation of investment potential of the agriculture will be determined according to the formula:

$$Ic.eff. = \sqrt[3]{Iec.eff. x Isoc.eff. x Iecol.eff.}, \quad (2.6)$$

where *Ic.eff.* – the average integral index of efficiency of investment politics influence on the formation of investment potential;

Iec.eff. – the integral index of economic efficiency;

Isoc.eff. – the integral index of social efficiency;

Iecol.eff. – the integral index of ecologic efficiency.

4. The average meaning of integral index of the influence of regional investment politics of the agriculture development on the reduction of investment threats will be determined according to the formula:

$$Ia.t. = \sqrt[3]{Iec.t. x Isoc.t. x Iecol.t.}, \quad (2.7)$$

where *Ia.t.* – the average integral index of investment politics influence on the reduction of investment threats;

Iec.t. – the integral index of economic threats;

Isoc.t. – the integral index of social threats;

Iecol.t. – the integral index of ecologic threats.

5. The significant index of assessment of efficiency of investment politics of regional development of the agriculture is the level of the formation of investment climate. Taking into account that on the formation of investment climate influence the cumulative investment potential of economic, social and ecological factors (stimulants) and ecological threats (destimulants), we will determine this index according to the formula:

$$IC = \sqrt{Ic.eff.} - \sqrt{Ic.t.}, \quad (2.8)$$

where *Ic* – the integral index of the formation of investment climate;

Ic.eff. – the average integral index of investment politics influence on the formation of investment potential;

Ic.t. – the average integral index of investment politics influence on the level of investment threats.

The level of the efficiency of regional investment politics influence on the formation of investment appealing climate in the agriculture during 2010–2017 we will determine according to such scale of assessment (1):

Table 1

The scale of assessment of the level of efficiency of regional investment politics influence on the formation of investment appealing climate in the agriculture

№	The level of efficiency	The average meaning of integral index (Ic.eff.)
1.	High	> 0,80
2.	Medium	0,60–0,79
3.	Low	0,41–0,59
4.	Crisis	0,40 <

The level of efficiency of the formation of appealing investment climate is determined by:

a) high level – the integral index of the formation of investment appealing climate indicates to the reduction of the level of threats to minimal level and the growth of investment potential of the branch, which ensures high tempos of production, high level of profitability of agricultural output, competitiveness of enterprises and social standards;

b) medium level – is such a level of investment appeal of investment climate, which enables to satisfy the manufacturers' needs in investments for more than half and to ensure the steadiness of growing agriculture development of country regions, to intensify investment activity in rural area;

c) low level – is characterized by insignificant investments in the agriculture development, low competitiveness of agrarian output, insignificant capital investments in the land, low tempos of production;

d) crisis level – is characterized by insignificant volumes of floating assets of agrarian enterprises, by low level of their crediting, by the reduction of volumes of foreign investment of the agriculture, by low profitability and competitiveness of industrial structures, by low level of social standards, by considerable percentage of work force from the rural area.

6. Accomplishing separately the assessment of investment politics influence on the formation of investment potential (*Ig.eff.*) and investment climate (IC), we will carry out their general integral assessment:

$$Ieff.i.i. = \sqrt{Ig.eff.xIC}\ , \qquad (2.9)$$

where *Ieff.i.i.* – the integral index of assessment of efficiency of investment politics;

Ig.eff. – the average meaning of integral index of the formation of investment potential of the branch;

IC – the integral index of assessment of the formation of investment climate.

The parameters of the assessment of efficiency of investment politics have to be:

- high level (>1);
- medium level (=1);
- low level (<1).

Thus methodic-methodological sequence enables to estimate the influence of regional investment politics on the formation of investment potential and appealing investment climate in the agriculture gradually, to estimate the level of increase of social standards of population of the rural areas and to conduct the integral assessment of influence of regional investment politics on the development of agriculture, which according to the data of general conclusions, can be effective or ineffective. The suggested methodological and methodic approaches to the assessment of efficiency of regional investment politics of the agriculture development are based on the principles, which characterize the growth of branch and are determined by the totality of economic, social and ecological factors with consideration of threats and opportunities. The methods, which will be used in the process of research, enable to estimate the influence of investment politics on the formation of investment potentials of the branch gradually, the reduction of investment threats and to accomplish the integral assessment of efficiency of the implementation of state investment politics of the agriculture development, which is going to allow to make the general conclusion to its efficiency of influence on the development of agrarian branch.

2. The assessment of the impact of regional investment politics on the formation and utilization of investment potential of the branch

The extremely low level of attractiveness of the social investment potential reduces the general rating index and points out to the unsatisfactory social investment state politics in the agrarian branch of the regions. To improve such negative phenomenon is possible only through the development of

market social infrastructure in the countryside, by the increase of salaries of workers, by the enhancement of volumes of the social assistance for those who do not have a possibility to get employed or to be engaged in the individual production.

To our point of view, one of the main assignment of the regional agrarian politics, in this difficult crisis period, should be the establishment of conditions for more intensive development of the private farms of population including also the individual rural households that, producing almost the half of agrarian output, influence significantly on the state of food security of the country on the investment attractiveness of the agriculture (Prikhodko I.P., 2004)[5]. Receiving the insignificant support from the country, the individual rural households, economically and socially developing, carry out the following functions: the production of agrarian output as for their own consumption and also for realization at the markets; the involvement to the process of production everyone including the retired and disabled people; the increase of the level of life of the rural population; the assistance of intensification of the use of rural lands and support of the functioning of the countryside schools, kindergartens, medical facilities and others; the creation of conditions for the reduction of prices for the agricultural output through the creation of competition for the big farms; the processing and storage of the privately produced output; the provision of services to the local population; the arrangement of "green tourism" and others.

The typical peculiarity of the individual rural households is their high level of economic development, the transfer from the subsistence farming to commercial, the utilization of opportunities of the cooperative collaboration, the usage of small mechanization and innovative technologies on the insignificant by the size plots of land that allows to receive the competitive output (Petina L.V., 2015)[6].

Applying the instruments of administrative, law and economic management, the state carries out the political impact on the creation of conditions for the efficient usage of opportunities of investment resources and the decrease of the amount of threats that prevent the development of the agriculture. Enacting the appropriate laws of Ukraine, the state regulates the relations between the participants of the agrarian investment market, attempting to create the attractive investment climate in every region of the country that could positively influence the increase of competitiveness of the

[5] Prikhodko I.P. (2004). The efficiency of personal peasant farms. *State and Regions. Series: economics and entrepreneurship*. 2. 123–125.

[6] Petina L.V. (2015). Leasing – an innovative factor in activating investment processes in agriculture. Economics. Finances. Jurisprudence. Kyiv. 7.4–7.

agrarian output (Petina L.V., 2010)[7]and the growth of quality of livelihood of the rural population. Giving the definition of the mechanism of state management, S. V. Onyshko underlines that it is the unity of regulators with the assistance of which the social economic politics is carried out (Onishko S.V., 2007)[8]. While accomplishing the rating assessment of the formation of regional investment potential of the agriculture, it is necessary to identify the opportunities for its increase. The indexes of the level of formation of the investment potential can be indexes of their dynamics for every year of our research in calculation per one person or per one unit of resource. Applying the method SWOT – the analysis, we will estimate the strong and weak points and then the opportunities and the threats, what is going to help to form the full opinion not only about the general level of formation of the real potential of the branch but also to detect the opportunities of its growth and reduction of the level of threats of the agriculture development and the usage of the available resource of the branch (Karnaushenko A., Petrenko V., Tanklevska N., Borovik L., & Furdak M., 2020)[9].

To the strong points are included such indexes as: the sown areas, the irrigated lands of the agrarian enterprises, the rural housing stock, the direct foreign investments, the power capacities, the number of people who studied at the general education institutions. The rating indexes of these factors are high and made 8,90 points in 2014, and the medium index for 2014–2020 made 9,22 points, in other words increased for 3,6%. The insignificant increase of the rating assessment points out to the low level of formation of the main means of production. Possessing the soil of the best quality in the world and the biggest irrigated land masses in Europe, the agrarian enterprises use them irrationally. On average, during the period from 2014 till 2020 the efficiency of formation of the investment potential of the irrigated lands rose only for 3,0%. Even in the south of Ukraine, where it is impossible to develop not only the branch of plant cultivation without irrigation, but also the animal husbandry, more than half of the irrigated lands are not used to destination. The lack of the state program for the reconstruction of irrigated lands, the reduction of production of the special technical means for the irrigation and cultivation of the irrigated lands, almost the full closure of training of such

[7] Petina L.V. (2010). Directions of growth of investment potential of agrarian enterprises. *Tavriya Scientific Bulletin*. Kherson. 81. 395–399.

[8] Onishko S.V. (2007). *State regulation of the national economy*. Irpin: National University of the State Tax Service of Ukraine.

[9] Karnaushenko, A., Petrenko, V., Tanklevska, N., Borovik, L., & Furdak, M. (2020). Prospects of youth agricultural entrepreneurship in Ukraine. *Agricultural and Resource Economics: International Scientific E-Journal*, 6(4), 90–117. DOI: https://doi.org/10.51599/are.2020.06.04.06

professionals as the operators of sprinkling machines at the vocational technical institutions, do not help the increase of the efficiency of the utilization of the irrigated lands potential.

For the social economic growth of the branch did not assist such weak points of the formation of investment potential as: the drainage of wetland masses, the construction of paved roads in the countryside, the insignificant employment of population in the agricultural production. In general, the utilization of strong and weak sides of the investment potentials rose from 8.09 to 8,54 points, meaning for 5,6% that indicates the unsatisfactory tempos of the formation of aggregate investment potential by the regions of the country, what does not assist the recovery of the agriculture form the financial economic crisis.

While analyzing the efficiency of the formation of the gross investment potential in the agriculture of Ukraine, it is necessary to separately determine the ratios of efficiency of the formation of economic, social and ecologic potentials and their average index (tabl. 2).

Table 2

The efficiency of the formation of the gross investment potential of the agriculture of Ukraine for 2014–2020 (points)

№	Factors	Rating index for 2014–2020		Ratio of the efficiency (un.)
		Investment potential	Threats	
1.	Economic	6,63	7,54	0,88
2.	Social	6,38	8,62	0,74
3.	Ecologic	9,28	6,32	1,47
Average factorial rating index		7,28	7,70	0,95

The source: the author's own calculations

As it is shown in the table 2 the ratios of efficiency of the formation of economic and social factors have the low rating level and make respectively 0,88 and 0,74 units. The ratio of efficiency of the formation of ecologic potential is high (1,47 un.), what points out to the enhancing natural ecologic environment for the leading of the agriculture in Ukraine. In general, the average factorial index of the ratio of efficiency of the formation of the gross investment potential of the agriculture is low and makes 0,95 units.

After conducting of the analysis and the rating assessment of the formation of investment potential, we will consecutively estimate the influence of regional investment politics on the formation of investment potential and the

attractive investment climate in the agriculture of Ukraine. Utilizing the geometric method of assessment, we will calculate the integral coefficients of economic, social and ecologic investment potentials – the stimulants and destimulants and define:

1. The integral indexes of the impact of investment politics on the formation of economic, social and ecologic investment potentials:

a) the integral meaning of the index of the impact of investment politics on the formation of economic potential (Ie.p.):

$$Ie.p. = \sqrt[6]{3,11x3,05x2,11x2,92x2,43x2,15} = \sqrt[6]{305,33} = 2,59$$

b) the integral meaning of the index of the impact of investment politics on the formation of social potential (Is.p.):

$$Is.p. = \sqrt[3]{3,13x2,24x1,56} = \sqrt[3]{10,94} = 2,22$$

c) the integral meaning of the index of the impact of investment politics on the formation of ecologic potential (Iecol.p.):

$$Iecol.p. = \sqrt[3]{2,82x3,12x3,08} = \sqrt[3]{27,10} = 3,00$$

d) the average meaning of integral index of the impact of investment politics on the formation of economic, social and ecologic investment potentials (Iaver.p.):

$$Iaver.p = \sqrt[3]{2,59x2,22x3,00} = \sqrt[3]{17,24} = 2,58$$

2. The integral indexes of the impact of investment politics on the reduction of economic, social and ecologic investment threats:

a) the integral meaning of the index of the impact of investment politics on the reduction of economic investment threats (Ie.t.):

$$Ie.t. = \sqrt[3]{2,90x2,93x1,93} = \sqrt[3]{16,40} = 2,54$$

b) the integral meaning of the index of the impact of investment politics on the reduction of social investment threats (Is.t.):

$$Is.t. = \sqrt[6]{3,10x2,97x2,95x3,01x2,79x2,74} = \sqrt[6]{624.97} = 2.92$$

c) the integral meaning of the index of the impact of investment politics on the reduction of ecologic investment threats (Iecol.t.):

$$Iecol.t. = \sqrt[5]{2,87x2,89x1,13x1,97x3,12} = \sqrt[5]{57,61} = 2,25$$

d) the average meaning of the integral index of the impact of investment politics on the reduction of economic, social and ecologic threats (Iaver.t.):

$$Iaver.t. = \sqrt[3]{2,54x2,92x2,25} = \sqrt[3]{16,69} = 2,56$$

3. The integral indexes of the efficiency of the impact of investment politics on the formation of economic, social and ecologic investment potentials:

a) the integral index of the efficiency of the impact of investment politics on the formation of economic investment potential:

$$Iec.ef. = \frac{\sqrt[6]{3,11x3,05x2,11x2,92x2,43x2,15}}{\sqrt[3]{2,90x2,93x1,93}} = \frac{\sqrt[6]{305,33}}{\sqrt[3]{16,40}} = \frac{2,59}{2,54} = 1,02$$

b) the integral index of the efficiency of the impact of investment politics on the formation of social investment potential:

$$Isoc.ef. = \frac{\sqrt[3]{3,13x2,24x1,56}}{\sqrt[6]{3,10x2,97x2,95x3,01x2,79x2,74}} = \frac{\sqrt[3]{10,94}}{\sqrt[6]{624,97}} = \frac{2,22}{2,92} = 0,76$$

c) the integral index of the efficiency of the impact of investment politics on the formation of ecologic investment potential:

$$Iecol.ef. = \frac{\sqrt[3]{2,82x3,12x3,08}}{\sqrt[5]{2,87x2,89x1,13x1,97x3,12}} = \frac{\sqrt[3]{27,10}}{\sqrt[5]{57,61}} = \frac{3,00}{2,25} = 1,33$$

d) the average meaning of the integral index of the efficiency of the impact of investment politics on the formation of investment potential (economic, social, ecologic) of the agriculture:

$$Ia.ef. = \sqrt[3]{1,02x0,76x1,33} = \sqrt[3]{1,03} = 1,01$$

4. The integral index of the impact of investment politics on the formation of the attractiveness of investment climate of the agriculture (IC):

$$IC = \sqrt{2,58\text{-}2,56} = \sqrt{0,02} = 0,14$$

5. The average integral index of the impact of investment politics on the formation of investment potential and the attractiveness of investment climate (*Ia.p.c*):

$$Ia.p.c = \sqrt{1,01x0,14} = \sqrt{0,14} = 0,38$$

From the received mathematic calculations is evident that the high level of investment threats and the low level of social investment potential negatively influenced the integral index of the formation of investment potential and the investment attractiveness of the investment climate of the agriculture.

CONCLUSIONS

Considering this, it is necessary to direct the regional investment politics of the state to more powerful utilization of the opportunities and the threats reduction that contains the use of economic, social and ecologic resources. The results of conducted analysis indicate that the agriculture has the significant opportunities for more efficient utilization of the resource potential by means of:

– the resumption of land resources fertility (the consumption of the optimal amount of fertilizers, the utilization of ecologically safe technologies);

– the increase of the volumes of capital investments (the resumption of irrigating chains, the renewal of technical means, the building of storage and processing capacities);

– the growth of export of the agrarian output (first of all the organic and processed food);

– the enhancement of labor productivity (by means of the innovative technologies and the highly-qualified professionals);

– the improvement of financial results (the production of output with the high added value, the utilization of the power-saving technologies, the improvement of the quality of plough-lands);

– the increase of the level of health care of the rural population.

The significant level of investment threats reduces the efficiency of the formation of investment potential of the branch. The level of average integral assessment of the efficiency of the formation of investment potential and the investment climate of the agriculture is estimated as being crisis.

Considering that the aims and purpose of investment politics of 2013–2020 are partially attained, and the integral assessment of the efficiency of the impact of regional investment politics of the agriculture development on the formation of investment potential and the investment climate of the branch are defined as being crisis (0,38 un.), we estimate its general influence on the social ecologic development of the agriculture as being insufficiently effective.

The strategy of the management of ecological security in the agrarian sector should consider such factors as the scientifically rigorous land use, the utilization of innovative technologies of soil cultivation, the reasonable exploitation of water resources for the irrigation of agricultural crops, the consumption of optimal norms of mineral fertilizers that do not affect the health of people and others. The investment of measures, which are directed to the environmental protection and improvement of ecological security of population, gives an opportunity to eliminate the contradictions that appear between the economic development of the region and its social ecological consequences.

Therefore, the main aim of investment politics of the regional development of the agriculture should be not only the preservation of water and land resources, but also the increase of the level of their natural value, that is the determinant of the attractiveness of agrarian sector of economics for the investors and the improvement of the quality of livelihood of the rural population.

SUMMARY

The methodic approaches to the estimation of the efficiency of regional investment politics of the agriculture formation were determined. The algorithm of determination of the estimation of efficiency of the regional investment politics influence on the development of agriculture of Ukraine was suggested. The aim and goals of investment politics have to be real, have strategic perspective, be oriented to more rational usage of financial-economic, social, natural-resource and industrial opportunities while meeting current and long-term challenges of the social-economic development.

REFERENCES

1. Polshakova V.I. (2009). *Investment management*. “Kondor”. Ukraine.
2. Goncharenko I.V., Tanklevska N.S. (2010). Methodical approaches to the implementation of the budgeting system at enterprises. *Bulletin of Sumy National Agrarian University*. 5/2 (40). 64–68. Ukraine.
3. Orlovskaya Y.V. (2006). *Strategy of investment management in regional development*. Knowledge of Ukraine.
4. Grinyova V.M., Koyuda V.O. (2004). *Finance of enterprises* (2nd ed). Knowledge. Press.

5. Prikhodko I.P. (2004). The efficiency of personal peasant farms. *State and Regions. Series: economics and entrepreneurship*. 2. 123–125.

6. Petina L.V. (2015). Leasing – an innovative factor in activating investment processes in agriculture. *Economics. Finances. Jurisprudence.* Kyiv. 7. 4–7.

7. Petina L.V. (2010). Directions of growth of investment potential of agrarian enterprises. *Tavriya Scientific Bulletin*. Kherson. 81. 395–399.

8. Onishko S.V. (2007). *State regulation of the national economy*. Irpin: National University of the State Tax Service of Ukraine.

9. Karnaushenko, A., Petrenko, V., Tanklevska, N., Borovik, L., & Furdak, M. (2020). Prospects of youth agricultural entrepreneurship in Ukraine. *Agricultural and Resource Economics: International Scientific E-Journal*, *6*(4), 90–117. DOI: https://doi.org/10.51599/are.2020.06.04.06

Information about the author:
Borovik Liubov Volodymyrivna,
Doctor of Economics, Associate Professor,
Associate Professor at the Department of Economic and Finance
Kherson State agrarian and economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0001-7200-0497

DOI https://doi.org/10.36059/978-966-397-239-8-6

THE EXPERIENCE OF ECONOMICAL MODERNIZATION OF MUNICIPAL ECONOMY IN THE SOUTH OF UKRAINE IN THE SECOND HALF OF XIX – AT THE BEGINNING OF XX

Cheremisin O. V.

INTRODUCTION

The article is dedicated to the research in history of municipal self-government in the south of Ukraine in the end of XVIII – at the beginning of XX c. The budgeting policy is analyzed as well as the municipal economy, the participation in social-economical life of local population and its role in engineering-technical provisions of local communities' interests. The major attention is paid to the experience of local municipal self-government in modernization of economical potential on a regional scale in southern Ukraine[1].

The southern region was special in a lot of peculiarities which differentiated it substantially from others. For a long time the empire tried to realize the "Novorusia project", but the policy failed. The region was populated by the Ukrainians forming itself in close economical and social-cultural relationships with the right and the left bank Ukraine and it eventually became an integral part of Great Ukraine. The spirit of free enterprising was spread widely here; there were no serfdom practically and through the southern ports not only goods but ideas of modernized Europe were also imported, in particular concerning specifics of municipal and administrative management. In comparison with other regions of Ukraine modernization and urbanization took place very fast here. Towns had large land resources, developed economy and substantial trade and industrial connections[1].

The majority of researchers in history of municipal self-government put an emphasis on an exceptionally positive role of municipalities in the studied period, especially in the second half of the XIX – at the beginning of XX c., as public institutions of power did their best in: development of enterprising; ports' modernization, building of railways, increase in expenses on medicine and education, making substantial progress in cultural institutions and other achievements.

[1] Turchenko F.H., Turchenko H.F. (2003). Pivdenna Ukraina: modernizatsiia, svitova viina, revoliutsiia (kinets XIX st. – 1921 r.): Istorychni narysy. [South Ukraine: Modernization, World War, Revolution (end of the XIX century – 1921): Historical essays.]. K. : Heneza. 304 s. [in Ukrainian]

During the modernization's period of the second half of the XIX–XX c. a role of municipal self-government manifested it self in:

– the development of industry; municipal self-government was taken out of the system of factory legislation, which put an obstacle to the development of public society. Municipalities, in their turn, were completely satisfied with receiving particular revenues to the budget being interested in nothing more. Even enterprises which after the Reform in the middle of the XIX c. had been municipalized were quickly leased and the management was not interested in the working conditions of people in these enterprises, it was completely satisfied that the Government took over security functions. Revolutionaries used this situation in their ideology of transition from capitalism to socialism. In general, in 1870–1917 in regard to industrial development municipal self-government made a substantial step forward in comparison with the before Reform period, when municipal administration was not interested in this branch of economy at all, but the above step forward was not sufficient enough, because municipal administration's role was limited to leasing land for building industrial enterprises;

– the participation in building a network of railroads and ports' modernization in which municipalities showed more mobility. Although ideas and initiatives concerning the organization and building of railway were produced inside the Governmental apparatus which played a strategic role in connecting central regions with ports the financial burden was still put upon foreign and private companies. Municipal self-government by taking part in this process concentrated ideas and led organizers of the above construction of the railways to building these through their own towns. Municipalities also built their own railways from stations to ports and to industrial enterprises – doing their minimum. As their maximum – municipalities built railroads on a subregional level, which connected the left and right bank Ukraine.

– the modernization of land property, which referred to the minority of towns in southern Ukraine, satisfied everyone with leasing lands without a problem of increase in productivity and thus they took off an enterpriser's responsibility, having minimal guaranteed income from the leaseholder instead.

In general, notwithstanding the fact that the modernization of southern Ukrainian towns was rather fast, it was still unfinished. However, in comparison with other regions of the empire the situation in the south of Ukraine was much better. Budgets were growing with bigger rate as well as urbanization was taking place quicker and much more expenditure was directed to educational-cultural and medico-sanitary measures; towns' development took place faster. Municipalities conducted modernization of engineering-technical infrastructure independently and did not share experience with their neighbors. Still without financial support of the State, banking establishments as well as the participation of local enterprisers municipalities would not be able to conduct innovations.

1. Modernization of municipal land fund by local self-governmental bodies

The municipal regulation from 1870 made certain changes in development of municipal land policy. The changes were connected mainly with purchase-selling process of land property. Thus, the new regulation granted rights to municipal self-government bodies on behalf of the public to purchase and alienate real estate, to make contracts, to act as a plaintiff in a court and to take part in property quarrels as a defendant. With compliance with it municipalities had the right to land resources, the right to define prices for renting or to use municipal land resources, to grant concessions to build various enterprises on municipal lands which were incorporated into towns or were out of their boundaries.

It was defined that municipal lands were objects of market relationships. The control over the doings of municipal self-government bodies in the sphere of land policy was strengthened after the Municipal Reform from 1892. For example, according to the new regulation municipalities were obliged to fix prices on land resources after it was agreed with Gubernators and the Minister of Home affairs was obliged to approve of decisions of municipal self-government concerning the alienation of immobility. Thus, the control over conducting municipal land policy was shared between different levels of competence, which sufficiently made situation less adapted to market conditions.

In all towns' budgets of the southern Ukrainian region a particular item was specified which towns received due to using municipal land resources.

In comparison with the previous period due to this item there increased revenues to budgets. For example, the largest revenues could be only Kherson's pride (43,4%), so this item of the budget was regarded as priority for the city. In Mariupolrevenues from using municipal land property were 23,8%, in Elisavetgrad – 40%, in Katherinoslav – 20%, Oleksandrivsk made 20%, in Yalta revenues to the budget during the studied period fluctuated from 47% in 1870, in 1872 – 15%, in 1887 – 65% to 13% in 1894 and at the beginning of the XX century it was 15%, in Simferopol – 23%, in Eupatorium – 30%, in Kerch-Enikaleadministrative area – 30%, in Ackermann – 30%, in Odessa – 12%, in Mykolajiv – 20%, in Sebastopol – 20%[3]. In all other towns revenue to budgets from land municipal property made approximately the same varying from 20% to 30%[2].

[2] Cheremisin A. (2014). Municipal budgets of the southern Ukraine at 1785–1870. *British journal of science, education and culture.* 1 (5). P. 17–24. [in English].; Cheremisin O. V. Miski biudzhety Pivdnia Ukrainy v 1870–1917 rr. *Naukovi zapysky Ternopilskoho natsionalnoho universytetu im. V. Hnatiuka. Seriia: Istoriia.* Ternopil : Vyd-vo TNPU im. V. Hnatiuka, 2015. Vyp. 1. Ch. 2. S. 17–23. [in Ukrainian].

This was regional-individual specifics of towns in the southern Ukraine, as in other regions revenue from municipal land property was too minimal or even absent.

Not a kopek from the above mentioned revenue was spent on the development of municipal land resources. The land policy of self-government bodies was realized in the way by which all the burdens of expenditure connected with land usage were put upon pockets of leaseholders. The money from leasing land was redirected to unprofitable items: supporting educational institutions, medical service, returning debts and credits.

The least sum of revenues to the budget was in Odessa, as the whole land was shared into allotments of 12 des. which were available for leasing; it was prohibited to sublease land there, which made it impossible to concentrate land in one's hands, instead it made land available for leaseholders[3].

L. Tsybulenko thinks very reasonably that Kherson's self-government dealt seriously with problems of development of land property and worked constantly on improving its productivity. In order to rationally organize the land resources the municipality shared municipal arable land into 5 categories depending on its cost. It led to a minimal level of speculations connected with land economy. Demographic growth of population was accompanied with diminishing of leaseholders' farmland. Kherson's self-government bodies tried to adopt the experience of GB, German and USA, so it systematically took care of fermenting soils, development of nitric-absorbing bacteria, mixed fruit rotation and usage of sophisticated mechanisms. At the edge of the XIX – XX c. the municipality thought that it was not enough to just gain rent for exploiting municipal land property, so it thought it was necessary to work out fix-term programs of optimal land usage which lay in irrigation, fields processing and sensible crop rotation[5].

Odessa's municipality worked out a creative and rational way of exploiting land resources with the aim of increasing profitable revenues to the budget, finding alternative variants of developing farming and meeting demands of town's population for land.

However, in spite of considerable efforts of Odessa's self-government bodies after 1912, we can notice an abrupt decrease in corresponding revenues to the budget, which was connected with bad harvests. That is why it was necessary to make substantial efforts to prevent leaseholders of municipal lands from bankruptcy. The problem was connected with low provision of

[3] Tsybulenko L.O. (2001). Diialnist orhaniv samovriaduvannia Odesy, Mykolaieva, Khersona shchodo formuvannia i rozvytku munitsypalnoi zemelnoi i vyrobnychoi vlasnosti v XIX – na pochatku XX stolit. [Activities of self-government bodies of Odessa, Nikolaev, Kherson on the formation and development of municipal land and industrial property in the XIX – early XX centuries]. Dnipropetrovsk. S. 32–40. [in Ukrainian].

town's leaseholders with technical facilities for land processing, which influenced a decrease in productivity of labor and an increase in rent. Judging from the above-mentioned we come to a conclusion about a low level of agriculture on municipal lands. In conditions of growing demands for lands the municipality organized public auctions at high prices. It was planned that this measure would increase revenues to the budget, although in 1914 the city managed to gain only 73 thousand rubles which was only 1.6%[4].

In the studied period it was a common practice concerning development of municipal land property to lease land by public auction. Municipality of Mykolajivrefused from this practice. In Mykolajiv the term of land lease was shortened to 1 year. In 1903 the Department brought up a question of raising productivity of labor on municipal lands. Partially this problem was to be solved by means of irrigation. For this purpose, while making contracts on land lease, leaseholders were obliged to improve a system of irrigation wheels. The similar measures led to increasing in land cost notwithstanding the fact that 4 thousands des. were allotted to municipal land property in 1896. In general, revenues to the budget from agricultural sector were rather big and in spite of constant shortages they constituted a substantial part of the budget and were 223 203 rubles in 1913, that is 20.1%[6].

Pastures constituted a certain part in the agriculture's structure of all towns in the southern Ukrainian region. According to the Municipal regulation from 1870 all active pastures were allotted to municipal land property on general conditions and all revenues from their exploiting were allotted to municipal budgets. Under the above conditions municipalities charged fees for feeding cattle and formulated rules and methods of taxation. There were cases when self-government bodies refused townspeople to feed their cattle on municipal lands; in some towns self-government bodies provided opportunities for free feeding of cattle. In general, it was a common practice for municipalities and municipal communes to make special contracts on cattle feeding. The variety of practice maybe explained by the fact that before the Reform period fields for cattle feeding were not taxed on at all, as these were legally attached to rural communities and were regarded as property of the State. After 1871 land for pastures was allotted to municipal self-government bodies that were able to manage lands themselves acting in accordance with the interpretations of appeal department of the Senate.

[4] Tsybulenko L.O. (2001). Diialnist orhaniv samovriaduvannia Odesy, Mykolaieva, Khersona shchodo formuvannia i rozvytku munitsypalnoi zemelnoi i vyrobnychoi vlasnosti v XIX – na pochatku XX stolit. [Activities of self-government bodies of Odessa, Nikolaev, Kherson on the formation and development of municipal land and industrial property in the XIX – early XX centuries]. Dnipropetrovsk. S. 32–40. [in Ukrainian].

As a result, L. Tsybulenko[7] in her research makes conclusions that municipal property had certain legislative limits, though it continued its development. Mechanisms of aren't scheme of different land categories were formed, a system of stimulating was worked out in regard to the usage of achievements in agro-engineering and, in case it was necessary, a system of favorable conditions for farmers was applied. An increase in price for rent led to an increase in revenues to the budget. Economical activity was remarkable not only for persistence, but also for a creative attitude to using scientific potential as well as achievements of Novorossiysk University.

As a result, it appeared that a few towns conducted modernizational measures in developing agriculture trying to sufficiently improve and modernize land tenure on municipal lands and to eventually increase the profitability of budgets. In other towns of the province municipalities were absolutely satisfied with collecting rent and thus limiting themselves in activity. In provincial towns there were even no traces of modernizing land policy, as these were mentally still in the before Reform period. The changes in the legislation as well as the modernizational examples in regional centers did not influence the work of self-governmental institutions in small towns and those in the majority of subregional centers.

We can agree to V. Konstantinova's[5] thought that in land policy of municipal self-government bodies collecting of rent took the priority and municipalities worked out various schemes of such services according to different categories of land. At the same time, in different towns this problem was solved on an individual basis by finding a compromise between the interests of municipality to fill a budget or to defend the interests of municipal population and small leaseholders. We should also agree that municipal self-government bodies did differently in regard to an individual basis as well as in regard to a regional scale, as municipal self-governmental institutions in Kherson's province were busier with leasing land for farming agriculture products (wheat, barley, winter crops and others)than with cattle breeding on municipal lands, whereas municipalities of Katherinoslav province made efforts in granting land on lease aiming at industrial construction and creating on its basis a system of capital buildings; municipal self-government bodies in Tavrijska province were traditionally busy with development and protection of gourds in the limits of municipal land fund.

The problem of unauthorized seizure of municipal land property was crucial for every self-government body and a town solved it on an individual

[5] Konstantinova V. M. (2010). Urbanizaciya: pivdennoukraïnskij vimir (1861–1904 rokah). [Urbanization: South-Ukraini and imension (1861–1904)]. Zaporizhzhya : AA Tandem. S. 216–217. [in Ukrainian].

basis: from beating a owner of land, an arbitrary choice of land and ruination of buildings – to bringing unauthorized farmers to a court[6]. For example, in Eupatorium it was a usual practice, especially during a resort season, to seize a tavern or to build it for holiday-makers without permission. Local police being informed by the municipality found such places and moved out their quests. The eviction was rather rude, with beating and putting into jail. The author can partially agree to V. Konstantinova's opinion that the most characteristic situation took place in Katherinoslav where the poor were simply satisfied with seizure of forlorn lands, whereas richer people did openly, widely and for their future benefits. The examples of this sort can be found in every town.

According to the author's opinion the situation with the misuse on municipal lands was deeper and more complicated, because such doings caused abuses, speculations and conflicts. The whole complex of the above problem can be divided into several (5)categories.

The first category – interethnic misuses with unauthorized seizures of land. For example, in 1830 a well-known conflict between Armenian and Slavish population took place about municipal land in Grygoropol quoting as an authority to Paul's Deed from 1798. The Government trying to solve the conflict made certain concessions and established a municipal self-government institution in this town with the aim of settling quarrels.

In 1870s the Greeks from Mariupol[10] decided that municipal lands belonged to them quoting as an authority to the Deed from 1779, but Municipal Duma made a decision that municipal land belonged to the city – not to separate nationalities.

The second category – economical misuses when municipal lands were grabbed arbitrarily with the aim of selling and reselling them to private hands and thus they were artificially removed from civilized turnover. This problem would appear both before the Reform period and after.

The third category – communal misuses connected with the doings of municipal self-government bodies, as they by their own decisions were able to replace land tax with valuation one, which was in contradiction with active legislation or with the help of police to grab crops from small leaseholders (at the same time to change the terms of rent), which was more characteristic of towns in Kherson's province.

The fourth category – arbitrary grabbing of land with the aim of artificial broadening of city limits without permission from municipalities. For

[6] Cheremisin A. (2014). The municipal legislation of the southern Ukraine at the 1870–1917. *Applied sciences and technologies in the United States and Europe*. New York. USA. P. 26–31. [in English].

example, in Olexandrivsk it caused a lot of displeasure from the part of self-government bodies and the both sides of the conflict had to spend a lot of time in court authorities.

The fifth category – social misuses, as a result of which the poor strata of population had nothing at all or were content with disadvantageous land property, whereas the richer had concentrated in their hands land allotments of about 200–300 des., what is more the municipal budget did not collect a kopek of rent.

In this aspect the south of Ukraine differed substantially from other regions of the empire and had the regional-individual specifics, as it owned a tremendous lot of land property (from 2–4 thousand to 47 thousand des.), whereas in other regions municipal land property was in the limits of 2–4 thousand des. Conflicts around land property in other town were not known simply.

Thus, towns in the south of Ukraine were the biggest landowners in the empire and earned the biggest profits from usage of land fund. That's why it is not surprising that a great lot of conflicts were fixed on municipal lands. In other regions a fund of land property, profits and usage of it were too different from those in southern Ukraine. Only towns of Siberia were capable of concurrence in an amount of land resources, but the level of profitability in the south of Ukraine was higher. The attempts to modernize the exploiting of municipal lands took place only in the south of Ukraine. It was either of an unfinished character or did not influence substantially productivity of crops[11]. Still it commenced and self-government bodies realized that it was possible to use actual resources more rationally. In the studied period towns in the south of Ukraine were large landowners, but they did not develop their own agriculture, so municipalities had to lease lands with the aim of collecting a fixed income by means of taxation and charges giving to each leaseholder a freedom of establishing a system of economy. Thus, the whole land which was allotted to towns was municipal property, whereas the public enjoyed the right of using land through rent which they might lose if they would not follow the terms. As the negative features of this process we can mention the following: there was no motivation to invest substantial capitals in development of land allotments; there were no necessary material resources, too, as it was impossible to receive credits without pawning; towns received minimal revenues to budgets; it was necessary to support costly administration and municipality[7].

[7] Shchepkin M. (1882). Opyty izucheniya obshchestvennogo hozyajstva i upravleniya gorodov. [Experimentsin the study of public economy and urban management]. M. : Tip. M. SHCHepkina, 1882. CH. 1. 256 s. [in Russian].

2. Modernization of industrial complexes by self-government bodies

After the municipal reforms of the second half of the XX c. there commenced an active industrial development of southern Ukrainian region. Municipal self-government made attempts of changing the very structure of industry and, as there was no any united body to control industrial enterprises, municipalities tried to take over functions of management and control. Magistrates' heads in 1870s wrote letters to the Minister of Home Affairs about necessary measures for improving the situation and suggested to apply privileges for industrial enterprises. Thus, it appeared that municipalities were active in the process of developing industry only after the Reform from 1870. It was noticed that the reason of the unsatisfactory condition of industry was connected with crop-failures which, according to statistical data of committees, took place constantly. However, the direct connection between the phenomena was not made[8].

Towns of southern Ukraine received a powerful impetus to industrial development not due to the industrial revolution in proper, but due to the forming of a "radical mental-economic change" which was connected mainly with the population's development of enterprising and commerciality as well as necessary technical knowledge and sufficient amount of finances and credits.

In the south of Ukraine mineral raw materials were known already before the reform, but they were obtained only in small quantities. After the abolition of serfdom there appeared a burst of urbanity and plenty of population in towns increased; in direct proportionality to it there also increased a demand for municipal land which was not sufficient for everyone, so the population with the purpose of material security looked for jobs in the industrial sector.

The building of railroads influenced a development of factory industry that connected towns, which existed before it autonomously, on a basis of common interests. Apart from this, the conditions for a sale of production grew better not only in a neighbor province but also in a distant one. The industrial development of the province, according to the author, may be connected with hopes of urban population for better financial-material future, which also influenced industrialization, the development of trade qualities and at the same time there was an increase in knowledge which the population gained itself. Townspeople had no limitations already in the development of industry for

[8] Cheremisin O. V. (2011). Uchast administratyvnoho upravlinnia v rozvytku promyslovosti m. Khersona kinets XVIII – persha polovyna XIX stolit. [Participation of administrative management in the development of industry in Kherson end of XVIII – the first half of the XIX century]. *Istorychnyi arkhiv. Naukovi studii: Zbirnyk naukovykh prats*. Mykolaiv : Vyd-vo ChDU im. Petra Mohyly. Vyp. 6. S 63–67. [in Ukrainian].

solving exceptionally local problems and needs, but they began to pay attention to market demands in provinces[9].

In spite of tremendous achievements in industry already in the end of the XIX c. towns in the south of Ukraine remained agro-industrial to a greater extent, as the agriculture sector was still a basis of municipal economy and the structure of industry was built on its foundation[10].

Coal-mining industry influenced the formation and development of the city of Lugansk. In 1795 a factory became a construction site for a whole town that received its self-government in 1870. This branch of industry promoted development of Slavyanoserbsk which(a former out-of-the-way place) became a powerful industrial center. The significant efforts made by self-government of Katherinoslav province were aimed at building of railroads without which raw minerals production in large amounts would be impossible. Municipalities participated in building Donetsk, Katherinoslav and Kursk-Kharkov-Azov railroad systems which consisted of 26 stations and were adjusted for working with various mineral cargoes. The State's support for development of regional industry was realized through facilitating the building of railroads, through high taxes on imported cast-iron, coals and other minerals which were imported from abroad through sea ports; not to mention that metallurgic factories were also built with the support of the State[11].

The role of municipal self-government bodies in the development of industry was not substantial, to be correct, it was minimal, as, on the one hand, they were not engaged in industrial problems without outer support, whereas they tried only to lease enterprises, on the other hand, the division of enterprises subordinating them to branch ministries did not provide possibilities for municipalities to freely orientate themselves in industrial sector, and the third, the crucial role in the development of industry in the region was played by powerful foreign financial corporations such as: "New Russian Society of coal-mining, iron and railroad production" with the headquarters in GB; French company "Mining and Industrial Society in the south of Russia" and in economical environment of which there was no concurrence from the part of self-government bodies.

---

[9] Pavlovich V. (1862). Materialy dlya geografii i statistiki Rossii. [Materials for geography and statistics of Russia. Ekaterinoslav province]. Ekaterinoslavskaya guberniya. Spb. : Tip. depertamenta general'nogo shtaba. 402 s. [in Russian].

[10] Golobov Ya.G. (1912). Pamyatnaya knizhka i adres-kalendar' dlya Ekaterinoslavskoj gubernii na 1912 g. [Memorial book and calendar address for the Ekaterinoslav province in 1912]. Ekaterinoslav : Tip. ekaterinoslavskogo gubernskogo pravleniya. 428 s. [in Russian].

[11] Totomianc V.F. (1910). Samoupravlenie i gorodskoe hozyajstvo. [Self-government and urban economy]. SPb. : V.V. Bitner. 79 s. [in Russian].

Thus, self-government was far from organizing industrial enterprises. Its role was limited by giving permissions for building factories and plants, leasing municipal land for building and for conducting current statistics on quantity and quality and amount of production in industrial enterprises having no direct relationships to them.

The main distinctive feature of transition from the XIX to XX c. was that towns became more interconnected to each other. For example, the development of Lugansk's industry influenced negatively the condition of Slavyanoserbsk from which a moving of urban population increased and there commenced a curtailment of industrial enterprises and a rate of life did not look like urban; instead it was similar to that of countryside. Most towns of Katherinoslav province were still agrarian or became of that type in the XX c. with traditional thinking characteristic for this type of municipal self-government workers.

The situation did not change absolutely until 1917. Only a number of factories and plants increased as well as a volume of production, but the role of municipal self-government bodies in this process remained unchanged. In the stormy years of the Revolution towns of Katherinoslav province were still agricultural. During this process municipalities engaged themselves in creating myths exaggerating artificially their role in the process, as if it was they whose permissions were crucial for building industrial enterprises as well as leasing land. In reality permissions were given only for the building or establishment of 1% industrial enterprises and not very large ones. In their reports municipalities were constantly proud of level of industrial development as well as the increase in production and of other issues, but they had no connection to organization and sale of production; in reality they were simply statistical committees for the industries.

Thus, due to the participation of municipal self-government bodies a net of railroads was built, which sufficiently accelerated the industrial development and increased a rate of production, it also made it possible for a lot of rustic population to move to towns and find a job in industrial enterprises and it were railroads due to which the province acquired a status of industrial region every year, although in reality not only municipalities but also the State together with big financial companies took part in the building of railroads; that is why a role of self-government was a little overestimated in the process. It is worth mentioning that the importance of municipalities was emphasized by self-governmental institutions themselves.

In the mentality of urban population and self-government bodies there formed clear understanding that a place of living might be a matter of proud – e.g. factory production, a center of coal-mining industry's life of the state and that due to all of it the industrial "feeding" of a region and the state was realized, but the importance of it was to a greater extent overprized, as, in fact,

the region before 1917 was more agrarian than industrial; the percentage of employed population was also bigger in the agrarian sector of economy than in the industrial one.

Thus, according to the statistical data from 1874 in regard to a level of the development in mining industry the south of Ukraine took only 6-th place among 11 regions where anthracite, coal and iron were mainly produced. In this we can trace a regional-individual peculiarity of the region which specialized in coal and metallurgic production. Gold-mining industry was successfully developed in Siberian provinces mainly. Platinum industry was actively developed in Perm and Orenburg provinces. Silver was mined in the Caucasus, Zabaykalje and Semipalatinsk regions. Zinc industry was developed in the Tsarstvo Polskoe and Petrovska province. Tin was mined in Finland and in Zabaykajle. Cupper was mined in Permskaja, Orenburgskaja, Kazanskaja, Tifliskaja, Tomskaja, Tobolskaja and other provinces. The leaders in metallurgic industry were Permskaja, Ufimskaja and Penzenskaja provinces. Metallurgic production in Katherinoslav province took the 19 place among 20 provinces of the empire, leaving only Mogilevska behind and giving up its place to Volynska province[12].

Thus, metallurgic production in 1870 was greatly overestimated in southern Ukrainian towns. The prospects for the Donbas were described as rather optimistic, regarding it as one of the perspective and new industrial regions of the empire, though on conditions of private initiatives' development. Thus, due to industrial development and private capital in the second half of the XIX c. there appeared "new" industrial-modernization towns – Donetsk and Lugansk. One can consider a regional-individual feature of the southern Ukrainian region as a common fact, as only in the south the Government let private people invest money in metallurgic and coal production.

The Donbas coal basin was regarded as one of the largest in the Russian empire, though it gave its place to Tulskaja, Razanskaja, Novgorodskaja and Kaluzhskaja provinces in its development. Judging by the output of coal and anthracite the industrial enterprises of Katherinoslav province obtained already 6 million coals and 14 million puds anthracites in 1871. Raw oil production took place mainly in Russia's provinces. In the Crimea deposits of oil were found, though they took the 8th place among 9[13].

According to the statistical data from 1893 on the territory of Katherinoslav province there commenced the production of manganese ore near a town of Nikopol in 1886. However, the output gave its place to those in the Caucasus and Ural. In regard to the output of coal the Donetsk coal joined the leaders

[12] Levron V. (1874). Statisticheskoe obozrenie Rossijskoj imperii. [Statisticalreview of the Russian Empire]. SPb. : Tip. «Obshchestvennaya polza». S. 98–156. [in Russian].

[13] Ibid.

giving its place only to Ural provinces. Thus, in the Ural region 56 millions coal were mined, whereas in Katherinoslav 22 million puds only.

Judging by the export of minerals abroad the ports of Baltic Sea were the leaders, whereas the ports of the Sea of Azov and the Black sea ports took the last positions. Thus, according to the statistical data from 1890 from the ports of Baltic Sea 74 millions puds were exported, whereas from the Black Sea and the ports of the Sea of Azov 10 million puds were exported in total, as for the ports of Baltic Seas a more favorable tax system was applied. In the south of Ukraine the system was the least favorable.

Notwithstanding the substantial progress in modernizational and industrial development in the south of Ukraine, which became one of the main industrial regions in the empire within less than a century, thelevel of development remained slow and it fell behind countries of West Europe and USA. To the most extent it was due to obsolete forms and methods of management, as the region was still agrarian. Industrial-modernizational development in the south of Ukraine continued after the liquidation of serfdom, the breaking of traditional patriarchal relationships which, by the way, were very deep-seated in Moscow province, whereas the south was regarded as a more modernized region. With the beginning of building the Donbas coal basin there appeared new towns in the South – Donetsk and Lugansk.

The role of municipal self-government bodies was not vivid even in mobility of industrial development, it did not show any changes during a rather long period of time and in regard to its adaptation to capitalistic market conditions it remained under traditional mental schemes even being never interested in social conditions of workers in factories and their medical security. However, the municipalities' role was more significant in spreading an idea of industrialism as a component for leadership among other regions and towns and from this starting point there prospered a town's patriotism. Thus, within only several decades after the Reform period due to a mental construction of municipalities towns in Katherinoslav province turned from out-of-way rustic places into powerful industrial enterprises, remaining, in fact, far from this image.

During the studied period in towns of Tavrijskaja province the following branches of factory industry were developed: processing of stock-breeding products – 71 (soap, fish, leather, morocco and other production), processing of plant-growing products – 33 (vinegar, tobacco, floury, wood-sawing, starch, oil-mill, brewing, match and others), processing of mining products – 24 (brick stone, iron, mining), mixed production – 15 (chemical, blacksmith's and others)[14].

[14] Feferbojm I.A. (1896). Yuzhnaya Rossiya. Putevoditel po gorodam. [Southern Russia. Cityguide]. Nikolaev : Russkaya tipo-litografiya. 176 s. [in Russian].

The tendency towards development manifested itself in the fact that during the post reform period factories and plants appeared in those towns where there weren't any before the Reform period. For example, in Oleshki there were no enterprises of factory industry before 1870, but already in 1892 there appeared 6 chemical plants in the town. Thus, radical industrial change manifested itself even in absolutely agrarian towns in which the absolute majority of population was busy with agriculture[15].

Comparatively only towns in Katherinoslav province obtained powerful industrial development. Khersonska and Tavrijska provinces remained agrarian territoriesto the most extent, though they felt an effect of factory development and there appeared industrial enterprises in those towns which in regard to their lifestyle were nearly agrarian. Thus, we can speak about negative tendencies in development of industrial potential of towns as well as factors which influenced this very process; we can speak about critical attitude from the side of public institutions concerning participation in this process, but we can state that in comparison with other regions of the empire in the south of Ukraine the situation did not seem so difficult or problematic.

Thus, during the modernizational period in the second half of the XIX – the beginning of the XX c. the role of municipal self-government bodies was represented in the following: the participation in building a means of communication (railways) and ports' modernization; the leasing of municipal property and receiving revenues to budgets which were allotted to towns' development.

In general, towns in the south of Ukraine felt themselves as self-sufficient social-economical organisms, but at the same time they were limited in their self-government, which caused displeasure from the part of those who were not advocates of the autocracy. In the end of the XIX – at the beginning of the XX c. there appeared works by liberally thinking lawyers, historians and political figures in which a lot of attention was paid to disadvantages of an existing system of power, ways of improvement, organization and functioning of municipal self-governmental institutions; a variety of ways for their development were also suggested.

---

[15] Hanackij K.V. (1867). Pamyatnaya knizhka Tavricheskoj gubernii na 1867 g. [Memorial book of the Tauride province for 1867]. Simfereopol : Tip. tavricheskogo gubernskogo pravleniya. 657 s. [in Russian].; Gorlovskij D. (1897). Otchet hersonskoj gorodskoj upravy za 1896 g. [Kherson City Council Reportfor 1896] Herson, Tip. O.D. Hodushinoj. S. 23–89. [in Russion].; Golobov Ya.G. (1912). Pamyatnaya knizhka i adres-kalendar dlya Ekaterinoslavskoj gubernii na 1912 g. [Memorial book and calendar address for the Ekaterinoslav province in 1912]. Ekaterinoslav : Tip. ekaterinoslavskogo gubernskogo pravleniya. 428 s. [in Russian].; Verner K.A. (1888). Pamyatnaya knizhka Tavricheskoj gubernii na 1889 g. [Memorial book of the Tauride province for 1889]. Simfereopol : Tip. «Krym». 697 s. [in Russian].

The substantial part of publicist and scientific-popular works by liberally and socialistically thinking authors about municipal self-government institutions was aimed at a practical task: to involve masses in political life, to appeal for struggle against the autocracy, that is why such publications were biased and tendentious. In the most cases a social composition of deputies was mainly criticized for supposedly being guilty of having made municipalities incapable of working effectively for the benefit of all townspeople or for being incapable of managing rationally or for strict control from the part of the Government, for centralization as well.

The critics knew prerevolutionary foundations of conducting municipal economy. Information which was given in the publicists' works about the success of western towns was to be "the most eloquent reproach of our criminal indifference towards such matters." As a result, the authors suggested demands for "new life" in regard to self-government bodies: substantial broadening of electoral rights, weakening of the Government's control, cancelling of obligatory expenditures, turning of municipalities' functioning to the development of economic potential, education-culture spheres, medico-sanitary activity, towns development and communal sphere of municipal economy.

CONCLUSIONS

Thus, the self-government in the south of Ukraine manifested significant modernization mobility in conducting economical policy. Each municipality was completely individual in the process of solving problems of industrial development, modernization of land policy, modernization of ports' structures, etc. From the point of view of competitiveness the self-government bodies in the south of Ukraine showed a high level of mobility in this aspect.

In general, although municipal-self-government bodies acted on the basis of general legislation, they solved questions of leasing land in an individual way either while municipalizing industrial enterprises or when it was necessary to build means of communication or to modernize ports or develop trade routes. Each municipality looked for sources of financing the abovementioned projects, as a municipal budget could not cover expenditures neither on building railways nor ports' modernization, that's way public institutions received credits on security in an individual way. It goes without saying that modernizational tendencies were not spread in all towns of the southern Ukraine. The majority of towns in the south realized that their future life and prospects were completely dependent on new modernizing events: on railroads which would provide economical and urbanity drive; on engineering infrastructure which would give more comfortable social-communal conditions of life. The towns, which were able to provide building railroads, acquired fast industrial-commercial development. The population increased

and town's environment widened. That's why only those towns in the south of Ukraine became urbanized and modernized which used necessary potential the capitalism's time required. They built railways to modernize ports connecting by means of new trade routes administrative centers and provincial towns to ports, to regional centers or big cities in the south of Ukraine thus to receive new conditions of life which substantially would surpass in indicators in other regions of the country. In comparison with other regions of Ukraine, Russia, Belarus, Baltic regions the self-government bodies in the south of Ukraine showed positive examples of new modernizing possibilities.

SUMMARY

The article deals with problems of modernizing economical potential of self-governmental (decentralized) bodies during the second half of the XIX – at the beginning of the XX c. The major emphasis is put on the modernization of land policy and industrial complexes. The ideas, which were used during the activity of the prerevolutionary self-governmental bodies, are still of practical interest. The actual realization of municipal self-governmental experience may give modern regions a substantial economical and urbanization on impulse and can also influence the development of engineering infrastructure, which might provide more comfortable social-communal conditions of life. It is mentioned in the conclusions that according to the results of modernizational changes during the studied period self-government bodies made significant progress in development of social-economical potential. In comparison with other regions of Ukraine, Russia, Belarus, the Baltic regions the self-government bodies in the south of Ukraine showed positive examples of new modernizational possibilities. As a result of the conducted research, it may be concluded that self-government in the south of Ukraine manifested significant mobility in realizing regional economical policy.

REFERENCES

1. Gorlovskij D. (1897). *Otchet hersonskoj gorodskoj upravy za 1896 g.* [Kherson City Council Reportfor 1896] Herson, Tip. O. D. Hodushinoj. S. 23–89. [in Russian].

2. Konstantinova V. M. (2010). *Urbanizaciya: pivdennoukraïnskij vimir (1861–1904 rokah)*. [Urbanization: South-Ukraini and imension (1861–1904)]. Zaporizhzhya : AA Tandem. S. 216–217. [in Ukrainian].

3. Pavlovich V. (1862). *Materialy dlya geografii i statistiki Rossii*. [Materials for geography and statistics of Russia. Ekaterinoslav province]. Ekaterinoslavskaya guberniya. Spb. : Tip. depertamenta generalnogo shtaba. 402 s. [in Russian].

4. Levron V. (1874). *Statisticheskoe obozrenie Rossijskoj imperii*. [Statisticalreview of the Russian Empire]. SPb. : Tip. “Obshchestvennaya pol’za”. S. 98–156. [in Russian].

5. Feferbojm I. A. (1896). *Yuzhnaya Rossiya. Putevoditel’ po gorodam.* [Southern Russia. Cityguide]. Nikolaev : Russkaya tipo-litografiya. 176 s. [in Russian].

6. Shchepkin M. (1882). *Opyty izucheniya obshchestvennogo hozyajstva i upravleniya gorodov.* [Experimentsin the study of public economy and urban management]. M. : Tip. M. SHCHepkina, 1882. CH. 1. 256 s. [in Russian].

7. Cheremisin A. (2014). The municipal legislation of the southern Ukraine at the 1870 – 1917. *Applied sciences and technologies in the United States and Europe*. New York. USA. P. 26–31. [in English].

8. Cheremisin A. (2014). Municipal budgets of the southern Ukraine at 1785–1870. *British journal of science, education and culture*. 1 (5). P. 17–24. [in English].

9. Cheremisin O. V. Miski biudzhety Pivdnia Ukrainy v 1870–1917 rr. *Naukovi zapysky Ternopilskoho natsionalnoho universytetu im. V. Hnatiuka. Seriia: Istoriia.* Ternopil : Vyd-vo TNPU im. V. Hnatiuka, 2015. Vyp. 1. Ch. 2. S. 17–23. [in Ukrainian].

10. Cheremisin O. V. (2011). Uchast administratyvnoho upravlinnia v rozvytku promyslovosti m. Khersona kinets XVIII – persha polovyna \

XIX stolit. [Participation of administrative management in the development of industry in Kherson end of XVIII – the first half of the XIX century]. *Istorychnyi arkhiv. Naukovi studii: Zbirnyk naukovykh prats*. Mykolaiv : Vyd-vo ChDU im. Petra Mohyly. Vyp. 6. S 63–67. [in Ukrainian].

11. Fesenko I. O. (1900). Vazhnyj vopros gorodskogo hozyajstva. Uchastie kvartirohozyaev v gorodskom upravlenii. [Animportantissue of urban economy. Participation of tenantsin city administration]. SPb. : Tipografiya MVD. 107 s. [in Russian].

12. Tsybulenko L. O. (2001). Diialnist orhaniv samovriaduvannia Odesy, Mykolaieva, Khersona shchodo formuvannia i rozvytku munitsypalnoi zemelnoi i vyrobnychoi vlasnosti v XIX – na pochatku XX stolit. [Activities of self-government bodies of Odessa, Nikolaev, Kherson on the formation and development of municipal land and industrial property in the XIX – early XX centuries]. Dnipropetrovsk. S. 32–40. [in Ukrainian].

13. Turchenko F. H., Turchenko H. F. (2003). Pivdenna Ukraina: modernizatsiia, svitova viina, revoliutsiia (kinets XIX st. – 1921 r.): Istorychni narysy. [South Ukraine: Modernization, World War, Revolution (end of the XIX century – 1921): Historical essays.]. K.: Heneza. 304 s. [in Ukrainian].

14. Totomianc V. F. (1910). Samoupravlenie i gorodskoe hozyajstvo. [Self-government and urban economy]. SPb. : V. V. Bitner. 79 s. [in Russian].

15. Golobov YA. G. (1912). Pamyatnaya knizhka i adres-kalendar' dlya Ekaterinoslavskoj gubernii na 1912 g. [Memorial book and calendar address for the Ekaterinoslav province in 1912]. Ekaterinoslav : Tip. ekaterinoslavskogo gubernskogo pravleniya. 428 s. [in Russian].
16. Hanackij K. V. (1867). Pamyatnaya knizhka Tavricheskoj gubernii na 1867 g. [Memorial book of the Tauride province for 1867]. Simfereopol' : Tip. tavricheskogo gubernskogo pravleniya. 657 s. [in Russian].
17. Verner K. A. (1888). Pamyatnaya knizhka Tavricheskoj gubernii na 1889 g. [Memorial book of the Tauride province for 1889]. Simfereopol : Tip. "Krym". 697 s. [in Russian].

Information about the author:
Cheremisin Oleksandr Viktorovych,
Prof. drhab.,
Professor at the Department of Professional Education
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0003-0173-0489

DOI https://doi.org/10.36059/978-966-397-239-8-7

RESEARCH OF OPTIMIZATION MANAGEMENT MODELS IN CONDITIONS OF UNCERTAINTY AND RISKS

Debela I. M.

INTRODUCTION

Zoning is the basic law of distribution of natural factors on the Earth's surface, the manifestation of which is observed as a sequence of changes in geographical, natural and climatic zones. The climatic zones of Ukraine are characterized by severe negative natural and climatic conditions, which cause high production, household and infrastructure costs, high production costs, and a long payback period. The allocation of zones in the country, regions in which production is characterized by minimal costs requires the development of methodology and deterministic criteria for assessing the quality of alternative management decisions based on the use of mathematical models of socio-economic systems (SES)[16].

The problems of SES control are fundamentally different from the problems of automatic and automated control of technical systems. This difference is that in technical systems control objectives are exogenous – external to the control object, which means the passivity of the control object, the absence of internal (endogenous) goals and as a consequence the ability to determine the optimal algorithm, control law.

The purpose of the high-level system and the endogenous goals of local organizational systems in the general case do not coincide. In this case, the problem of effective management is transformed into the problem of making agreed decisions as a compromise between endogenous and exogenous goals of the system[17].

Regional SES, as high-level systems, can be presented as complex artificially active, partially formalized systems with endogenous targeting, so the management of such a system should be multifactorial and anti-crisis[18].

The functioning of socio-economic and production systems in adverse climatic conditions is accompanied by risks of different nature, which is similar to the functioning of systems in times of crisis and uncertainty.

[16] Pyatakov E.N. and others, 2020, p. 170–176.
[17] Ibid. P. 177–181.
[18] Debela I.M., 2011/2011, p. 86–91.

Inter-zonal differences in natural and climatic conditions, as uncontrolled factors determine the different efficiency of agricultural production, as part of the socio-economic system of the regional type. In Ukraine, the term "risky agriculture"[19], is traditionally used, which is firmly established in scientific terminology.

Adverse natural and climatic factors such as infertile soils, soil erosion caused by strong winds and unstable unpredictable weather conditions are the defining characteristics of the zone of risky agriculture. Planning and forecasting of future crops in the zone of risky agriculture is given in conditions of partial uncertainty and requires the adoption of crisis management decisions throughout the process of growing crops.

Considering the process of crop production as a partially determined optimization management system with conditionally predicted dynamics, it is possible to exclude the uncertainty of information about the structure, system parameters due to adverse climatic factors and non-linear dynamics of its existence and development.

The study of formalization methods, construction of mathematical models of control systems in conditions of uncertainty and risk is relevant and open for research.

1. General statement of the management task in the presence of risks and uncertainties

In decision support theory, optimization procedures are used to select the "best" of possible alternatives. The quality of the chosen alternative depends on the determinism and completeness of information about the state of the studied system – the object of decision-making.

The process of decision-making modeling can be divided into three classes of problems.

1. Decision-making in terms of complete certainty and determinism of the input parameters of the model.

2. Decision-making in conditions of risk – the input characteristics and parameters of the model are random variables, with a predicted probability distribution function.

3. Decision-making in conditions of uncertainty (full, partial). The input data of the problem are not deterministic, not predictable. It is not possible to assess the impact of factors on management efficiency[20].

4. Research of models of control systems depending on degree and character of uncertainty of the input information on object of management can be divided into two classes of problems of decision-making: in the conditions

[19] Pyatakov E.M. and others, 2020, p. 177–181.

[20] Hamdi & Taha, 2001/2001, p. 514–517.

of full or partial uncertainty; in the conditions of risk. The input information of decision-making in risk conditions is reflected by the probability distribution function (probability density) of random variables – model parameters. The concept of uncertainty precludes the existence of even such input data.

Depending on the content of the problem, its solution can be deterministic or random values of variables. The determinism of variables determines the only optimal solution in unambiguously defined conditions[21]. Solutions in conditions of stochastic uncertainty can be found by searching for elements of a set of alternatives, each of which with some probability may be the optimal solution. The uncertainty of the solution is due to the significant amount of stochastic and functional relationships, different ways of presenting input data, the impossibility of formalizing some of the studied processes, as a consequence, the inadequacy of the mathematical model.

There are two main types of uncertainty that complicate the process of formalizing the decision-making model:

1) structural, if the criterion of efficiency, the number of partial optimization criteria, their relationship and the degree of influence on the result are not clearly defined;

2) parametric, when some of the parameters of the model are not defined, stochastic, or not deterministic.

In the process of analysis of control systems in conditions of uncertainty there are problems of structural and parametric identification of the model. The decision-making process itself in conditions of uncertainty is divided into two equivalent tasks:

– specification and formalization of the decision-making model;

– choice of methods and algorithms for constructing alternatives taking into account the peculiarities of the chosen decision-making model.

Generalized parametric uncertainty can be represented as a limited range of possible parameter values. The interval can be strictly limited to numerical values given with varying degrees of accuracy, or with vague boundaries – descriptive qualitative variables. Given the level of awareness of the decision maker, uncertainty can be formally classified as risk or uncertainty.

Risk assessment is possible if the probabilistic numerical characteristics of the model are known, such as the distribution density function, mathematical expectation, variance of random variables – environmental factors. Numerical characteristics can be deterministic: exact values, or determined according to the law of large numbers, when the sample size is large enough and the value of the parameter loses the property of unpredictability. Or intervals, given with

[21] Hamdi & Taha, 2001/2001, pp. 25–439.

a certain confidence probability, if the sample size is not significant (compared to the size of the general population).

Statistical estimation of risk parameters is possible only under the condition of homogeneity of the studied statistical sample. In the conditions of sustainable economic development it is possible. In today's conditions, for most categories of economic risks (economic reorientation, pandemic, dynamic change in supply and demand), this is practically not the case. Therefore, it is advisable to move from risk management to the formalization of uncertainty, i.e., the definition of interval estimates of the studied parameters.

The value distribution function within the interval is determined on the basis of expert estimates as a heuristic probability density function, a fuzzy set membership function, or an interval uncertainty function. This approach necessitates the study of specific methods of economic risk management.

Algorithmization of control systems in the conditions of interval assessments of risks and uncertainties is at the stage of researches and is an actual scientific problem.

The general task of decision-making in the conditions of interval risks and uncertainty includes the following stages[22]:

1) formation of many possible solution-alternatives

$$X = \{x_k\}, (k = 1 \div s);$$

2) determination of criteria for assessing the quality of alternatives $x \in X$, agreed for the purpose of the study;

3) selection of the optimal solution $\tilde{x} \in X$ from the set of possible alternatives.

The set of possible alternatives *X* (admissible solutions of the optimization task) is formed on the basis of meaningful analysis and input parameters of the task, possibly in an informal form, as a subset of the domain of the problem constraints in the form of inequalities (1) or equations (2)

$$G_j(x, c_j) \le 0, \quad j = 1 \div m \tag{1}$$

$$Q_i(x, c_i) = 0, \quad i = 1 \div n \tag{2}$$

where x – n – measurable vector of controlled variables $(x \in R^n)$;

G_j – operator-functional that determines the specification of the mathematical model of the corresponding constraint;

[22] Debela I.M., 2011/2011, p. 10–13.

c_i – quantitative estimates of model parameters.

The optimization step involves determining the criteria for selecting alternatives from the set *X*. Assume that each alternative is described by different partial criteria of the expected value of $K_i(x)$.

The expected value criterion is actually an extreme value of the utility function. The expected value criterion can be defined as the maximum expected average return, or the minimum expected average costs[23]. That is, on the set $\{K_i(x)\}$ there is a model of quantitative evaluation of the solution $x \in X$ from the set of alternatives.

$$\tilde{x} = Z(x) = F\{b_i, K_i(x)\} \to exstr, \tag{3}$$

where *F* – operator of formalized description of the model structure;

b_i – quantitative estimates of model parameters, for example, weights of partial criteria, cost of consumables, product prices.

In the traditional formulation of the optimization task, the extreme value of the utility function is the optimal solution. But a prerequisite is the determinacy of the mathematical model of the object of study, which means complete certainty of the structure and limited quantitative characteristics of the model. In fact, model (1) – (3) does not take into account the degree of uncertainty and incompleteness of information about the structural features of the object of study and stochastic estimation of parameters.

Dynamic optimization systems are characterized by changes in the functioning of the structure, composition and number of parameters, criteria of the expected value over time. That is, for models of such systems it is necessary to formulate a decision-making algorithm for different scenarios of behavior of the external environment *y(t)* – states of nature[24]. Each scenario must correspond to a certain conditionally optimal behavior of the system. Formally, this requirement can be taken into account by including a time factor in model (1) – (3). Then each implementation of a separate scenario of the environment *y(t)* will correspond to some optimal control $\tilde{x}$ from the set of alternatives $X = \{x_k\}, (k = 1 \div s)$

$$\tilde{x} = Z(x, y, t) \to exstr\ ,\ x \in R^n\ ,\ y \in R^n \tag{4}$$

[23] Hamdi & Taha, 2001/2001, p. 525.

[24] Ibid. P. 526.

$$G_j\left(x,c_j,y,t\right)\le 0, j=1\div m; \tag{5}$$

$$Q_i\left(x,c_j,y,t\right)=0, i=1\div n. \tag{6}$$

The problem of realization of model (4) – (6) consists in unpredictability, uncontrollability of influence of external environment at the level of separate local system[25]. Therefore, only a heuristic approach to estimating the possible values of the function *y(t)* is possible. For nonstationary systems, constraints (5) – (6), which determine the set of possible alternatives *X*, clearly depend on the chosen environmental behavior scenario and this dependence is not linear.

This means, in particular, that small variations of *y*(*t*) can lead to disproportionately large fluctuations in the initial characteristics of the model (financial crisis, inflation, unemployment, etc.). Therefore, for dynamic systems, it is advisable to divide the optimization problem into two separate tasks.

The first task involves the formation of a set of alternatives *X* = {*x_k*}, $(k=1\div s)$ $X=\{x_k\}, (k=1\div s)$ and states of nature $y_i(t)$, $(i=1\div n)$ of the studied time interval $[t_0,t_n]$ of decision-making. The mathematical model of this task must answer the question "what will happen if we choose a certain state $y_i(t)\ldots$ ". At time t_0, the goal of the task is considered to be formulated and not variable. This will allow describing mathematically the corresponding objective function, which is optimized by selecting the appropriate values of the controlled variables x_k. Thus, for each state of nature $y_i(t)$ for each moment of time t_i the solution $\{x_k^i\}$ is determined, which corresponds to the extreme value of the objective function $Z(x,y,t)$.

The second problem is the problem of choosing the strategy of behavior of the studied system at the initial moment t_0, upon condition that in the interval $[t_0,t_n]$ change of the initial solution $x(t_0)$ is not possible.

For example, if the project of management of economic efficiency of new leased sown areas of some agricultural enterprise is considered. This decision is related to the choice of cultivation culture, resource costs, the volume of future deliveries of products, and the market.

[25] Petrov E.G. & Gubenko E.V., 2013, p. 128–135.

Management decision-making is based on analytical assessments of the demand market, the cost of resources, interest rates on credit, the estimated inflation rate, etc. In the process of project implementation, when some decisions are irreversible (purchased seed, paid rent), it is important that at time t_0 the decision is optimal and economically feasible.

2. Formalization of the optimization task in conditions of uncertainty and risks

Mathematically, the uncertainty leads to the introduction into the model (4) – (6) of some random factor ε, which complicates the form of dependence – the function of the description of the studied process $f(x)$

$$y = f(x, a, \varepsilon) \tag{7}$$

Assessing the degree of influence of a random factor ε on the quality of optimization solutions allows adjusting the model, if possible, to eliminate uncertainty.

Weakening the impact of uncertainty can be achieved in several ways. The simplest is to replace random variables ε with their mathematical expectations $M(\varepsilon)$, i.e. the transition from stochastic to deterministic values:

$$y = f(x, a, M(\varepsilon)). \tag{8}$$

Uncertainty can be eliminated by formalizing the optimization model in the form of:

$$y = M[f(x, a, \varepsilon)]. \tag{9}$$

where $M[f(x, a, \varepsilon)]$ – mathematical expectation of the function of description of the studied process.

Then, the generalized optimization task under uncertainty can be represented by a model of the form:

$$Z(X, \tilde{\varepsilon}) = \underset{\substack{\in \\ x \in D}}{exstr}[f_1(X), f_2(X), \cdots, f_n(X); \tilde{\varepsilon}], \tag{10}$$

where $\tilde{\varepsilon}$ – vector of random variables, which reflects the uncertainty of the selection procedure of optimization criteria;

X – vector of possible alternative solutions $X = \{x_i\} \in R^n$.

The optimization area $D = D(x, \varepsilon_1, \varepsilon_2)$ is limited by the intervals:

$$\begin{cases} f_1(x, a, \varepsilon_1) \geq b_i; \\ a_i(x; \varepsilon_2) \leq x_i \leq b_i(x; \varepsilon_2); \\ x_i \geq 0, i = 1 \div n, \end{cases} \tag{11}$$

where: ε_1 – random variable of a component whose distribution function (or its numerical characteristics) determines the uncertainty of the boundary conditions of the task;

ε_2 – deterministic of a component, determines the change in the initial conditions of the task.

Task (10) – (11) belong to the tasks of stochastic programming, the functional dependencies of which are given implicitly.

The construction of such mathematical models involves the replacement of random variables ε_1, ε_2 by their mathematical expectations, i.e., the calculation of the integrals of complex functions, which not only increases the error but also significantly complicates the modeling process. An effective way to formalize such tasks is A.M. Tikhonov's[26] method of regulation – reduction of the initial task of stochastic programming to a set of deterministic tasks of mathematical programming with a fixed value of the vector of random variables $\tilde{\varepsilon}$.

Let's consider some predictable strategy of behavior of the studied system. Assume that the previous analysis allows determining the set of alternatives consisting of *n* possible implementations of a random process – random events $S = (S_1, S_2, \cdots, S_{i,\cdots,} S_n)$, $i = 1 \div n$ each of which can occur separately, or in total[27].

Combinations of such events will be subsets of the set *S* and, in fact, the level of the criterion of marginal risk of the selected *m*-variant of the random process:

[26] Tikhonov A. N & Arsenin V. I., 1979/1979, p. 48.

[27] Nakonechny A.N., 1996, p. 42–48.

$$K^m = \left\{S_1^m, S_2^m, \cdots, S_j^m, \cdots, S_k^m\right\}, \quad S_j^m \in S,\ j = 1 \div k;\ j \le n. \tag{12}$$

Let's denote the set of events with no risk for the selected alternative A_j by $M = \{M_i\}$. Then for all possible alternatives with non-zero risk we have a set of criteria: $\tilde{K} = \left\{K_i^j, M_i\right\}$, the estimate of which will be the probabilities $p_i\left(K_i^j\right)$ and $p_i\left(M_i\right)$, which satisfy the rationing condition

$$\sum_{j=1}^{k} p_i\left(K_i^j\right) + p_i\left(M_i\right) = 1. \tag{13}$$

For each combination of criteria K_i^j we will correspond to the cost estimate of alternatives B_i^j, then the losses from the implementation of the risky alternative will be

$$R_i = \sum_{j=1}^{k} B_i^j \cdot p_i\left(K_i^j\right). \tag{14}$$

If the probabilities of risk events are equal to each other $p_i\left(K_i^j\right) = p_i$, then formula (14) will look like:

$$R_i = p_i \sum_{j=1}^{k} B_i^j \tag{15}$$

Similarly, if the costs estimate of risk-free events $M = \{M_i\}$ is known and equal to $V_i = v_i \cdot p_i\left(M_i\right)$, then the total result of the strategy – the predicted state of the system can be calculated as:

$$V_i - R_i = Z_i. \tag{16}$$

Then:

$$\tilde{Z} = \max_{\tilde{K}} Z_i = \max_{\tilde{K}} \left(V_i - R_i\right) \tag{17}$$

– will be the optimal choice for the predicted system behavior strategy.

Risk in control tasks, as a factor of randomness can be quantified by such numerical characteristics as mathematical expectation, variance, coefficient of variation, variational scope, and more.

The absolute value of risk can be measured by the amount of projected losses from the implementation of the chosen management strategy. For example, as the total level of losses from the implementation of the strategy with risk parameters:

$$D = \sum_{i=1}^{n} D_i = \sum_{i=1}^{n} x_i \alpha_i , \tag{18}$$

where: D_i – quantitative risk assessment by parameter x_i ;

x_i – statistical evaluation of the parameter in the absence of risk;

α_i – calculated value of risk (probabilistic characteristic).

The relative level of risk on the parameters x_i can be defined as a ratio

$$\rho_i = \frac{D_i}{x_i} \cdot 100\ \%. \tag{19}$$

The analytical model of risk management should provide solutions to the following issues:

– definition of the list of the main risk factors and processes;

– risk assessment: risk ratio, probability of risky event;

– acceptable, critical level of losses from the implementation of a risky alternative, other.

Considering individual implementations of risk strategies as a set of random variables, the formalized task of risk management can be written as a random process of obtaining the projected benefit – the level of profitability[28]

$$U(t,x) = U + \alpha(t,x) - \beta(t,x), \tag{20}$$

where: $\alpha(t,x); \beta(t,x)$ – random processes, the implementation of which for time $t > 0$ and selected parameters of the control system is known or predicted;

$\alpha(t)$ – planned income, receipts, payments;

[28] Vitlinsky V.V. & Verchenko P.G., 2000/2000, p. 13.

$\beta\ (t)$ – projected costs, payments;

$$\alpha(t=0)=0;\ \beta(t=0)=0;$$

$U>0$ – the initial state of the system, which is actually the "start-up capital" at time $t = 0$;

x – parameter of the model: $x \in R^n \{-\infty < a_i \le x_i \le b_i < +\infty\}$, $i = 1 \div n$.

It is assumed that the implementation of a random process (20) is only two random events that form a complete group: 1 – income exceeds costs, 2 – costs exceed income.

Then, the positive dynamics of the process $U(t,x)$ will need a condition:

$$\frac{M(\alpha(t_i,x))}{M(\beta(t_i,x))} \ge 1, \tag{21}$$

where, $M(\alpha(t_i,x)), M(\beta(t_i,x)$ – mathematical expectations of realizations of random processes at a time t_i.

Condition (21) can be taken into account by introducing an additional restriction: the probability of monotonic growth $U(t,x)$ – increase in capital (profitability) of the enterprise $p(U(t,x))$ should be close to one:

$$(1-p(U(t,x)) \le \varepsilon \tag{22}$$

where, $\varepsilon > 0$, rather small value.

The criterion of optimality for risk management tasks will be the maximum of capital at the end of the modeling period T.

Thus, the risk management task is the task of optimizing the function:

$$\max_{X \in R^n} M(X) = \max_{x \in R^n} M[\alpha(t,x)-\beta(t,x)], \tag{23}$$

where $M(X)$ – mathematical expectation of a random variable $[\alpha(t,x)-\beta(t,x)]$.

If the solution of the optimization task (20) – (23) is denoted by X^*, then the value of risk $R(t,X^*)=1-p(U(t,x))$ is acceptable, as it provides positive dynamics of the process and guarantees financial stability of the object of management.

Let's specify formula (18) for a separate implementation of the process $U(t,x)$:

$$K(t) = K_0 + A(t) - B(t), \tag{24}$$

where: $K(t)$ – the amount of capital at the estimated time t;

K_0 – initial capital;

$A(t)$ – income, receipts, profits;

$B(t)$ – deductions, payments, expenses.

Numerical risk assessment can be calculated as the product of the values of the random variable $X(t)$ – management implementations at time t on the vector of interval risk assessments R

$$d = R \cdot (t) = A(t) - B(t), \tag{25}$$

where $R \in (0; R_{max})$; R_{max} – the upper limit of acceptable risk.

Then, the formula (24) is written in the form:

$$K(t) = K_0 + R \cdot X(t). \tag{26}$$

The probability distribution function of a random variable $F(\mathrm{X(t)})$ is taken as known in advance.

The optimal level of profitability is determined by the stochastic objective function

$$Z = \max(K_0 + R \cdot X). \tag{27}$$

We assume that at the moment $t = 0$ the admissible level of risk is defined, and at $t = 1$ the level of risk is not defined value.

Assuming that the distribution function of the values of $X(t)$ is homogeneous, continuous and differentiated on the interval $[0, t]$, the task of choosing the optimal level of risk is to determine the mathematical expectation of a random variable – the level of profitability Z, on the time interval

$$Z = \max_{\hat{K}} Z_i = \max_{R \in (0; R_{\max})} Z(R, K_0) = M[Z] = \int_0^t \mathrm{X(t)} \;\; f(X(t))dt \tag{28}$$

where $f(X)$ – differential distribution function of a random variable $X(t)$.

The degree of variation of risks, within the studied time interval, can be defined as the standard deviation

$$\sigma = \sqrt{\sigma^2} = \left(\int_0^t \left[\mathrm{X}(\mathrm{t}) - M(X) \right]^2 f\left(\mathrm{X}(\mathrm{t}) \right) dt \right)^{1/2}. \quad (29)$$

The standard deviation is an auxiliary characteristic for determining the limit values – critical levels of risk.

The choice of the optimal level of risk is determined by the behavior of function (28) and the given constraints of the task.

The calculation of the optimal level of risk is complicated if the condition of continuity of the distribution function X(t) on the study interval $[0, t]$ is not fulfilled, i. e. there are *k* breakpoints $\left[x_1(t = t_{k=1}), x_2(t = t_k + \Delta t), \ldots \right]$.

Dividing the study interval into partial intervals, the boundaries of which are breakpoints, eliminates this complexity. The risk value R_k is estimated at each partial interval.

The expected risk is defined as the arithmetic mean of the calculated interval values: $\bar{R} = \frac{\sum_k R_k}{k}$.

3. The task of choosing the optimal risk-based management

Management is the task of minimizing the negative consequences of uncertainty and risks when choosing the strategy and directions of development of the studied system – the object of management. The success and quality of the solution of this task is determined by the stage of formation of the input data of the model: the completeness of statistical information, the predictability of risk factors for the study period, the availability of methods to eliminate uncertainty[29].

If statistical observations of the studied object or management process are incomplete, insufficiently formalized, or impossible at all, then the uncertainty of the decision to predict the directions of their possible development is clear[30]. Complex computational procedures, cumbersome stochastic models are not always appropriate to implement in practice. Therefore, a step-by-step management decision-making process is used:

– first step – selection of optimal management strategies;
– second step – choice of decision algorithm.

[29] Petrov E.G. & Gubenko E.V., 2013, p. 128–135.
[30] Chumachenko, 2010, p. 18–21.

The decision maker (DM) independently models the management process, determines the structure, parameters of the task and forms a list of steps to implement the chosen strategy. The determining factor in ensuring the quality of management is the practical experience of DM, its fundamental and professional training.

A formalized decision-making algorithm in terms of risk will begin with the definition of the object under study as a complex system. Let the object under study be a complex system consisting of *n* subsystems $(n = \{n_i\},\ i = 1 \div N)$, which form an ordered set of possible states $S = \{S_j\}$, $(j = 1 \div m)$.

Let's group the subsets $S = \{S_j\}$ into four groups according to the level of risk:

1) a set of subsets with no risk $S_1 \in \{S_j\}$;
2) a set of subsets with an acceptable level of risk $S_2 \in \{S_j\}$;
3) a set of subsets with a critical level of risk $S_3 \in \{S_j\}$;
4) a set of subsets with a catastrophic level of risk $S_4 \in \{S_j\}$.

The states of the system S_3 are the object of control, the purpose of which is to compensate for the risk effects of the environment – the transition from group 3 to group 2, or 1. The states of the system of subset 4 are considered non-compensatory.

Let's consider a step-by-step process of optimizing the management of such states of the system, namely:

– selection of the optimal control strategy ($\vartheta_k (k = 1 \div l)$, as a set of interrelated operations $(g_t (t = 1 \div s),$ ordered in time;

– selection of optimal management according to the criteria of strategy evaluation.

The management process begins with choosing the optimal strategy ϑ_k from a set of possible strategies $(\vartheta_k \in \Omega)$. The optimal strategy consists of a set of optimal functions – control steps $\vartheta_k = \left[g_1, g_2, \cdots, g_t \right]$, the execution of which in the *j-th* step for the state S_j uniquely determines the solution $\tilde{y}_j = g_j \left(S_j \right);\ j = 1 \div m$. The content of control steps g_j (depends on the process of changing the states S_j of the system.

Each individual state of the system S_j of the subset S_2 or S_3 can be estimated by the level of losses of system efficiency: existing or future decrease in income, decrease in profitability of production, inflationary fluctuations in the level of prices for raw materials, products, etc.

Each state of the system S_j can be matched by the cost vector R_j – loss of efficiency of the system

$$R_j = \left(r_{j1}, r_{j2}, \cdots r_{ji}, r_{jn}\right), \tag{30}$$

where: r_{ji} – the estimate of the decrease in the efficiency of the subsystem *n* in the state S_j is given per unit time interval of the study.

To compensate for the loss of system efficiency in the states S_3, S_2 one of the possible implementations $\vartheta_k \in \Omega$, from the full set of alternatives – possible strategies in the state of the system S_j.can be used.

Each alternative is associated with the cost of its implementation – the price of the alternative. These costs C_{ji} $(=1 \div m)$ can be considered as a cost estimate of the transition of the system from the state S_j to the state S_i of the set of subsets S_3, S_2.

The set of possible states of the system, their numerical parameters (probability of state p_j, the corresponding value of losses C_j) are the initial conditions and are formed on the basis of preliminary analysis and statistical characteristics of the research system.

The task of optimizing the solution taking into account the risk can be formulated as the task of finding the extreme value of a comprehensive criterion for the loss of efficiency of the control system.

For example, the transition of the system from the state S_j of the set of critical risk level S_3 to the state S_i of the set of acceptable level S_2 describes the function of the complex criterion $K = \{K_i\}$:

$$Z_j = \min_k \max_i \sum_K \left(C_{ji} + \sum_{S_2} p_i \cdot r_{ji} \cdot \left[a_k^j \times a_k^i \right] \right), \tag{31}$$

where: a_k^j, a_k^i – are logical functions that determine the fact of choosing a strategy ϑ_k from a set of alternatives Ω;

$$a_k^j = \begin{cases} 1, if\ in the state S_j \subset S_2 the alternative\ \vartheta_k\ is accepted \\ 0, alternative\ \vartheta_k\ is not accepted in the state\ S_j \subset S_2 \end{cases};$$

$$a_k^i = \begin{cases} 1, of\ the choice\ \vartheta_k\ transfer the system in the state S_i \subset S_3 \\ 0, if\ the transition of\ the system to the state\ S_i \subset S_3\ is not choosen \end{cases}.$$

Task (31) belongs to the class of multicriteria optimization tasks[31]. The input data of this task is the result of predictive modeling of the behavior of the studied system and the external environment – random variables and processes.

Uncertainty in the parameters of the model, the impossibility of formalizing all factors of influence, uncontrollability of variables, a large number of alternatives for possible implementations of the chosen strategy, all this leads to the conclusion about the feasibility of intuitive – expert management methods[32].

It is possible to specify only the general procedures for selecting the optimal management based on risk:

– determination of the current state and numerical characteristics of the system and the environment;
– forecast calculations of dynamics trends;
– determination of the time interval of system stability, stability of predicted parameters and external factors;
– choice and formalization of the model;
– assessment of quality, adequacy of the model;
– formation of a base of additional parameters, if necessary, to specify the model as a whole, or individual modeling processes;
– model adjustment taking into account additional parameters;
– formation of many alternatives of management strategy;
– choice of the optimal strategy from a set of alternative criteria (31);
– implementation of the chosen management strategy.

The optimal management strategy, descriptively, is an algorithm for the implementation of stable states of the system, which provides the predicted dynamics, compensates the risks and eliminates structural, parametric uncertainty of the research system and external factors.

[31] Debela I.M, 2011/2011, p. 39–42.
[32] Lepa E.V & Debela I.M, 2007/2007, p. 125–133.

CONCLUSION

The analysis of formalized models of decision-making problems in conditions of complete or partial uncertainty, in terms of risk allows formulating the following conclusions:

1. Control systems in conditions of uncertainty should solve the problems of structural and parametric identification of the model.
2. The decision-making process in conditions of uncertainty should be divided into stages: specification and formalization of the decision-making model; choice of methods and algorithms for constructing alternatives taking into account the peculiarities of the chosen decision-making model.
3. Parametric uncertainty should be considered within the range of possible parameter values.
4. The function of distribution of values within the interval is defined on the basis of expert estimations, as a heuristic function of distribution of probability.
5. The decision maker classifies uncertainty as risk or parametric uncertainty based on management objectives and personal experience.
6. The transition from risk management to the formalization of uncertainty is carried out by determining the interval estimates of the studied parameters.
7. Tasks of qualitative risk assessment include the identification of risk factors, areas of implementation of projected strategies and risk management stages.
8. Risk, as a random factor, can be estimated by the numerical characteristics of the probability distribution function of risk management strategies, such as mathematical expectation, variance, and rate of variation.
9. The problem of risk-based optimization can be formulated as the problem of finding the extreme value of a comprehensive criterion for the loss of efficiency of the control system.

Mathematical models with risk factors should be used to assess the economic efficiency of the implementation of management tasks of objects of economic activity of various forms of ownership.

Knowledge of the level of forecasted risk, the degree of impact and the financial consequences of the implementation of risky decisions allow avoiding critical uncontrolled situations in strategic planning.

SUMMARY

Complex artificially active, partially formalized systems with endogenous targeting are investigated. The process of crop production is considered as a partially determined optimization management system with conditionally predicted dynamics. Methods of formalization of system states and algorithm of construction of optimization mathematical models in the conditions of

uncertainty and risks are offered. Optimization of risk management systems is formulated as a task to minimize the negative consequences of uncertainty and risks of choosing alternative strategies and directions of development of the studied system as an object of management.

REFERENCES

1. Borchik E.Yu., Debela I.N. & Borodin S.I. (2017). Nechetkaya model' opredeleniya stepeni vliyaniya vneshnikh faktorov na LPR [Fuzzy model for determining the degree of influence of external factors on enterprise]. Information Technology in Modeling, pp. 104–105.
2. Borchik E.Yu., Debela I.N. & Zverev V.K. (2018). Vybor relevantnykh alternativ prinyatiya resheniy v ergaticheskikh sistemakh kriticheskogo primeneniya [Selection of relevant decision-making alternatives in ergatic systems of critical application]. Information Technology in Modeling, pp. 88–89.
3. Vitlinsky V.V. & Verchenko P.G. (2000). Analiz, modelyuvannya ta upravlinnya ekonomichnym ryzykom. [Analysis, modeling and management of economic risk]. Kyiv : KNEU. (in Ukrainian).
4. Debela I.M. (2011). Ekonomiko-matematychne modelyuvannya [Economic and mathematical modeling]. Kherson : KIEL. (in Ukrainian).
5. Debela I.M., Sokolov A.E. & Sokolova O.V. (2020). Vplyv pryrodnoho seredovyshcha ta klimatu na funktsionuvannya sotsial'no-ekonomichnykh system rehionalnoho typu [The impact of the natural environment and climate on the functioning of socio-economic systems of the regional type]. III Ushakov readings "River and sea transport: state, problems, prospects". AUMI, pp. 86–91.
6. Erina A.M. (2001). Statystychne modelyuvannya ta prohnozuvann [Statistical modeling and forecasting]. Kyiv : KNEU. (in Ukrainian).
7. Lepa E.V. & Debela I.M. (2007). Prohnozuvannya sotsialno-ekonomichnykh protsesiv [Forecasting of socio-economic processes]. Kherson : Kherson city printing house. (in Ukrainian).
8. Petrov E.G. & Gubenko E.V. (2013). Usloviya ustoychivogo funktsionirovaniya sotsial'no-ekonomicheskikh sistem [Conditions for sustainable functioning of socio-economic systems]. System research and information technologies, no1, pp. 128–135.
9. Polishchuk L.I. (1984). Modeli mnogokriterial'noy optimizatsii ekonomicheskikh sistem [Models of multicriteria optimization of economic systems]. Novosibirsk : NSU. (in Russian).
10. Pyatakov E.M., Korolenko O.V., Khodakov V.E., Debela I.M. & Sokolov A.E. (2020). Osoblyvosti rehionalnykh sotsialno-ekonomichnykh system Ukrayiny [Features of regional socio-economic systems of Ukraine]. MINT 2020. pp. 177–181.

11. Pyatakov E.N., Korolenko A.V., Khodakov V.E., Debela I.N. & Sokolov A.E. (2020). Snizhenie proyavleniy prirodno-klimaticheskikh faktorov v regionalnykh sotsialno-ekonomicheskikh sistemakh [Reducing the manifestations of natural and climatic factors in regional socio-economic systems]. MINT (2020). pp. 170–176.
12. Tikhonov A. N. & Arsenin V. Ya. (1979). Metody resheniya nekorrektnykh zadach [Methods for solving incorrect problems]. Moscow : Science. (in Russian).
13. Khodakov V.E. & Sokolova N.A. (2016). Natural and climatic factors and the development of socio-economic systems [Natural and climatic factors and the development of socio-economic systems]. Kherson : KSMA. (in Ukrainian).
14. Hamdi A., & Taha. (2001). Vvedenie v issledovanie operatsiy [Introduction to the study of operations]. Moscow : Williams. (in Russian).
15. Chumachenko O.I. (2010). Metody vyrishennya zadach nechitkoyi optymizatsiyi u systemakh pidtrymky pryynyattya rishennya [Methods for solving fuzzy optimization tasks in decision support systems]. Adaptive automatic control systems, 2 (17), pp.18–21. DOI: https://doi.org/10.20535/1560-8956.17.2010.33568.

Information about the author:
Debela Iryna Mykolaivna,
Candidate of Agricultural Sciences, Associate Professor,
Associate Professor at the Department of Management
and Information Technologies
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0001-7990-4202

DOI https://doi.org/10.36059/978-966-397-239-8-8

METHOD FOR IDENTIFICATION AND FORECASTING THE STATE OF ECONOMIC DYNAMIC SYSTEMS

Dymova H. O.

INTRODUCTION

The analysis of economic processes involves two approaches – fundamental and technical. The fundamental approach is to build a hypothesis about the possibility of the influence of a number of changed conditions on the economic indicator in the future. Knowing what significance the factor will take in the future, it is possible to predict this process. The technical approach is to study the change in indicator as a function of time. Here the hypothesis is accepted that the trends of the past will be repeated in the future. In this case, factors affecting the process is neglected.

In modern economic and analytical activities, dynamic models, which include both approaches to forecasting, are increasingly used. The development of economic policy at both the macro and micro levels requires solving problems that determine what impact the values of the controlled variables of the current period will have on the future values of economic indicators.

The process of identifying and forecasting information data in economics is that it is necessary to define a model and identify it with a library of known models or signals. The described task can present significant difficulties if information data is subjected to large distortion.

Information recovery problems for dynamic systems have been considered in many works and are represented by three tasks:

1) an identification task, when, on the basis of known signals at the input and output of the system, a conclusion is made about the composition of the system and its characteristics;

2) a control task when the characteristics of the system and the input signal are known and is determined the law of change of the signal at the output of the system or such an input signal that at the output brings the system to a given state;

3) measurement task, when the output signal and the characteristics of the system are known, the characteristics of the input signal are determined.

In many problems, there is no information about the input signal and the characteristics of the system, but the measured characteristics of the output process are known, therefore, it is necessary to study factorization algorithms. Regardless of any identification or assessment considerations, it is desirable

to find a model to describe the dynamics of process generation. Thus, there is a problem of determining the characteristics of the system and describing the dynamics of the input process.

1. Presentation of random processes in the state variables

To develop a method for identifying and forecasting the state of dynamic systems in economics, it is necessary to introduce the concept of specifying a random process in the form of a system with a variable state, which can be used to generate a process.

A dynamical system that generates some random process in a linear representation can be specified by five matrices **A**(t), **B**(t), **C**(t), **Q**, $\mathbf{P}_i$, a system of differential and algebraic equations, with given initial conditions:

$$\frac{d\vec{x}}{dt} = \mathbf{A}(t)\,\vec{x}(t) + \mathbf{B}(t)\,\vec{u}(t),\ \ T_i \le t \tag{1}$$

$$\vec{y}(t) = \mathbf{C}(t)\,\vec{x}(t),\ \ T_i \le t, \tag{2}$$

where $\vec{x}(t)$ – state vector with the dimension $(n \times 1)$; $\vec{u}(t)$ – white arousal process with the dimension $(p \times 1)$; $\vec{y}(t)$ – observable process with the dimension $(m \times 1)$.

Equation (1) is a linear equation of state, and (2) is an observation equation. The matrices **A**(t), **B**(t), **C**(t) have dimensions $(n \times n)$, $(n \times p)$, $(m \times n)$, respectively.

The input process $\vec{u}(t)$ has a covariance function of the form

$$E\left[\vec{u}(t)\,\vec{u}^T(\tau)\right] = \mathbf{Q}\,\delta(t-\tau) \tag{3}$$

The initial state vector is a random variable with a covariance matrix

$$E\left[\vec{x}(T_i)\,\vec{x}^T(T_i)\right] = \mathbf{K}_x(T_i, T_i) = \mathbf{P}_i, \tag{4}$$

where E – operator of mathematical expectation.

Many results of the theory of random processes can be expressed in terms of the matrix of covariance functions

$$\mathbf{K}_y(t,\tau) = E\left[\vec{y}(t), \vec{y}^T(\tau)\right] \tag{5}$$

To solve the problem of forecasting the state of dynamical systems it is necessary to create a signal library, that is the solution of the direct problem. Therefore, it is necessary to perform the search procedure for the covariance function of a random process by its representation in state variables.

2 Determination of the covariance function of a random process by its description in state variables

Definition of the covariance function of a random output process $\vec{y}(t)$ from its description in state variables is given according to[1, 2, 3] without proof and used it to solve the inverse problem – finding the state variables from a known covariance matrix. According to (2) $\mathbf{K}_y(t,\tau)$ is easily related to the covariance matrix of the state vector $\vec{\mathbf{x}}(t)$:

$$\mathbf{K}_y(t,\tau) = \mathbf{C}(t)\,\mathbf{K}_x(t,\tau)\mathbf{C}^T(\tau). \tag{6}$$

The covariance matrix $\mathbf{K}_x(t,\tau)$, in its turn, satisfies the differential equation[4]

$$\dot{\mathbf{K}}_x(t,\tau) = \mathbf{A}(t)\,\mathbf{K}_x(t,t) + \mathbf{K}_x(t,t)\,\mathbf{A}^T(t) + \mathbf{B}(t)\,\mathbf{Q}\,\mathbf{B}^T(t) \tag{7}$$

at the initial condition $\mathbf{K}_x(T_i, T_i) = \mathbf{P}_i$.

Since $\vec{u}(t')$ and $\vec{x}(t)$ are not correlated on the integration interval of the differential equation (7), obtain

$$\mathbf{K}_x(t,\tau) = \begin{cases} \Theta(t,\tau)\,\mathbf{K}_x(\tau,\tau), & t \geq \tau \\ \mathbf{K}_x(t,t)\,\Theta^T(\tau,t), & \tau \geq t \end{cases} \tag{8}$$

where $\Theta(t,\tau)$ – transition matrix obtained from the differential equation[5] $\dot{\Theta}(t,t_0) = \mathbf{A}(t)\,\Theta(t,t_0)$, at the initial condition $\Theta(t_0,t_0) = \mathbf{I}$, where $\mathbf{I}$ – identity matrix.

---

[1] Derusso, P., Roy, R., & Klouz, C. (1970). *Prostranstvo sostoyaniy v teorii upravleniya [State space in control theory]*. Nauka.

[2] Van Trees, G.L. (1972). *Teoriya obnaruzheniya, otsenok i modulyatsii [The theory of detection, estimation and modulation]* (T. 1). Sovetskoye radio.

[3] Kamke, E. (1971). *Spravochnik po obyknovennym differentsial'nym uravneniyam [Handbook of ordinary differential equations]*. Nauka.

[4] Van Trees, G.L. (1972). *Teoriya obnaruzheniya, otsenok i modulyatsii [The theory of detection, estimation and modulation]* (T. 1). Sovetskoye radio.

[5] Baggeroer, A.B. (1968). *State Variables, the Fredholm Theory, and Optimal Communications*. M.I.T.

The solution for the state vector $\vec{x}(t)$ at any moment of time has the form $\vec{x}(t) = \Theta(t, t_0)\, x(t_0)$. Property (8) is valid for all processes represented by state variables in the form (1) – (5). For the stationary case, if the parameters of the system generating the process $\vec{y}(t)$ are constant, then the transition matrix is determined by the exponential factor $\Theta(t,\tau) = e^{\mathbf{A}(t-\tau)}$ [6].

In order for the matrix $\mathbf{K}_x(t, t+\Delta t)$ to be a function of only Δt, the matrix $\mathbf{K}_x(t, t)$ must, according to (8), be equated to a constant value $\mathbf{P}_\infty$. This constant matrix is a stationary solution to equation (7). So, it is possible to simulate segments of a stationary process using systems with constant parameters and setting the covariance matrix of the initial state $\mathbf{P}_i$ equal to $\mathbf{P}_\infty$. As shown in[7], the stationary solution of equation (7) has the form

$$\mathbf{P}_\infty = \int_0^\infty e^{\mathbf{A}t}\mathbf{B}\,\mathbf{Q}\,e^{\mathbf{A}^T t}dt = \frac{1}{2\pi j}\int_{-j\infty}^{j\infty}[\mathbf{I}s-\mathbf{A}]^{-1}\mathbf{B}\,\mathbf{Q}\,\mathbf{B}^{\mathrm{T}}[-\mathbf{I}s-\mathbf{A}^T]^{-1}ds$$

and the covariance matrix of the state vector

$$\mathbf{K}_x(t,t+\Delta t) = \begin{cases} e^{-\mathbf{A}\Delta t}\mathbf{P}_\infty, & \Delta t \le 0 \\ \mathbf{P}_\infty e^{\mathbf{A}\Delta t}, & \Delta t > 0 \end{cases}$$

And hence, according to the formula (6)

$$\mathbf{K}_y(t,t+\Delta t) = \begin{cases} \mathbf{C}(t)\, e^{-\mathbf{A}\Delta t}\mathbf{P}_\infty\mathbf{C}^T(t), & \Delta t \le 0 \\ \mathbf{C}(t)\,\mathbf{P}_\infty e^{\mathbf{A}^T\Delta t}\mathbf{C}^T(t), & \Delta t > 0 \end{cases}, \qquad (9)$$

that is, the correlation function of the system output is expressed in terms of the system state variables. Consequently, on the contrary, there should be an inverse problem: knowing the correlation matrix of the output for given $\mathbf{C}(t)$ and $\mathbf{P}_\infty$ = const, determine the structure of the transfer function of the system, that is, solve the problem of partial identification and forecasting of the economic system. To solve this problem, it is advisable to use the method of factorization of covariance functions.

---

[6] Van Trees, G. L. (1975). *Teoriya obnaruzheniya, otsenok i modulyatsii [The theory of detection, estimation and modulation]* (T. 2). Sovetskoye radio.

[7] Baggeroer, A.B. (1968). *State Variables, the Fredholm Theory, and Optimal Communications*. M.I.T.

3. Improvement of the factorization method of covariance functions

Previously, it was assumed that there is a description of a random process in state variables, and a model for determining the covariance function (matrix) of this process was proposed. Now consider the situation when the covariance function of the process is known, and, based on this, can be present a model of describing the process in state variables.

So, let there be the covariance matrix of the system output $\vec{y}(t)$ – $\mathbf{K}_y(t, \tau)$. It is built on the basis of observing a random output process $\vec{y}(t)$ measured by a device with an observation matrix $\mathbf{C}(t)$ on the interval $T_i \le t$, $\tau \le T_j$. For the process $\vec{y}(t)$, under consideration, use its description in state variables (1) – (4) is used, for which it is necessary to find the matrices $\mathbf{A}(t)$, $\mathbf{B}(t)$, $\mathbf{C}(t)$, $\mathbf{Q}$ and $\mathbf{P}_i$, that is, to solve the problem of factorization covariance function factorization. The factorization problem can be solved in the time domain or in the frequency domain. To solve the factorization problem in the frequency domain, it is necessary to find the Fourier transform from (9). Since the only way to take into account the possible non-stationarity of the system's output process is factorization in the time domain, consider its capabilities. So, have

$$\mathbf{K}_y(t,\tau) = \begin{cases} \mathbf{C}(t)\,\Theta(t,\tau)\,\mathbf{K}_x(\tau,\tau)\,\mathbf{C}^T(\tau), & t \ge \tau \\ \mathbf{C}(t)\,\mathbf{K}_x(t,t)\,\Theta^T(\tau,t)\,\mathbf{C}^T(\tau), & \tau \ge t \end{cases} \tag{10}$$

From the properties of transition matrices[8, 9, 10] ($\Theta(t,t_0) = \mathbf{A}(t)\,\Theta(t,t_0)$), it can be concluded that the covariance function of the process $\vec{y}(t)$, generated by a system with an unknown structure, represented in the form of state variables, must have a separable (decomposed) form.

$$\mathbf{K}_y(t,\tau) = \begin{cases} \mathbf{F}^T(t)\,\mathbf{G}(\tau), & t \ge \tau \\ \mathbf{G}^T(t)\,\mathbf{F}(\tau), & \tau \ge t \end{cases}, \tag{11}$$

where $\mathbf{F}^T(t) = \mathbf{C}(t)\,\Theta(t,t_1)$; $\mathbf{G}(t) = \Theta(t_1,t)\,\mathbf{K}_x(t,t)\,\mathbf{C}^T(t)$; t_1 – an arbitrary time variable in the domain of the process $\vec{y}(t)$ (take it equal to T_i).

---

[8] Van Trees, G.L. (1975). *Teoriya obnaruzheniya, otsenok i modulyatsii [The theory of detection, estimation and modulation]* (T. 2). Sovetskoye radio.

[9] Derusso, P., Roy, R., & Klouz, C. (1970). *Prostranstvo sostoyaniy v teorii upravleniya [State space in control theory]*. Nauka.

[10] Eikhoff, P. (1975). *Osnovy identifikatsii sistem upravleniya [Fundamentals identification of control systems]*. Mir.

The dimensions $\mathbf{F}(t)$ and $\mathbf{G}(t)$ are related to the dimension of the output process $\vec{y}(t)$. Therefore, the first step in a factorization problem is to find the $(n \times m)$-dimensional matrices $\mathbf{F}(t)$ and $\mathbf{G}(t)$ by the given covariance functions. The second step is to develop an algorithm for obtaining $\mathbf{A}(t)$, $\mathbf{B}(t)$, $\mathbf{C}(t)$, $\mathbf{Q}$ and $\mathbf{P}_i$ from $\mathbf{F}(t)$ and $\mathbf{G}(t)$. Consider the case when no restriction is imposed on the minimality of n. In the case of non-minimal factorization, each element of the covariance matrix must have the form

$$[\mathbf{K}_y(t,\tau)]_{ij} = \begin{cases} \sum_{k}^{n'} \sum_{l}^{n'} b_{ij}^{*}(k,l)\ f_k(t)\, q_i(\tau)\,, & T_i \le \tau \le t \le T_j \\ \sum_{k}^{n'} \sum_{l}^{n'} b_{ij}^{*}(k,l)\, q_i(t)\ f_k(\tau)\,, & T_i \le t \le \tau \le T_j \end{cases}$$

The members of the series $\{f_k(t),\ 1 \le k \le n'\}$, $\{q_i(\tau),\ 1 \le l \le n'\}$ will be, for example, for $n = 2$, if

$$\mathbf{K}_y(t,\tau) = \begin{bmatrix} \mathbf{P}_1\ e^{-k_1|t-\tau|} & 0 \\ 0 & \mathbf{P}_2\ e^{-k_2|t-\tau|} \end{bmatrix},$$

then

$$\begin{aligned} f_1(t) = e^{-k_1 t} \quad & q_1(\tau) = e^{k_1 \tau} \quad & b_{11}(k,l) = \mathbf{P}_1\ \delta_{k_1}\delta_{i_1} \\ f_2(t) = e^{-k_2 t} \quad & q_2(\tau) = e^{k_2 \tau} \quad & b_{22}(k,l) = \mathbf{P}_2\ \delta_{k_2}\delta_{i_2} \\ & & b_{12}(k,l) = b_{21}(k,l) = 0 \end{aligned}$$

In general, column vectors

$$\vec{f}(t) = \begin{pmatrix} f_1(t) \\ \vdots \\ f_n(t) \end{pmatrix}, \quad \vec{q}(t) = \begin{pmatrix} q_1(t) \\ \vdots \\ q_n(t) \end{pmatrix}$$

form systems of linearly independent functions. Each element of matrix (12) can be written as:

$$[\mathbf{K}_y(t,\tau)]_{ij} = \vec{f}^{\,T}(t) \begin{bmatrix} g_{ij}^{*}(1,1) & g_{ij}^{*}(1,2) & \cdots & g_{ij}^{*}(1,n^1) \\ \vdots & & \ddots & \vdots \\ g_{ij}^{*}(n^1,1) & & \cdots & g_{ij}^{*}(n^1,n^1) \end{bmatrix} \vec{q}(\tau) = \vec{f}^{\,T}(t)\ \mathbf{G}_{ij}^{*}\ \vec{q}(\tau)\,,$$

where $\mathbf{G}_{ij}^{*}$ – matrix of dimension $n^1 \times n^1$.

Using this representation, it is possible to decompose by factors, not necessarily of the minimum degree, the result is obtained in the form of matrices of dimension $((n^1 \cdot m) \times m)$:

$$\mathbf{F}^*(t) = \begin{bmatrix} \vec{f}(t) & 0 & \cdots & 0 \\ 0 & \vec{f}(t) & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & \vec{f}(t) \end{bmatrix},$$

$$\mathbf{G}^*(t) = \begin{bmatrix} \mathbf{G}^*_{11}\vec{q}(t) & \mathbf{G}^*_{12}\vec{q}(t) & \cdots & \mathbf{G}^*_{1n}\vec{q}(t) \\ \mathbf{G}^*_{21}\vec{q}(t) & \mathbf{G}^*_{22}\vec{q}(t) & & \\ \vdots & \vdots & \ddots & \vdots \\ \mathbf{G}^*_{m1}\vec{q}(t) & 0 & \cdots & \mathbf{G}^*_{mn}\vec{q}(t) \end{bmatrix}.$$

A sufficient criterion for verifying that the matrices $\mathbf{F}^*(t)$ and $\mathbf{G}^*(t)$ are factors of the minimum degree is the positive definiteness of two matrices

$$\mathbf{M}_\mathbf{F} = \int_{T_i}^{T_j} \mathbf{F}^*(t)\, \mathbf{F}^{*T}(t)\, dt,$$

$$\mathbf{M}_\mathbf{G} = \int_{T_i}^{T_j} \mathbf{G}^*(t)\, \mathbf{G}^{*\mathrm{T}}(t)\, dt,$$

that is, the rank of the matrices $\mathbf{M_F}$ and $\mathbf{M_G}$ is equal to the minimum dimension ($n^* = n^1 \cdot m$). Since $\mathbf{M_F}$ and $\mathbf{M_G}$ are symmetric, positively semi-definite, they must be coordinated through non-degenerate transformations $\mathbf{T_F}$ and $\mathbf{T_G}$ in accordance with matrices – conditional mathematical expectations E_F and E_G. There is always a coordinate system in which random variables are uncorrelated[11], and the new system is associated with an output linear transformation, that is

$$\mathbf{T}_\mathbf{F}\ \mathrm{E}_\mathbf{F}\ \mathbf{T}_\mathbf{F}^T = \mathbf{M}_\mathbf{F},$$

$$\mathbf{T}_\mathbf{G}\ \mathrm{E}_\mathbf{G}\ \mathbf{T}_\mathbf{G}^T = \mathbf{M}_\mathbf{G}$$

and at this

[11] Bendat, J., & Pirsol, A. (1989). *Prikladnoy analiz sluchaynykh dannykh [Applied Analysis of Random Data]*. Mir.

$$\int_{T_i}^{T_j} \left(\mathbf{T_F}\ \mathrm{E_F}\ \mathbf{T_F^{-1}} \mathbf{F}^*(t) - \mathbf{F}^*(t) \right) \left(\mathbf{T_F}\ \mathrm{E_F}\ \mathbf{T_F^{-1}} \mathbf{F}^*(t) - \mathbf{F}^*(t) \right)^T dt = 0,$$

$$\int_{T_i}^{T_j} \left(\mathbf{T_G}\ \mathrm{E_G}\ \mathbf{T_G^{-1}} \mathbf{G}^*(t) - \mathbf{G}^*(t) \right) \left(\mathbf{T_G}\ \mathrm{E_G}\ \mathbf{T_G^{-1}} \mathbf{G}^*(t) - \mathbf{G}^*(t) \right)^T dt = 0.$$

As a result, get

$$\mathbf{F}^*(t) = \mathbf{T_F}\ \mathrm{E_F}\ \mathbf{T_F^{-1}}\ \mathbf{F}^*(t)\ ,\quad T_i \le t \le T_j$$

$$\mathbf{G}^*(t) = \mathbf{T_G}\ \mathrm{E_G}\ \mathbf{T_G^{-1}}\ \mathbf{G}^*(t)\ ,\quad T_i \le t \le T_j$$

$$\mathbf{K}_y(t,\tau) = \mathbf{F}^{*T}(t)\ \mathbf{G}^*(\tau) = \mathbf{F}^{*T}(t)\ \mathbf{T_F^{-1T}}\ \mathrm{E_F}\ \mathbf{T_F^T}\ \mathbf{T_G}\ \mathrm{E_G}\ \mathbf{T_G^{-1}}\ \mathbf{G}^*(\tau)\ ,\quad t > \tau$$

To obtain the minimum degree multiplier for (11), let $\mathbf{F}(t)$ and $\mathbf{G}(t)$ be defined as follows:

$$\mathbf{F}(t) = \mathbf{N}_1\ \mathbf{T_F^{-1}}\ \mathbf{F}^*(t),$$

$$\mathbf{G}(t) = \mathbf{N}_2\ \mathbf{T_G^{-1}}\ \mathbf{G}^*(t),$$

where the matrices $\mathbf{N}_1$ and $\mathbf{N}_2$, of dimension $(n \times n^*)$, satisfy the condition $\mathrm{E_F}\ \mathbf{T_F^T}\ \mathbf{T_G}\ \mathrm{E_G} = \mathbf{N}_1^T\ \mathbf{N}_2$, and the matrix $\mathrm{E_F}\ \mathbf{T_F^T}\ \mathbf{T_G}\ \mathrm{E_G}$ has, respectively, the dimension $(n^* \times n^*)$. Now, having an algorithmic procedure for decomposition the covariance matrix $\mathbf{K}_y(t, \tau)$ into factors, it is necessary to determine the state matrices of the dynamic system $\mathbf{A}(t)$, $\mathbf{B}(t)$, $\mathbf{C}(t)$ and the covariance matrices $\mathbf{Q}$ and $\mathbf{P}_i$ on the basis of $\mathbf{F}(t)$ and $\mathbf{G}(t)$. Since the coordinate system of the state vector is not the only one and it follows from this that these matrices are deliberately not the only ones[12, 13].

Indeed, with the exception of its dimension, the matrix $\mathbf{A}(t)$ is essentially not set.

First, consider an implementation with a triplet of matrices $(0, \mathbf{B}_*(t), \mathbf{C}_*(t))$, and then – the question of the transformation to coordinate systems with the desired properties (here ''0'' is the zero matrix $\mathbf{A}_*(t)$). The transition matrix associated with $\mathbf{A}_*(t) = 0$ is the identity matrix[14]. Therefore, according to (10),

[12] Derusso, P., Roy, R., & Klouz, C. (1970). *Prostranstvo sostoyaniy v teorii upravleniya [State space in control theory]*. Nauka.

[13] Gantmakher, F.R. (2004). *Teoriya matrits [Matrix theory]*. FIZMATLIT.

[14] Van Trees, G.L. (1975). *Teoriya obnaruzheniya, otsenok i modulyatsii [The theory of detection, estimation and modulation]* (T. 2). Sovetskoye radio.

$$\mathbf{K}_y(t,\tau)=\begin{cases}\mathbf{C}_*(t)\,\mathbf{K}_{x*}(\tau,\tau)\,\mathbf{C}_*^T(\tau), & t>\tau\\ \mathbf{C}_*(t)\,\mathbf{K}_{x*}(t,t)\,\mathbf{C}_*^T(\tau), & \tau>t\end{cases} \tag{13}$$

or

$$\mathbf{F}^T(t)=\mathbf{C}_*(t)\,,\qquad \mathbf{G}(t)=\mathbf{K}_{x*}(t,t)\,\mathbf{C}_*^T(\tau)\,.$$

Note that (14) does not uniquely define $\mathbf{K}_{x*}(t, t)$, because the matrix $\mathbf{C}_*(t)$ has the dimension $(m \times n)$, and the matrix $\mathbf{K}_{x*}(t, t)$ has the dimension $(n \times n)$. Using (7), it is possible to show the validity of the following two properties

$$\dot{\mathbf{K}}_{x*}(t,t)=\mathbf{B}_*(t)\,\mathbf{Q}\,\mathbf{B}_*(t)\,,$$

$$\mathbf{F}^T(t)\,\dot{\mathbf{G}}(t)-\mathbf{G}^T(t)\,\dot{\mathbf{F}}(t)=\mathbf{C}_*(t)\,\mathbf{B}_*(t)\,\mathbf{Q}\,\mathbf{B}_*^T(t)\,\mathbf{C}_*(t)\,.$$

It is known[15]that the covariance function of the derivative of a random vector $\vec{\mathbf{y}}(t)$ is determined by the expression

$$\mathbf{K}_{\dot{\mathbf{y}}}(t,\tau)=\frac{\partial^2}{\partial t\,\partial\tau}\,\mathbf{K}_y(t,\tau) \tag{17}$$

or

$$\begin{aligned}\mathbf{K}_y(t,\tau)=&\begin{cases}\dot{\mathbf{F}}^T(t)\,\dot{\mathbf{G}}(\tau)\,, & t>\tau\\ \dot{\mathbf{G}}^T(t)\,\dot{\mathbf{F}}(\tau)\,, & \tau>t\end{cases}\Bigg\}+\\ &+\left(\mathbf{F}^T(t)\,\dot{\mathbf{G}}(t)-\mathbf{G}^T(t)\,\dot{\mathbf{F}}(t)\right)\delta(t-\tau).\end{aligned} \tag{18}$$

If the process is differentiable in the root mean square, then the coefficient at the δ-function should be equal to zero[16]. Noting that **Q** can be considered positive definite without loss of generality, come to the conclusion that for a mean-square differentiable process

$$\mathbf{C}_*(t)\,\mathbf{B}_*(t)=0.$$

[15] Bendat, J., & Pirsol, A. (1989). *Prikladnoy analiz sluchaynykh dannykh [Applied Analysis of Random Data]*. Mir.

[16] Ibid.

For a differentiable process, the expansion, according to (18), has the form

$$\mathbf{F}_{\dot{y}}^{T}(t) = \dot{\mathbf{F}}^{\mathrm{T}}(t) = \dot{\mathbf{C}}_{*}(t), \tag{19}$$

$$\mathbf{G}_{\dot{y}}(t) = \dot{\mathbf{G}}(t) = \mathbf{K}_{x*}(t,t)\,\dot{\mathbf{C}}_{*}^{T}(\tau). \tag{20}$$

From this it follows that the implementation for the derivative of the process would be the function (0, $\mathbf{B}_{*}(t)$, $\mathbf{C}_{*}(t)$). The inference strategy is to repeat this differentiation procedure until $\vec{y}^{(l)}(t)$ is reached. $\vec{y}^{(l)}(t)$ is the higher-order derivative of the process $\vec{y}(t)$, which still exists in the root-mean-square sense. The need for this procedure is that the decomposition of the process $\vec{y}(t)$ and all its derivatives up to and including $\vec{y}^{(l)}(t)$ is necessary to determine the state matrices. In the general case, for the interval $1 \le k \le l$ have

$$\mathbf{F}^{(k-1)T}(t)\,\mathbf{G}^{(k)}(t) - \mathbf{G}^{(k-1)T}(t)\,\mathbf{F}^{(k)}(t) = 0, \tag{21}$$

$$\mathbf{C}_{*}^{(k-1)}(t)\,\mathbf{B}_{*}(t) = 0. \tag{22}$$

The l-th order derivative has a realization (0, $\mathbf{B}_{*}(t)$, $\mathbf{C}_{*}^{(l)}(t)$) and decomposition $\mathbf{C}_{*}^{(l)}(t)$ and $\mathbf{K}_{x*}(t, t)\ \mathbf{C}_{*}^{(l)}(t)$ for $\mathbf{F}^{T}(t)$ and $\mathbf{G}(t)$, respectively.

Equations (19), (20), (21), (22) contain the main results connecting the differentiability of the process with the derivatives of the factors $\mathbf{F}(t)$ and $\mathbf{G}(t)$. The algorithm for determining the state matrices (0, B*(t), C*(t)) can be reduced to the following sequence of operations[17]. Arrange the components $\mathbf{K}_{y}(t, \tau)$ in the reverse order of their differentiability, that is, the first r_1 components have only derivatives of zero order, the second r_2 components have only derivatives of first order, etc. It is also assumed that the columns of the matrices $\mathbf{F}(t)$ and $\mathbf{G}(t)$ are respectively interchanged and that $\mathbf{Q}$ is an m – dimensional identity matrix. Next, partition the matrices $\mathbf{B}_{*}(t)$ and $\mathbf{C}_{*}(t)$ in accordance with the order of differentiability ($r_1, r_2, \ldots, r_L$):

$$\mathbf{B}_{*}(t) = \left[\mathbf{B}_{*_1}(t) \quad \mathbf{B}_{*_2}(t) \quad \cdots \quad \mathbf{B}_{*_L}(t)\right] - n \text{ components},$$

[17] Baggeroer, A.B. (1968). *State Variables, the Fredholm Theory, and Optimal Communications*. M.I.T.

$$\mathbf{C}_*(t) = \begin{bmatrix} \mathbf{C}_{*1}(t) \\ \mathbf{C}_{*2}(t) \\ \vdots \\ \mathbf{C}_{*L}(t) \end{bmatrix} \begin{matrix} r_1 \text{ strings} \\ r_2 \text{ strings} \\ \vdots \\ r_L \text{ strings} \end{matrix}$$

n components

Each component $\vec{y}_L(t)$ has a realization $(0, \mathbf{B}_*(t), \mathbf{C}_{*l}(t))$, which is $(l-1)$ – fold (not l-fold) differentiable in the mean square sense (Fig. 1)[18].

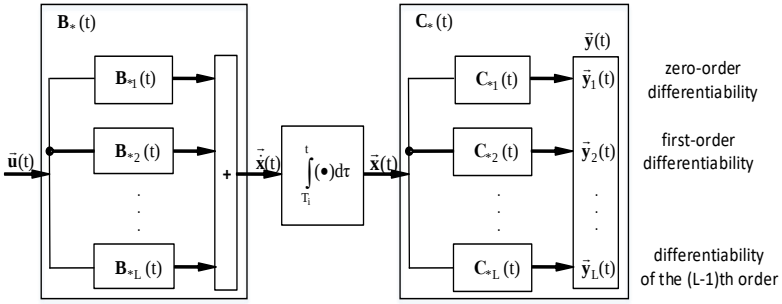


Fig. 1. Structural scheme of the implementation of the output process in accordance with the its components differentiability[19]

According to (15), the differential equation for the covariance function of the process is written in the form

$$\dot{\mathbf{K}}_{\mathbf{x}}(t,t) = \mathbf{B}_*(t)\,\mathbf{B}_*^T(t) = \sum_{l=1}^{L} \mathbf{B}_{*l}(t)\,\mathbf{B}_{*l}^T(t)\,. \qquad (23)$$

If (22) is applied to the corresponding components $\vec{y}_i(t)$, then it follows from the indicated differentiability conditions that

$$\mathbf{C}_*^{(k)}(t)\,\mathbf{C}_*(t) = 0 \quad \text{при} \quad 0 \le k < l-1. \qquad (24)$$

[18] Van Trees, G.L. (1972). *Teoriya obnaruzheniya, otsenok i modulyatsii [The theory of detection, estimation and modulation]* (T. 1). Sovetskoye radio.

[19] Ibid.

Split the $\mathbf{F}(t)$ and $\mathbf{G}(t)$ in the form

$$\begin{array}{c}\mathbf{F}(t)=\left[\mathbf{F}_1(t) \quad \mathbf{F}_2(t) \quad \cdots \quad \mathbf{F}_L(t)\right] \\ \begin{array}{cccc} r_1 & r_2 & & r_L \\ \text{columns} & \text{columns} & \cdots & \text{columns} \end{array} \\ \mathbf{G}(t)=\left[\mathbf{G}_1(t) \quad \mathbf{G}_2(t) \quad \cdots \quad \mathbf{G}_L(t)\right]\end{array},$$

Now, as it is obvious from (13), (14), it is necessary to identify $\mathbf{C}_*(t)$ with $\mathbf{F}^T(t)$, that is,

$$\mathbf{C}_*(t)=\mathbf{F}^T(t), \tag{25}$$

$$\mathbf{C}_{*l}^T(t)=\mathbf{F}_l(t). \tag{26}$$

According to this, it is possible to freely mutually replace the matrices $\mathbf{F}(t)$ and $\mathbf{C}^T(t)$ in the subsequent equations. Thus

$$\mathbf{G}(t)=\mathbf{K}_{x*}(t,t)\,\mathbf{F}(t) \tag{27}$$

$$\mathbf{G}_l(t)=\mathbf{K}_{x*}(t,t)\,\mathbf{F}_l(t) \tag{28}$$

Differentiating (28), obtain

$$\dot{\mathbf{G}}_l(t)=\dot{\mathbf{K}}_{x*}(t,t)\,\mathbf{F}_l(t)+\mathbf{K}_{x*}(t,t)\,\dot{\mathbf{F}}_l(t)=\mathbf{B}_*(t)\,\mathbf{B}_*^T(t)\,\mathbf{C}_{*l}^T(t)+\mathbf{K}_{x*}(t,t)\,\dot{\mathbf{F}}_l(t)$$

If $l=1$, then $\dot{\mathbf{G}}_1(t)=\mathbf{B}_*(t)\,\mathbf{B}_*^T(t)\,\mathbf{C}_{*1}^T(t)+\mathbf{K}_{x*}(t,t)\,\dot{\mathbf{F}}_l(t)$.

If $l\neq 1$, then taking into account (24) $\dot{\mathbf{G}}_1(t)=\mathbf{K}_{x*}(t,t)\,\dot{\mathbf{F}}_l(t)$.

After l-fold differentiation

$$\dot{\mathbf{G}}_l^{(l)}(t)=\mathbf{B}_*(t)\,\mathbf{B}_*^T(t)\,\mathbf{C}_{*l}^{(l-1)T}(t)+\mathbf{K}_{x*}(t,t)\,\dot{\mathbf{F}}_l^{(l)}(t) \tag{29}$$

$$\mathbf{G}_l^{(k)}(t)=\mathbf{K}_{x*}(t,t)\,\mathbf{F}_l^{(k)}(t), \quad 0\le k\le l-1 \tag{30}$$

Perform term-by-term multiplication (29) by $\mathbf{C}_{*l}^{(l-1)}(t)$, putting $\mathbf{C}_{*l}^{(l-1)}(t)$ in front, and using the result of permutation (30), obtain the matrix equation of dimension $(r_l\times r_l)$

$$\left(\mathbf{C}_{*l}^{(l-1)}(t)\,\mathbf{B}_*(t)\right)\left(\mathbf{B}_*^T(t)\,\mathbf{C}_{*l}^{(l-1)T}(t)\right)=\mathbf{F}_l^{(l-1)T}(t)\,\mathbf{G}_l^{(l)}(t)-\mathbf{G}_l^{(l-1)T}(t)\,\dot{\mathbf{F}}_l^{(l)}(t)=\mathbf{D}_l(t),$$

which defines the matrix system $\mathbf{D}_l(t)$.

Suppose that the matrix $\mathbf{K}_y(t, \tau)$ is positive definite. It follows from this assumption and the differentiability conditions that $\mathbf{D}_l(t)$ is also a positive definite matrix; so it has a positive definite square root[20]. The matrix $\left(\mathbf{C}_{*l}^{(l-1)}(t)\,\mathbf{B}_*(t)\right)$ of dimension $(r_l \times m)$ can be expressed as

$$\left(\mathbf{C}_{*l}^{(l-1)}(t)\,\mathbf{B}_*(t)\right) = \underset{\substack{r_l \quad \cdots \quad r_l \quad \cdots \quad r_l}}{\left[0 \;\vdots\; \cdots \;\vdots\; \mathbf{D}_l^{\frac{1}{2}}(t) \;\vdots\; \cdots \;\vdots\; 0\right]}, \quad r_l \text{ strings}, \tag{31}$$

Now substitute the transposed matrix (31) into the formula (29)

$$\mathbf{B}_{*l}(t)\left[\mathbf{D}_l^{\frac{1}{2}}(t)\right]^T = \mathbf{G}_l^{(l)}(t) - \mathbf{K}_{x*}(t, t)\,\mathbf{F}_l^{(l)}(t),$$

from here

$$\mathbf{B}_{*l}(t) = \left(\mathbf{G}_l^{(l)}(t) - \mathbf{K}_{x*}(t, t)\,\mathbf{F}_l^{(l)}(t)\right)\left[\mathbf{D}_l^{-\frac{1}{2}}(t)\right]^T. \tag{32}$$

Equation (32) determines the decomposition $\mathbf{B}_*(t)$ through $\mathbf{K}_{x*}(t, t)$, $\mathbf{F}(t)$ and $\mathbf{G}(t)$; however, $\mathbf{K}_{x*}(t, t)$ remains unknown. Define the differential equation for $\mathbf{K}_{x*}(t, t)$, substituting (32) into (23), obtain

$$\begin{aligned}\dot{\mathbf{K}}_*(t,t) = \Big\{ &\left[\mathbf{G}_1^{(1)}(t) \quad \mathbf{G}_2^{(2)}(t) \quad \cdots \quad \mathbf{G}_L^{(L)}(t)\right] - \\ &- \mathbf{K}_{x*}(t, t)\left[\mathbf{F}_1^{(1)}(t) \quad \mathbf{F}_2^{(2)}(t) \quad \cdots \quad \mathbf{F}_L^{(L)}(t)\right]\Big\} \times \\ \times &\begin{bmatrix} \mathbf{D}_1(t) & 0 & \cdots & 0 \\ 0 & \mathbf{D}_2(t) & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & \mathbf{D}_L(t) \end{bmatrix}^{-1} \Big\{ \left[\mathbf{G}_1^{(1)}(t) \quad \mathbf{G}_2^{(2)}(t) \quad \cdots \quad \mathbf{G}_L^{(L)}(t)\right] - \\ &- \mathbf{K}_{x*}(t, t)\left[\mathbf{F}_1^{(1)}(t) \quad \mathbf{F}_2^{(2)}(t) \quad \cdots \quad \mathbf{F}_L^{(L)}(t)\right]\Big\}\end{aligned} \tag{33}$$

[20] Van der Waerden, B. L. (1976). *Algebra [Algebra]*. Nauka.

This is a Riccati type differential equation[21]. In order to show the existence of a completely definite solution, it is necessary, using a number of substitutions, to reduce it to an ordinary differential equation, denoting

$$\left[\mathbf{G}_1^{(1)}(t) \quad \mathbf{G}_2^{(2)}(t) \quad \cdots \quad \mathbf{G}_L^{(L)}(t)\right] = \tilde{\mathbf{G}}$$
$$\left[\mathbf{F}_1^{(1)}(t) \quad \mathbf{F}_2^{(2)}(t) \quad \cdots \quad \mathbf{F}_L^{(L)}(t)\right] = \tilde{\mathbf{F}}$$

$$\begin{bmatrix} \mathbf{D}_1(t) & 0 & \cdots & 0 \\ 0 & \mathbf{D}_2(t) & \cdots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \cdots & \mathbf{D}_L(t) \end{bmatrix} = \tilde{\mathbf{D}}$$

equation is obtained

$$\dot{\mathbf{K}}_{x*}(t,\,t) = \tilde{\mathbf{F}}\,\tilde{\mathbf{F}}^{\mathrm{T}}\mathbf{K}_{x*}^2(t,\,t) - \left(\tilde{\mathbf{D}}\,\tilde{\mathbf{G}}\,\tilde{\mathbf{F}}^{\mathrm{T}} + \tilde{\mathbf{D}}\,\tilde{\mathbf{F}}\,\tilde{\mathbf{G}}\right)\mathbf{K}_{x*}(t,\,t) + \tilde{\mathbf{D}}\,\tilde{\mathbf{G}}^2$$

and introducing one more notation

$$\begin{aligned} &\tilde{\mathbf{F}}\,\tilde{\mathbf{F}}^{\mathrm{T}} = f(t)\,; \qquad -\left(\tilde{\mathbf{D}}\,\tilde{\mathbf{G}}\,\tilde{\mathbf{F}}^{\mathrm{T}} + \tilde{\mathbf{D}}\,\tilde{\mathbf{F}}\,\tilde{\mathbf{G}}\right) = q(t)\,; \\ &\tilde{\mathbf{D}}\,\tilde{\mathbf{G}}^2 = h(t)\,; \qquad \mathbf{K}_{x*}(t,\,t) = z(t)\ , \end{aligned} \tag{34}$$

obtain

$$\dot{z}(t) = f(t)\,z^2(t) + q(t)\,z(t) + h(t) \tag{35}$$

– the classical Riccati equation, which can be reduced by substituting $\phi(t) = \exp\left(-\int f\,z\,dt\right)$ into a nonzero solution of the linear differential equation

$$f\phi'' - (f' + f\,q)\phi' + f^2 h\phi = 0 \tag{36}$$

Conversely, since $f \neq 0$, then each nonzero solution of equation (36) by the transformation

[21] Wilkinson, J.H. (1972). *Algebraicheskaya problema sobstvennykh znacheniy [Algebraic eigenvalue problem]*. Nauka.

$$z(t) = \frac{\phi'}{\phi f} \tag{37}$$

is translated in a Riccati equation solution which, in turn, allows to estimate the state vector space $\vec{x}(t)$ and the matrices **A**(*t*), **B**(*t*), **C**(*t*). Denoting $f = a_0$, $(f' + f q) = a_1$, $f^2 h = a_2$, write the Laplace transform, equations (36), in the form

$$(a_0 s^2 - a_1 s + a_2)\phi = 0$$

$$r_{1,2} = \frac{a_1 \pm \sqrt{a_1^2 - 4 a_0 a_2}}{2a_0}$$

The general solution of equation (36) $\phi = k_1 e^{r_1 t} + k_2 e^{r_2 t}$, and equation (35) according to (37) has the form

$$Z = \mathbf{K}_{x*}(t,t) = \frac{k_1 r_1 e^{r_1 t} + k_2 r_2 e^{r_2 t}}{(k_1 r_1 e^{r_1 t} + k_2 r_2 e^{r_2 t})\,\tilde{\mathbf{F}}\,\tilde{\mathbf{F}}^T}$$

and, based on formulas (6), (25), (34)

$$\begin{aligned} \mathbf{K}_y(t,\tau) = \mathbf{C}(t)\,\mathbf{K}_x(t,\tau)\,\mathbf{C}^T(\tau) = \mathbf{C}_*(t)\frac{k_1 r_1 e^{r_1 t} + k_2 r_2 e^{r_2 t}}{(k_1 e^{r_1 t} + k_2 e^{r_2 t})\,\tilde{\mathbf{F}}\,\tilde{\mathbf{F}}^T}\mathbf{C}_*^T(\tau) = \\ = \mathbf{F}^T(t)\frac{k_1 r_1 e^{r_1 t} + k_2 r_2 e^{r_2 t}}{(k_1 e^{r_1 t} + k_2 e^{r_2 t})\,\tilde{\mathbf{F}}\,\tilde{\mathbf{F}}^T}\mathbf{F}(\tau) \end{aligned} \tag{38}$$

To determine the initial conditions for the solution of the Riccati equation, it suffices to require that the initial condition $\mathbf{K}_{x*}(T_i, T_j)$ be described by a nonnegative definite symmetric matrix, **F**(*t*) and **G**(*t*) and their derivatives were finite and continuous, the covariance function was determined by relation (11) and at

$$\tilde{\mathbf{F}} = \left[\mathbf{F}_1^{(1)}(t) \quad \mathbf{F}_2^{(2)}(t) \quad \cdots \quad \mathbf{F}_L^{(L)}(t)\right]$$

$$\tilde{\mathbf{G}} = \left[\mathbf{G}_1^{(1)}(t) \quad \mathbf{G}_2^{(2)}(t) \quad \cdots \quad \mathbf{G}_L^{(L)}(t)\right]$$

was a positive definite matrix.

To determine the initial conditions, relation (30) can be expressed as a system of L matrix equations of dimension ($n \times n$):

$$\begin{matrix}
\left[\mathbf{G}_1^0(t) & \mathbf{G}_2^0(t) & \cdots & \mathbf{G}_L^0(t)\right] = \mathbf{K}_{x*}(t,\,t)\left[\mathbf{F}_1^0(t) & \mathbf{F}_2^0(t) & \cdots & \mathbf{F}_L^0(t)\right] \\
\left[\ 0 & \mathbf{G}_2^1(t) & \cdots & \mathbf{G}_L^1(t)\right] = \mathbf{K}_{x*}(t,\,t)\left[\ 0 & \mathbf{F}_2^1(t) & \cdots & \mathbf{F}_L^1(t)\right] \\
\vdots & \vdots & & \vdots & \vdots & \vdots & & \vdots \\
\left[\ 0 & 0 & \cdots & \mathbf{G}_L^{L-1}(t)\right] = \mathbf{K}_{x*}(t,\,t)\left[\ 0 & 0 & \cdots & \mathbf{F}_L^{L-1}(t)\right]
\end{matrix} \qquad (39)$$

It is necessary to solve these equations for the time moment T_i and relatively $\mathbf{K}_{x*}(T_i\,,\,T_i)$. It is possible in another way, using the method of pseudo-inversion of matrices to determine $\mathbf{K}_{x*}(T_i,\ T_i)$[22], combining all equations (39) into an ($n \times n\,L$)-dimensional system. Equation (31) at the given initial conditions simulates the sought solution for $\mathbf{K}_{x*}(t,\,t)$, which, in its turn, determines $\mathbf{B}_*(t)$ through (32), and $\mathbf{C}_*(t)$ is determined directly using $\mathbf{F}^T(t)$. Now there is a procedure for describing state variables. It is desirable to have an implementation of the solution of the system with constant parameters. Let's consider under what conditions this is possible. Let us introduce into consideration the matrix $\mathbf{T}(t)$, which determines the linear one-to-one differentiable transformation of the state vector $\vec{x}(t)$.

$$\vec{\dot{x}}(t) = \mathbf{T}(t)\,\vec{x}(t)$$

The state matrices for the transformed state vector are have the form:

$$\dot{\mathbf{A}}(t) = \left(\mathbf{T}(t)\,\mathbf{A}(t) + \dot{\mathbf{T}}(t)\right)\ \mathbf{T}^{-1}(t) \qquad (40)$$

$$\dot{\mathbf{B}}(t) = \mathbf{T}(t)\,\mathbf{B}(t) \qquad (41)$$

$$\dot{\mathbf{C}}(t) = \mathbf{C}(t)\,\mathbf{T}^{-1}(t) \qquad (42)$$

$$\dot{\mathbf{Q}} = \mathbf{Q} \qquad (43)$$

$$\dot{\mathbf{P}}_i(t) = \mathbf{T}(T_i)\,\mathbf{P}_i\ \mathbf{T}^T(T_i) \qquad (44)$$

[22] Gantmakher, F.R. (2004). *Teoriya matrits [Matrix theory]*. FIZMATLIT.

Let us determine the conditions under which it is possible to carry out such a transformation so that all state matrices are constant, that is, find conditions when the matrices $\dot{\mathbf{A}}(t)$, $\dot{\mathbf{B}}(t)$, $\dot{\mathbf{C}}(t)$ are constant, and the initial matrices are $(0, \mathbf{B}_*(t), \mathbf{C}_*(t))$. From (40) with $\mathbf{A}(t) = 0$ and $\dot{\mathbf{A}}(t) = \mathbf{A}_c$ have

$$\dot{\mathbf{T}}(t) = \mathbf{A}_c \mathbf{T}(t), \tag{45}$$

where $\mathbf{A}_c$ – matrix to be determined.

The general solution to equation (45) has the form[23]

$$\dot{\mathbf{T}}(t) = e^{\mathbf{A}_c (t-T_i)} \mathbf{T}(T_i) \tag{46}$$

By $\dot{\mathbf{B}}(t) = \mathbf{B}_c$ and $\mathbf{B}(t) = \mathbf{B}_*(t)$, after substituting (46) into (41) and differentiating, the find that, to obtain a constant realization, it is necessary that the matrix $\mathbf{B}_*(t)$ satisfies the equation

$$\dot{\mathbf{B}}_*(t) = -\mathbf{B}_*(t) \left(\mathbf{T}^{-1}(T_i)\, \mathbf{A}_c \mathbf{T}(T_i)\right) \mathbf{B}_*(t) = -\mathbf{A}_\text{т} \mathbf{B}_*(t), \tag{47}$$

where the matrix $\mathbf{A}_\text{т}$ is defined explicitly. Similarly, $\mathbf{C}_*(t)$ can be found as

$$\dot{\mathbf{C}}_*(t) = \left(\mathbf{T}^{-1}(T_i)\, \mathbf{A}_c \mathbf{T}(T_i)\right) = \mathbf{C}_*(t) \mathbf{A}_\text{т}. \tag{48}$$

So for the existence of a realization of a system with constant (time independent) parameters, it is necessary and sufficient that there is a matrix $\mathbf{A}_\text{т}$ that satisfies equations (47) and (48). Then there is a realization through the transformation of the general solution (46). The triplet of the implementation matrices will take the form $\left(\mathbf{T}(T_i)\, \mathbf{A}_c \mathbf{T}^{-1}(T_i),\ \mathbf{T}(T_i)\, e^{\mathbf{A}_c (t-T_i)} \mathbf{B}_*(t),\ \mathbf{C}_*(t) e^{-\mathbf{A}_c (t-T_i)} \mathbf{T}^{-1}(T_i)\right)$[24].

Although equations (47) and (48) form a necessary and sufficient criterion for the existence of a realization with constant parameters, this criterion is rather difficult to use.

---

[23] Van der Waerden, B. L. (1976). *Algebra [Algebra]*. Nauka.

[24] Dymova, H.O. (2020). Metody i modeli uporyadkuvannya eksperymental'noyi informatsiyi dlya identyfikatsiyi i prohnozuvannya stanu bezperervnykh protsesiv [Methods and models for ordering experimental information for identifying and forecasting the state of continuous processes]. Knyzhkove vydavnytstvo PP Vyshemyrskyy V.S.

For the created method for identifying and predicting the state of dynamical systems in time, a method has been developed for determining the matrices of a dynamical system using the method of factorization covariance functions (solution of direct and inverse problems). The stages of the method for identifying and forecasting the state of dynamic systems are shown in Fig. 2.

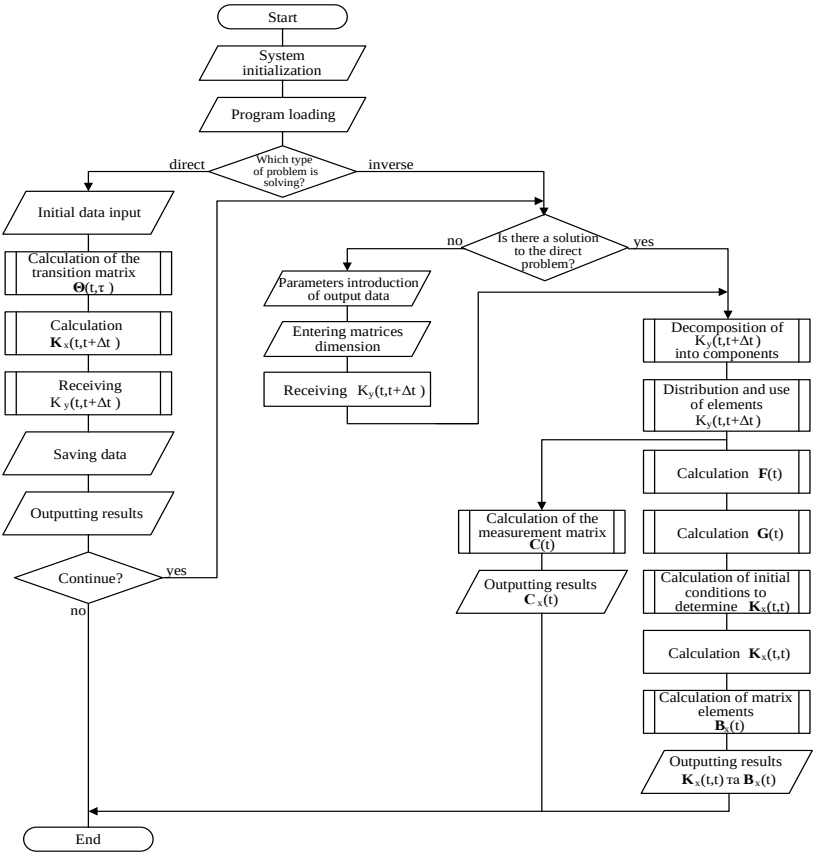


Fig. 2. Stages of the method for identifying and forecasting the state of dynamic systems

CONCLUSIONS

The work has solved the urgent scientific problem of identifying economic processes to determine the structure of a dynamic object with an output signal, the structure of its operator based on the structural properties of linear

operators. A model and a method are developed that are used to identify incompletely defined dynamical systems.

Methods for representing a random process in state variables and in the form of covariance functions are considered. The main difference between the method of specifying systems and random processes in state variables and the more common form of specifying them by the impulse transition function and the covariance function is that in the first case, the internal dynamics of the generating (modeling) system is determined, and not only the output process is described. It was shown how this internal form of the assignment can be used to define the characteristics of the output process. n many problems, such a representation in state variables is explicitly present in the problem statement. Then the opposite situation arises, when the covariance function of the process is specified, and its generation requires performance in state variables. This problem is called the problem of factoring the covariance function into factors (or the problem of factorizing the covariance function).

The developed method for identifying and forecasting the state of dynamic systems with the improvement of the method of factorization of covariance functions, that is, the determination of the main matrices of a dynamic system using the Riccati equation. By the method of substitutions, this equation is reduced to a linear differential equation, the solution of which is transformed into a solution of the Riccati equation, with the help of the solution of which it is possible to determine the basic matrices of the dynamical system.

The use of the state space method allows us to reduce the problem of identifying the structure of a dynamical system using additional information about the random process it generates to solving the Riccati equation.

Based on one-to-one differential transformations of the state vector, the applied procedure makes it possible to reduce the problem of predicting the structure of a dynamic system to the problem of predicting the structure with constant matrices of the state space.

SUMMARY

There is a problem of identification, forecasting and data recovery in economic systems. The paper analyzes the problems of information recovery for dynamic systems. They are represented by three tasks: an identification task, a control task, and a measurement task. In these problems, only one of the components is unknown – either the characteristics of the system, or the output signal, or the input signal. In this paper, the task is set to determine the characteristics of the dynamic system and input data only from the output information. For this, a random process in state variables is presented and, according to its description, the covariance function of this process is determined. This procedure is a solution to the problem of forecasting the state of dynamic systems, that is, a solution to the direct problem, which is used to

create signal libraries. To determine the partial identification of a dynamical system, a solution to the inverse problem was proposed using factorization method of covariance functions. There has been developed a method for identifying and forecasting the state of dynamical systems with the improvement of the method for factorizing covariance functions. The improvement of the method lies in the fact that the determination of the main matrices of the dynamical system was carried out using the Riccati equation.

REFERENCES

1. Baggeroer, A. B. (1968). *State Variables, the Fredholm Theory, and Optimal Communications*. M.I.T.
2. Bendat, J., & Pirsol, A. (1989). *Prikladnoy analiz sluchaynykh dannykh [Applied Analysis of Random Data]*. Mir.
3. Derusso, P., Roy, R., & Klouz, C. (1970). *Prostranstvo sostoyaniy v teorii upravleniya [State space in control theory]*. Nauka.
4. Dymova, H. O. (2020). *Metody i modeli uporyadkuvannya eksperymental'noyi informatsiyi dlya identyfikatsiyi i prohnozuvannya stanu bezperervnykh protsesiv [Methods and models for ordering experimental information for identifying and forecasting the state of continuous processes]*. Knyzhkove vydavnytstvo PP Vyshemyrs'kyy V.S.
5. Eikhoff, P. (1975). *Osnovy identifikatsii sistem upravleniya [Fundamentals identification of control systems]*. Mir.
6. Gantmakher, F. R. (2004). *Teoriya matrits [Matrix theory]*. FIZMATLIT.
7. Kamke, E. (1971). *Spravochnik po obyknovennym differentsial'nym uravneniyam [Handbook of ordinary differential equations]*. Nauka.
8. Van der Waerden, B. L. (1976). *Algebra [Algebra]*. Nauka.
9. Van Trees, G. L. (1972). *Teoriya obnaruzheniya, otsenok i modulyatsii [The theory of detection, estimation and modulation]* (T. 1). Sovetskoye radio.
10. Van Trees, G. L. (1975). *Teoriya obnaruzheniya, otsenok i modulyatsii [The theory of detection, estimation and modulation]* (T. 2). Sovetskoye radio.
11. Wilkinson, J. H. (1972). *Algebraicheskaya problema sobstvennykh znacheniy [Algebraic eigenvalue problem]*. Nauka.

Information about the author:
Dymova Hanna Olehivna,
Phd.,Candidate of Technical Sciences,
Associate Professor at the Department of Management
and Information Technology
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0002-5294-1756

DOI https://doi.org/10.36059/978-966-397-239-8-9

INTERCULTURAL COMMUNICATION AND CROSS-CULTURAL MANAGEMENT IN UKRAINE

Kaplina A. I.

INTRODUCTION

The relevance of the multi-agent system is due to the following main reasons: the complexity of modern systems and organizations, which reaches such a level that centralized management in them is ineffective due to the presence of large flows of information.

Cross-cultural aspects of recruitment, selection and adaptation of personnel distinguish the following varieties of international policy in multinational companies ethnocentric policy: filling key positions in their representative offices of the world only by personnel from the country of the parent company; polycentric policy: the use of local residents to manage foreign representative offices and managers from the parent company's countries as top managers of the company's headquarters; geocentric policy: to recruit the best and develop personnel, independence from nationality, to key positions in any multinational system.

The article discusses an attempt to analyze the basic principles of cross-cultural personnel management, which can be used when writing textbooks or in the work of HR managers. To implement management technologies today, the employee of the company must have cross-cultural achievements, that is, the ability in someone else's and mixed cultural environment to demonstrate consistent behavior that leads to achieving the goals. Human resources management of an organization operating in several countries, in a mixed or diverse cultural environment, aims to analyze the cultural impact on the main areas of organizational behavior and personnel management functions: organizational culture and structure; organizational communications; conflicts in the organization; motivation of staff; selection and adaptation, training of staff.

Recently, the systematic establishment relations between Ukraine and China has become increasingly significant. In this regard, ethnocultural differences, which are at the root business relations between different companies, are great importance. Today, there is a large amount of infusion Chinese investments into the Ukrainian economy, as a result of close cooperation it is necessary to try to achieve mutual understanding and mutual permeability and complement economies between the countries. The effectiveness these relations determines the need to take into account the

phenomenon of cross-cultural management in the construction of business relations. The most important task in the current conditions is the study and application of Confucian ethics, taking into account its impact on the culture and business traditions of negotiations will allow to intensify the decision-making process in international business. As a result of the globalization of the world economy, in which representatives of different cultures are involved, it is necessary to try to increase the range of business contacts in the world market, expand investments abroad, increase the overall culture when working in a cross-cultural environment, build an adaptive management system based on the study of the experience of the world's best companies. For a clear organization work, it is necessary to keep records all the nuances that can manifest themselves in joint production when making management decisions with representatives different cultures.

1. Cross-cultural management, a tool for organizing the cross-cultural interaction

Cross-cultural interaction is an important problem of today: business ties are expanding, multinational management teams are being formed, multinational companies are developing, international social associations are being created, intercultural ties are growing. This problem received a scientific production in the nineties, the concept of intercultural interaction was developed, the subject branch of comparative and cross-cultural management was determined, the main models of cross-cultural interaction were developed. However, there are no clear definitions and areas of scientific research of cross-cultural interaction and a general approach to modeling cross-cultural interaction[1]. This gender presents the subject areas of international, comparative and cross-cultural management and defined cross-cultural interaction modelling based on the tools of multi-agent systems.

The main cultural interest in the problem of cross-cultural management arose in Europe and the USA in the late 80s and early 90s, when the main researches of the Dutch G. Hawkstead and F. Trompenaars[2]and the American Nigel Holden[3]were published which today became classics and authorities of cross-cultural management. Today, the works of some Russian

[1] Black J. and Mendenhall M. (1990), "Cross-culture training effectiveness: a revive and theoretical framework for future research", *Academy of Management Review*, Vol. 15. Pp. 1131–1136.

[2] Evans S. (1992), "Conflict can be positive", *HR Magazine*, Vol. 37 (5). pp. 49–51.

[3] Laurent A. (1986), "The Cross-cultural Puzzle of International Human Resources Management", *Human Resources Management*, Vol 25 (1). Pp. 91–102.

and Ukrainian scientists, in particular L. Borisova[4], S. Myazoedova, Y. Petrushchenko[5], O. Romanukha[6], are devoted to the analysis of national business cultures according to the classification parameters of the above-mentioned models.

This publication aims at systematization of branches of knowledge of cross-cultural directions of modern management, determination of their subject industries and spheres of application. Development of the theory of multi-agent systems for modeling the behavior of multicultural management systems. On the basis of logical analysis, subject areas of new directions of mending, formalized task of intercultural interaction and possibility of modeling complex organizational systems[2].

The emergence of international management in the 1990s is determined by the emergence of new problems of managing large international companies with multinational staff. Organization of corporate work of personnel with different cultural parameters requires determining patterns of interaction in a multinational environment. Cross-cultural interactions touch on the problems of group dynamics, accounting of national traditions and differences in culture. Comparative and cross-cultural management were distinguished into different sections – these courses began to be studied in the training programs of managers[3]. These new sections of management are applied in nature and various subjects and areas of application of knowledge (Table 1).

Different social systems have different priorities of life, activity, different mentality, different culture of individuals and organizations. Therefore, contacts of representatives of different cultures and systems may have different results. For example, an individual I1 with culture K1 may, as result of sociocultural differences, misunderstand actions and information (I21) from the second individual I2. There may be a barrier of misunderstanding or cross-cultural shock. If the mentalities M1 and M2 have little in common, then the difficulties of interaction will increase compared to those prepared for interaction by individuals[4].

[4] Bunina V. (2008), "Cross-cultural management and intercultural kommunikia", *GUU*.

[5] Holden N. (2005), "Cross-cultural management. Conception of cognative management", *Uniti-Dana*, pp. 364.

[6] Petrushenko Yu (2009), "Cross-cultural aspects of improving the efficiency of international business", *Bulletin of Khmelnitsky National University*, Vol. 5. URL: http://journals.khnu.km.ua/vestnik/pdf/ekon/2009_5_1/pdf/146–148.pdf. (Accessed 17.09.2020).

Table 1

Subject areas of new sections of management

Management Section	Subject of study	Application branch
International management	Processes of management of activities of international companies	Study of management and organizational relations in international companies, accounting of cultural characteristics of personnel
Comparative management	National management models, cultural and institutional features of countries, similarity of management systems, separation of the best management techniques and technologies	Adaptation of management methods to cultural characteristics of countries, development of effective management systems, separation of best practices and technologies
Cross-cultural management	Definition and identification of socio-cultural features in the practice of managing multinational collectives of enterprises and organizations	Formation and management of multinational groups on the basis of accounting for cultural characteristics and mentality of workers

Comparative management studies the features of management systems of different countries and develops methods for increasing the effectiveness of interaction between representatives of rhine crops and the formation of management systems adequate to the mentality of the nation. The subject branch of comparative management consists of: analysis of the peculiarities of management and management of nations; diagnostics of organizing; features of the philosophy of the company and activity; business communication of representatives of different cultures; compliance with the management mentality; adaptation to another orgculture; methods of harmonization of orgcultures; management of organizing.

The concept of comparative management states that success in solving the problems of business cooperation is possible based on an understanding of the culture and mentality of business partners and adaptation to their features[7].

Formally, the study of cross-cultural interaction can be built on the positions of the theory of multiagent systems. Multi-agent systems formed from interacting intelligent agents achieve their own goals taking into account sociocultural statements, can be used to solve problems of cross-cultural interaction. Each agent is treated as a member of a group or organization. Task allocation involves determining the role of each member of the group, determining the extent of its responsibility and behavior requirements in the group. On this basis, you can build an expert system working on the basis of the rules of appearance: if (the situation C1 and the partner perform the actions of type D11), then perform actions (D22 with chances of W1 or actions D23 with chances of success of the W2), otherwise if the partner performs the D22 action with the W3 otherwise if (situation Sk, then perform Due), etc[4].

The concept of comparative management is a focus on the culture and mentality of partners, which is supported by knowledge and methods of interaction with other cultures. At the same time, the principle of partner sovereignty is implemented, that is, it is necessary to focus on its features to the maximum extent. Comparative management is based on social and ethical management.

Formally, the process of interaction of agents can be described by the following components:

$$Ma = (S, K, R, A, I, T, U)$$

where S is the set of agents of the management process; K is a division of the control system in which this process takes place; R – relationships created for agents (horizontal and vertical); A – a set of actions performed by agents; I – a set of established types of communication and interactions between agents; T – normative work technology; U – the state of achievement of the goals.

The process as a modeling object is dynamic. On the basis of the formal definition of the management system, it is possible to create an environment (virtual organization K), which implements the relationships necessary to achieve the goals of the organization (U…) and take into account restrictions

[7] Romanukha O. (2017), "The role of cross-cultural communications in the management of organizations", *Economics and society.* Vol. 9. URL: http:// www.economyandsociety.in.ua/journal/9_ukr/103.pdf (Accessed 17.09.2020).

in the form of sociocultural differences of agents (L) and (P). Such an environment can only be built on the basis of an agent-oriented approach that uses the placement of artificial intelligence[5].

Cooperative activity is the basis of modern management, the problems of group work in companies are closely related to the problems of their internal organization. The more activities of the company, the more complex the products it produces, the greater the role of group work and the more highly organized the company should be. At the same time, more organized company, more independent its internal divisions should be, more rigid the directive management in its internal functioning is replaced by cooperation.

2. Cross-cultural aspects of human resources management

In management theory, it is determined that national culture is an important factor that determines the specifics of organizational behavior and development, the role of the manager in the organization, the nature of communication with employees and the style of decision-making in the company. Belonging of an employee of an organization to a certain cultural group affects how he interacts with others in conditions of subordination, collegiality and conflicts in all these relationships, three issues are important:

1. When factors of cultural affiliation are crucial for choosing a model of behavior?
2. When do other factors matter more?
3. How can we determine the significance of these factors for specific situations?

In order to answer these questions, it is necessary to analyze the phenomenon of organizational behavior in terms of cultural influence. Understanding the cultural specifics of organizational behavior helps the manager to make the right choice of personnel management technologies in the company[8].

The modern Ukrainian HR manager does not have scientific and practical tools for diagnosing and managing intercultural differences in the company. Scientific literature devoted to cross-cultural management of personnel is presented in English and has not been translated into Ukrainian. In modern bookstores there is no literature devoted to the peculiarities of negotiations with representatives of different cultures or organization of personnel management of the company in the conditions of another subculture, means of adaptation of employees sent to work abroad.

[8] Kaplina A. and Kyrychenko N. (2020), "Cross-cultural aspects of human resources management", *Efektyvna ekonomika.* Vol. 10. URL: http://www.economy.nayka.com.ua/?op=1&z=8258 (Accessed 03.11.2020).

In this sex, an attempt is made to analyze the basic principles of cross-cultural personnel management, which can be used in writing textbooks or in the work of HR managers.

Presentation of the main research material. For an objective assessment of the cultural impact on organizational behavior and personnel management, it is necessary to consider the results of studies conducted in different countries over the past ten to fifteen years.

To implement management technologies today, an employee of the company must have cross-cultural skills, that is, the ability in someone else's and mixed cultural environment to demonstrate consistent behavior that leads to the achievement of goals. Cross-cultural skills include: understanding the nature of culture and the fact that culture affects human behavior in his workplace; understanding the differences between cultures; understanding how cultural factors affect the organization of structures, systems and priorities; the ability to introduce elements of one culture to another; understanding how deeply elements of one culture can be introduced into another, and vice versa[8].

Contraindications in the work of the international manager is ethnocentrism, that is, the desire to "fit" representatives of one culture into their own framework and expect them to meet these norms of behavior.

Human resources management of an organization operating in several countries, in a mixed or diverse cultural environment, aims to analyze the cultural impact on the main areas of organizational behavior and personnel management functions: organizational culture and structure; organizational communications; conflicts in the organization; staff motivation; selection and adaptation, training of personnel.

A manager who finds himself in an organization or in negotiations with representatives of an unfamiliar culture feels the need to obtain information for orientation. The source of information can be research, statistics, stories of experts on the one hand and their own experience – on the other. In cases where society is changing very quickly and the publication of research is not true, or when it is necessary to study the specific subculture of this society, the information about which is missing may require independent diagnosis of culture. A manager who works in a multicultural environment should be ready to fix non-competitive behavioral patterns for him when greeting, interacting with subordinates and management, resolving conflicts, motivation[7].

The problems that arise in intercultural communication are primarily due to fact that the sender and the recipient of information interpret the same text in different ways, within different contexts.

Each culture has its own model of perfect communication, so the American style is characterized by "straightforwardness", which is not effective for all cultural contexts. In Japan, it is very common to avoid a direct statement of facts so that subordinates can avoid confrontation and "not lose their face".

The choice of oral or written form for their communication is also guided by culture. Yes, English managers prefer written communication by e-mail. Most Ukrainian managers enter the neighboring department and negotiate with the partner personally, expecting more effect from personal communication. The Thai manager will send a report to his boss, but will talk to colleagues orally, expressing their feelings to them, which is important to him.

English-speaking cultures perceive a certain degree of conflict as a prerequisite for creativity and initiative. Tensions within the organization are considered as the norm and are a sign of a healthy organization. Well-managed disputes and discussions lead to "energy recharging" of participants and the emergence of new ideas. Cultures with the values of "deeds", in contrast to cultures with the values of "being", are more focused on conflict as a factor favorable to the creation of a new one, while cultures of the second type avoid conflict as a factor, destroying group harmony[8].

Group decision-making in collectivist cultures usually takes much longer than in individualist cultures. The time was taken to make consensus, to reconcile the interests of all participants, then such a decision made by everyone is almost impossible to change.

Cross-cultural aspects of attracting, selecting and adapting personnel distinguish the following types of international policy in multinational companies: ethnocentric policy: filling key positions in their representative offices of the world only by personnel from the country of the parent company; polycentric policy: use of local residents to manage foreign representative offices and managers from the countries of the parent company as top managers of the company's headquarters; geocentric policy: to recruit the best and develop personnel, independent of nationality, to key positions in any multinational system.

In different countries, approaches to recruitment vary. U.S. and European multinationals typically use local managers and fewer expatriates in their foreign affiliates than Japanese.

The issue of choosing a local manager or expatriant to lead a branch should be resolved depending on number of factors – requirements for a single standardization of products, knowledge of local markets, etc[8].

R. Selmer's research in Hong Kong showed that many local business owners like the leadership style of foreign managers in this order: the most desirable are American managers, then British, Japanese, and Asian managers in lost positions.

The price of the mistake of attracting an inappropriate specialist from expatriates to the top position in another country is very high. These are direct cash costs (costs range from 250 thousand to 1 million US dollars per expat to the top position, including wages, accommodation, maintenance of relatives), and broken careers, divorces, psychological injuries, etc.

The involvement of a specialist can be unsuccessful not only due to incorrect assessment of his qualifications or experience, the process of cultural adaptation plays a decisive role. When they get into someone else's culture, foreigners get a culture shock.

Cultural shock is a person's response to new cultural living conditions, a certain psychological disorientation. It is accompanied by a feeling of tension and frusturation, energy decline, the need for solitary, depression.

A. Thorburn highlights 4 stages of culture shock:

1. "Honeymoon". You come to another country with a sense of excitement and uplift. You like everything new to the unusual.

2. Irritation and hostility. Your primary enthusiasm is subsiding. You start to notice differences. You cannot de-color small and serious problems.

3. Partial adoption of another culture. You begin to build your rules of life in this culture. You can differentiate between small and important problems again. You solve small problems.

4. Full acceptance. Adaptation to the cultural environment.

There are two areas of possible expat training: learning how to work in a given culture, and learning how to live in a given culture. It is best to combine these two topics into one training program. The training program may include the following sections[8]:

1. Technical training – acquaintance with technologies used in the company's branches; local parameters in relation to these technologies.

2. Management training – acquaintance of the manager with his responsibilities in a new place, organizational structure and culture of the branch, communication channels between branches and the head office of the control system, business environment.

3. Cross-cultural training – acquaintance with the culture of the country, adaptation, learning to work and evaluation of achievements in this culture.

4. Language training.

At the same time, the stages of learning correspond to certain stages of rethinking cultural shock and changing intercultural sensitivity. Language and communication trainings take place at the stage of refusal. Training is necessary to understand cultural differences, corresponds to the stage of protection. The training of business cross-cultural skills corresponds to the stage of minimization. The training of specific working cross-cultural skills corresponds to the stage of acceptance of differences. The stage of adaptation is familiarity with the specifics of the country and culture. The integration stage corresponds to the training and support of expatriates. It is this training that will protect the manager from the consequences of cultural shock and prepare him for more constructive behavior in a foreign country[7].

Conclusions from the study. The above-mentioned results of cross-cultural research and theoretical approaches developed by scientists from different

countries can become the basis of both a practical directory for the Ukrainian manager and a program for teaching cross-cultural management in Ukrainian business schools.

3. Psychological characteristics and their consideration in cross-cultural management

We are witnessing the origin of economic ties between Ukraine and China, which is manifested in an increase in the volume of Chinese investments and an increase in the number of enterprises with Chinese capital in Ukraine, as well as in supplementing and interpetrating the Ukrainian and Chinese economies. China's sociocultural features affect not only the economic and political life of this country, but also certain countries, as well as the whole world, as Chinese enterprises and Chinese capital are more involved in the processes of globalization.

A number factors determine the need to take into account the phenomenon of cross-cultural management in the construction of business relations with Chinese companies[7]:

– globalization of the world economy, in which representatives of different national cultures take part;

– increasing the number of business contacts on the world market among business representatives of different countries as a whole;

– expanding Chinese investments abroad and increasing production with Chinese capital and management in the world in particular;

– the need to improve the general culture of managers, both Ukrainian and Chinese, necessary to work in a cross-cultural environment;

– construction of a management system adapted to Ukrainian culture and mentality;

– improving the efficiency of the organization (production) on the basis of studying the experience of leading world companies;

– the emergence in some cases of the "cross-cultural side", caused by a misunderstanding of the features of another culture, lifestyle, mentality, ethnopsychological features of culture carriers of different countries, which may manifest themselves in joint production and in management decisions.

The following goals and objectives of cross-cultural management as a field of research and its practical application in the interaction of two cultures can be defined:

1) in the ability to negotiate with representatives of another culture;

2) in the ability to quickly resolve the conflict in a team where representatives of different cultures work;

3) in the ability to build a motivation system in companies where representatives of different cultures work;

4) in the ability to determine the necessary characteristics of leadership.

Ethnocultural differences affect cross-cultural management. Cultural features are determined by the cultural environment, and ethnopsychological features – place of birth, ethnicity, place of residence[8]. These differences can be demonstrated by the example of interaction between representatives of the Western cultural tradition and Chinese cultural tradition or Confucian cultural tradition. China centric we call countries whose culture is largely determined by Confucian ethics – China, Korea, Vietnam, Japan.

In the modern conditions of the information society, the globalization of the world economy has significantly complicated business management, which in turn reduces the period necessary for making the right management decision. Managers need to have the latest data at the time of its adoption in order to make the optimal decision, and they must be processed and systematized. The technical capabilities of the information society help to solve this problem, which is reflected in the practice of control, which is a mechanism of information and analytical support of managers and managers of the company with the necessary data.

The control system integrates accounting, planning, marketing into a single self-managing system, which clearly defines the goals of the enterprise, management principles and means of their implementation. On this basis, the quality of management is significantly increased. Control is an important factor in ensuring the competitiveness of the enterprise, as it allows solving a number of issues related to and touching the stability of business and finance, search for possible internal reserves, prompt and strategic implementation of innovations, implementation of the mission, strategy for the development of the enterprise, etc.

The specifics of negotiations with representatives of Chinese centric culture are defined primarily by Confucian ethics and cultural tradition, which is fundamentally different from the Western European cultural tradition of negotiation. The impact of Confucian ethics on the culture and business tradition of negotiations is enormous. Confucian ethics forms a ritual – a set of correct patterns of behavior, including in course of business negotiations. Ritual and ethnopsychological features form methods of achieving the above key positions[8]:

1. The authority of the parties in the Confucian tradition is determined by the age and status of the participant in the negotiations. Western cultural tradition is characterized by paying attention to experience, qualifications and competence. It is necessary to take part of equal-status partners in negotiations of different cultural groups.

2. Chinese tradition excludes direct conflict and aggression in relations, which is associated with the “ethics of the face”. In this regard, “hard negotiations”, the concept characteristic of the Western cultural tradition is not permissible. The Chinese side usually takes a passive wait-and-see

position, responding to external calls. The conflict of the parties according to the Chinese tradition cannot be resolved in a direct confrontation. Unlike Western culture, where victory in open conflict is an achievement, a solution to the conflict in the Chinese sense, is possible only in course of reaching a compromise. In this regard, a huge role may be played by a third party or an intermediary involved in the settlement. This mediator must have authority for all parties to the negotiations.

3. How decisions are made is an important process that each party tries to understand. If rationality, calculation, forecast and planning are characteristic of the Western cultural tradition, then irrational and intuitive decision-making methods prevail in the Chinese business tradition, especially in conditions of uncertainty and risk. If the Western theory of management is based on the possibility of avoiding uncertainty in decision-making through forecasting and planning activities, then this is not peculiar to the Chinese tradition – only one person can decide.

4. It is necessary to note the increased scrupulousness to the details of negotiations and the content of the agreement by representatives of the Chinese cultural tradition, which is associated with the peculiarities of thinking from general to partial, while representatives of Western culture are prone to deduction – the formation of the overall picture from the details.

5. In accordance with general ideas, compromise – the terms of the agreement adopted by the parties because of negotiations. And if for the Western cultural tradition, a compromise is always the result of the agreements reached, but not always equivalent for both sides. For the Chinese cultural tradition, compromise is a mutually beneficial term of the agreement, only such in the future have the prospect of implementation.

6. Western cultural tradition attaches great importance to the contract as a written agreement between the parties enshrined in the Venn Convention on Treaties of 1980. The terms of the signed contract are inviolable and must be fulfilled under the fear of prosecution. However, when negotiating and concluding an agreement with the Chinese side, it is necessary to consider the worthlessness of contact and increased attention to oral arrangements, including personal contacts and guarantees in the Chinese cultural tradition.

7. Fulfillment of obligations under the agreement, based on the above, will depend on how the parties perceive the terms of the signed agreement and whether a compromise is found. The absence of such does not guarantee the terms of the agreement, even if there is a signed contract.

Domestic practice shows that market participants, business entities often make inefficient financial and investment decisions. The root cause of making irrational management decisions in the financial sphere and reducing the efficiency of financial and economic activities of agricultural enterprises as a whole is the uneven distribution of information between different groups of

participants in financial relations. One of the effective tools for information support of management decision-making and an important element in ensuring the information function of control at the enterprise is financial diagnostics. The relevance of the research topic is due to the urgent need to improve methodological approaches to the diagnosis of enterprises and the need for further development of the domestic concept of control, taking into account the priority of the function of ensuring financial decision-making. In this sex, an attempt is made to analyze the effective criteria for assessing management[5].

The experience of US universities reflects that in the last 15 years, students have demanded short-term educational programs devoted to the specifics of specific cultures (Japan, China, Indonesia, etc.). The active form of training and the mixed composition of participants create a unique environment of cross-cultural learning.

Ukrainian business schools gradually include theoretical courses in cross-cultural management in the professional training and retraining of managers. A logical continuation of the development of business education programs is the development of practical short-term programs of cross-cultural training and educational assistance in the formation of cross-cultural skills of the manager.

Timely consideration of the above-mentioned ethnopsychological features allows to intensify the decision-making process in international business, the participants of which are representatives of Chinese and Ukrainian cultures. Systematic use of these indicators will significantly reduce the risks of cross-cultural interaction, increase the effectiveness of adoption of managerial level. Like any type of organization, Chinese enterprises have their own strengths and weaknesses, and it is quite difficult to give an objective assessment of their activities. The advantages of such companies include a relatively high level of team connectivity, effective cooperation due to stable personal connections, low transaction costs, the ability to quickly respond to changes, the absence of the need for strict control of personnel and production. Among the shortcomings are the lack of initiatives and innovations among second-level subordinates and a clear strategy in management, a lack of professionalism, a constant threat to the division of personnel into factions that rival each other and limited opportunities for cooperation[7].

Thus, the most significant feature of Chinese business cooperation is the general amorphousness of individual conglomerates of companies and the entire business web of the business community in the presence of a firm paternalistic host power in a predominantly family firm. This prevents the definition of credit ratings for Chinese corporations, as well as to obtain any information about the activities of individual Chinese entrepreneurs. The overwhelming importance of the general web of connections prevents the

emergence of bright corporate brands in the Chinese business. All this is a feature of the Chinese management style, which must be taken account in the development of partnerships.

In today's environment of diversification and market differentiation, when the correct interpretation of marketing messages by the target audience is crucial, international communications are actively developing. Companies operating not only within their own countries, but also having access to international markets, face the need to develop a marketing strategy that takes account the individual characteristics of the target segment at the destination of the advertising message, as advertising is one of the most important and effective means of communication in modern marketing. Firms also need to take account the most important factors of the macro environment: the situation in the political environment, the peculiarities of the international market, current trends in the destination country and others. It is necessary to approach this issue from the point of view of an integrated approach, which includes the study of the existing advertising communications of rival enterprises, the choice of advertising media, the development of advertising circulation, planning and budgeting of the advertising campaign, the organization of advertising introduction into the media space, coordination and control of advertising activities and receiving feedback. Therefore, the most pressing problem of international advertising in today's environment is the choice between the strategy of its standardization or adaptation. Thus, over a 20-year period, from 2000 to 2020, there has been an increase in research that refers to the dominance of cultural differences in consumer behavior. A. Poletaeva, PR manager of Soldis Communications (the largest advertising agency, Moscow) in her work "Adaptation of advertising messages" defined national culture as "a system of interconnected elements, in which you can distinguish several "nodes" – features that appear at all levels of advertising message: visual, semantic, conceptual and role-playing"[8].

They should be taken account when adapting an advertising message abroad. Thus, before choosing media speakers and developing a media plan, it is necessary to analyze the national features, values, interests and preferences of the destination market. In developed European countries, the common value is the social responsibility of business. In this regard, many companies on their online resources in the section "On the company" post information about the charitable activities of the organization. For example, Kraft Foods' website contains publications about the company's fight against hunger and indicates the size of donations. Panasonic's website publishes notes about the company's concern for the environment and its sponsorship of the Olympic Games. Therefore, when the Russian company enters the. It will be important for the foreign market not only to translate the text, but to adapt their communications, including the company's website, its content.

As a negative example of the adaptation of advertising in the foreign market, we can distinguish the company in the fast food market KFC Holding. Launching its advertising in the UK, the fast food chain missed an extremely important point, which caused huge damage to the reputation of the brand in this market. A promotional video broadcast on local television showed people singing with their mouths full and eating at work. For sophisticated Englishmen, this behavior equates to insult. The advertising campaign caused a flurry of complaints about obscene advertising, because of which the commercial was quickly removed from the broadcast. KFC had to shoot and launch a new video in a short time but taking into account the requirements of the British market. An example of unrecorded linguistic adaptation is the largest American automotive corporation General Motors, which when the introduction of the Chevy Nova model to the South American market did not take account that in Spanish the name of the model – "Nova" – sounds like "will not go", so even an active advertising campaign could not increase sales in the Spanish-speaking market. Such cases are not only material, because updating advertising messages or launching completely new campaigns is costly. But the reputation and image of the organization are also damaged[7].

The choice of media channels depends on the legislation and at the destination of the marketing message. For example, in China there are many prohibitions that are incomprehensible to the European. In this country, cinemas and television are prohibited from broadcasting time travel and films in the genre of fiction. Also, in China is very unprofitable advertising on television, because the cost of its placement is high enough, and opportunities for creativity are limited by strict censorship. It is for this reason that many firms prefer to place their advertising on the Internet, where there are no strict bans on advertising, or inflated prices for its placement. Therefore, when choosing a strategy to promote the product in the Chinese market, it is worth paying special attention to such a media channel as video advertising on the Internet, this format is especially popular and at the same time effective. In Africa, on the contrary, despite fact that in many countries, such as Nigeria, the spread of smartphones is rapid, the low level of development of the Internet itself and slow connection hinder the ability to watch videos online. In Tanzania and Zambia, there are predominantly simple phones that can only access "easy" web resources (such as the BBC website, the mobile phone version of Facebook and Wikipedia) and there is no way to watch movies or videos online.

CONCLUSIONS

To work in the modern market, companies must be flexible, intelligent, mobile, which, on the one hand, should provide, on the one hand, the possibility of continuous evolutionary adaptation of companies to market

conditions and, on the other hand, the opportunity to make revolutionary and unexpected steps for competitors in their development that rapidly increase the competitiveness of the company. The latter is possible only on the basis of the process of continuous internal development (self-development) of the company.

A clear expression of belonging to the company is the top layer of organizational culture, which is based on behavioral norms, which are the basis of the values of the organization. The influence of organizational culture on the results is very significant – in case of non-compliance of organizational goals or its structure with the values and behavioral norms of employees, an internal conflict arises, which can develop into a deep crisis. Organizational culture evolves naturally under the influence of environmental changes and can be changed by management or another influential group of employees. On the basis of sociological researches of behavior motives, different schools have come to the same conclusion – a person in most cases tends to behave based primarily on his own interests and goals, as well as from his own vision of the worldview and his place in it. A person's personal goals and interests may coincide with the goals of the organization or vice versa are not related.

SUMMARY

The article provides subject areas of international, comparative and cross-cultural management and defined tools for modeling cross-cultural interaction on the basis of tools of multi-agent systems. The basic principles of cross-cultural management, which can be used when writing textbooks or in the work of managers, are analyzed. To implement management technologies today, the employee of the company must have cross-cultural achievements, that is, the ability in someone else's and mixed cultural environment to demonstrate consistent behavior that leads to achieving the goals. Cross-cultural skills include: understanding the nature of culture and the fact that culture affects human behavior in its workplace; understanding the differences between cultures; understanding how cultural factors influence the organization of structures, systems and priorities; the ability to introduce elements of one culture to another; understanding how deeply elements of one culture can be introduced into another, and vice versa. Contraindications in the work of the international manager is ethnocentrism, that is, the desire to "fit" representatives of one culture into the framework of their own and expect them to be subject to these norms of behavior.

REFERENCES

1. Black J. and Mendenhall M. (1990), Cross-culture training effectiveness: a revive and theoretical framework for future research. *Academy of Management Review*, Vol. 15, P. 1131–1136.

2. Evans S. (1992), Conflict can be positive. *HR Magazine*, Vol. 37 (5), pp. 49–51.

3. Laurent A. (1986), The Cross-cultural Puzzle of International Human Resources Management, *Human Resources Management*, Vol 25 (1), pp. 91–102.

4. Bunina V. (2008), Cross-cultural management and intercultural kommunikia, *GUU*, Vol'/ 24, pp. 34–45.

5. Holden N. (2005), Cross-cultural management. Conception of cognative management, *Uniti-Dana*, Vol. 6, pp. 364.

6. Petrushenko Yu (2009), Kros-kulturni aspekty povedinky u mizhnarodnomu biznesi [Cross-cultural aspects of improving the efficiency of international business], *Bulletin of Khmelnitsky National University*, Vol. 5. URL: http://www.market-infr.od.ua/journals/2021/53_2021/7.pdf (Accessed 17.09.2020).

7. Romanukha O. (2017), Rol kros-kulturnykh komunikatsii u menedzhmenti orhanizatsii [The role of cross-cultural communications in the management of organizations], *Economics and society.* Vol. 9. URL: https://economyandsociety.in.ua/journals/9_ukr/103.pdf (Accessed 17.09.2020).

8. Kaplina A. and Kyrychenko N. (2020), Kros-kulturni aspekty upravlinnia personalom [Cross-cultural aspects of human resources management], *Efektyvna ekonomika.* Vol. 10. available at: http://www.economy.nayka.com.ua/?op=1&z=8258 (Accessed 03.11.2020).

Information about the author:
Kaplina Anastasiia Ivanivna,
PhD in Economics,
Associate Professor at the Department of Management
and Information Technologies
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0001-6714-797X

DOI https://doi.org/10.36059/978-966-397-239-8-10

ROLE OF THE STATE IN IMPROVING THE LIVING STANDARDS OF HOUSEHOLDS

Karnaushenko A. S., Petrenko V. S.

INTRODUCTION

Each country should strive for more full satisfaction of the needs of its citizens. However, in reality, the most vulnerable remain existential needs, namely the need for security of human life, which are realised through comfort, stability of living conditions, security of existence and confidence in the future. These needs are basic in their nature and form a sustainable basis for the development of a country's economy and society in general. The issues of improving the living standards of households do not lose its relevance, since they are the most important component of the economy of a modern country. A significant drop in the material well-being of a large part of Ukraine's population has caused an intense economic stratification of society.

Thus, the problems of improving households' living standards are important today both for the citizens themselves and for the Ukrainian government. The strategic development priorities of Ukraine determine the need for state intervention and regulation of issues related to the improvement of living standards at the national, regional and territorial levels.

The current state of the economy of any country in the world is characterised primarily by the level and quality of life of its population. "The standard of living of a population determines the extent to which a country's citizens or residents of a particular region are supplied with material goods, services and opportunities and are financially and spiritually satisfied with the amount of goods, services and opportunities available to them in a given period".

The standard of living, in a narrow sense, is a system of quantitative indicators characterising resource provision and satisfaction of needs (income of the average person, the amount of his/her expenditure on purchases, payment for services, etc.). The reason for this approach is that the assessment of the benefits to be applied is directly quantifiable.

1. Socio-economic development of Ukraine

At present, Ukraine is experiencing modest growth in some economic sectors (e.g., retail and construction) as the government introduces certain measures to overcome the crisis. In general, the standard of living in the country is gradually improving and tends to return to its pre-crisis state, but is

most likely to do so once COVID-19 has been overcome[1]. According to the State Statistics Service of Ukraine[2](2021), the country's socio-economic indicators for the first 9 months of 2020 show an upward trend compared to the same period last year (Table 1).

Table 1

Socio-economic indicators of Ukraine's development

Indicators	Actually for January-September 2020	Rate of growth (decline),%			
		September 2020 till		January – September 2020 till January – September 2019	January – September 2019 till January – September 2018
		August 2020	September 2019		
1	2	3	4	5	6
Average monthly wage per employee: nominal, UAH	11199	104.8	112.3	109.2	119.2
actual,%	×	104.3	109.7	106.6	109.5
Arrears in wages – total, UAH million	3,560.9	104.1	113.4	×	108.7
Consumer price index	×	100.5	102.3	102.4	108.8
Price index of industrial manufacturers	×	101.7	98.3	95.2	106.9
Industrial production index	×	104.5	95.6	93	101.2
Agricultural production index	×	186.9	80.8	86.9	106,5
Construction product index	×	118.3	112.5	100.2	123.5

[1] Chervona, S. (2020). COVID-19 ta yoho vplyv na riven zhyttia naselennia Ukrainy [COVID-19 and its impact on the living standards of the population of Ukraine]. *Stratehiia rozvytku Ukrainy: finansovo-ekonomichnyi ta humanitarnyi aspekty : materialy VII Mizhnarodnoi naukovo-praktychnoi konferentsii*. 400–403.

[2] State Statistics Service of Ukraine (2020), from http://www.ukrstat.gov.ua/

Table 1 (ending)

1	2	3	4	5	6
Exports of goods, USD million	30,842.9	113.3	98.4	93.4	106.9
Imports of goods, USD million	33,241.6[2]	98.8[3]	85.7[4]	85.4[2]	108.4[2]
Balance (+, –), USD million	–2,398.7	×	×	×	×
Retail turnover, UAH million	854,148.8	99.3	111.6	106.7	110.0
Freight turnover, mln. tonne-kilometres	210,713.3	95.6	87.3	83.4	101.9
Passenger traffic, mln. passenger-kilometres	37,053.3	93.8	50.5	45.6	103.0

Analysis of Table 1 shows that the average monthly wage of an employee during 9 months of 2020 has increased by 12.3% compared to the same period last year, the construction product index has also increased by 12.5%, and retail trade turnover has grown by 11.6%. The following indicators reduced volumes as follows: Price index of industrial manufacturers – by 1.7%, industrial production index – by 4.4%, agricultural production index – by 19.2%, exports of goods – by 1.6%, imports of goods – by 14.3%, freight turnover – by 12.7%, passenger traffic – by 49.5%. But in Table 1 there are indicators of an increase that have a negative impact on the socio-economic development of the country – arrears in wages, which increased by 13.4% (3,560.9 UAH million arrears occurred in 9 months of 2020) and the consumer price index, which increased by 2.3%.

2. Level of the Human Development Index in Ukraine

The state of a country's socio-economic development has a direct impact on the level of the Human Development Index. Every year, the UN determines the level of the Human Development Index[3]; so in 2019, Norway, Switzerland and Ireland topped the world ranking for this indicator, which is often referred to as the world ranking for living standards. The data were presented in the UN's annual Human Development Report 2019. "The Human Development Index is a composite indicator measuring human development in countries and

[3] Human Development Report. (2020). *Electronic resources Retrieved*, December 15, 2020 from http://hdr.undp.org/en/content/2020-human-development-report-next-frontier-human-development-and-anthropocene

regions of the world". This indicator is identified with concepts such as "quality of life" or "standard of living".

The index measures a country's achievements in terms of health, educational attainment and actual income of citizens, in three main areas: access to education, health and longevity and a decent standard of living. When analysing the annual totals of the country rankings for this index, we can see significant changes. Indeed, in assessing previous years' leaders, it is established that the top three states change every year[4]. For example, in 2018 the top three were Norway, Switzerland and Australia. And in 2019, Australia was pushed aside by Ireland to take third place. Ukraine's place in the ranking of countries of the world in terms of living standards of the population ranks around 88th place[5]. For example, Ukraine ranked 88th in the 2014 ranking, but in the last couple of years it has consolidated its position at 85th.

For objectivity in determining the low level of the human development index in Ukraine, it is worth comparing the parameters of Ukraine and the leader of the ranking, Norway. This comparison will help to understand how far Ukraine lags behind the leaders of this ranking (Table 2).

When analysing table 2, we observe disappointing results in Ukraine, especially regarding the expectation of life at birth, the difference between Ukraine and Norway is 14.3 years. When comparing the Ukrainian gross national income per capita to that of Norway, it is found to be almost 50% lower than in Norway (fig. 1).

Table 2

Comparison of Ukraine's and Norway's Human Development Index indicators

Pos. No.	Indicator	Ukraine	Norway
1	Ranking position	83	1
2	Human development index	0.750	0.954
3	Expectation of life at birth, years	68	82.3
4	Gross national income (GNI) per capita	36.59	68.059
5	Expected years of education, years	17	18.1
6	Average years of education, years	12	12.6

[4] Reyting stran mira po urovnyu Valovogo vnutrennego produkta [Rating of countries in the world by the level of Gross Domestic Product.] (2020). *Humanitarnyy portal.* URL: https://gtmarket.ru/ratings/rating-countries-gdp/rating-countries-gdp-info

[5] Mesto pod solntsem: Top-20 ekonomik mira [A place in the sun: Top 20 economies in the world.] (2020). *Faktograf.* URL: https://www.factograph.info/a/30825544.html

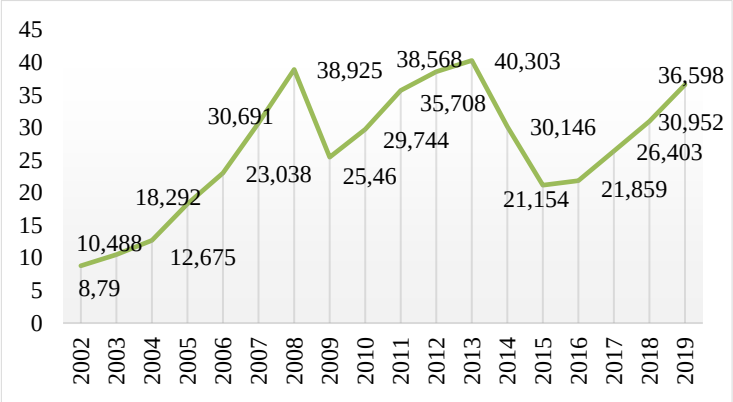


Fig. 1. Value of nominal GDP per capita in Ukraine for the period 2002–2019, USD

When analysing Figure 1, we can conclude that nominal GDP per capita is very volatile, with major declines in 2008–2009 and 2013–2014 due to the global crisis in 2008 and the dignity revolution in 2013 and the start of the anti-terrorist operation in eastern Ukraine in 2014. It is recognized that the GDP in the country is also contracting due to a reduction in the number of entrepreneurs who are liquidating their businesses and moving into the shadow economy to save on taxes, which is undoubtedly worsening the situation (Reyting stran mira po urovnyu, 2020).

The International Labour Organisation Convention states that "everyone has the right to a standard of living (including food, clothing, housing and medical care and social services) adequate for the health and well-being of himself and his family, and the right to security in the event of unemployment, incapacity for work or loss of breadwinner". Each country implements the above rights based on its own national strategy for improving living standards.

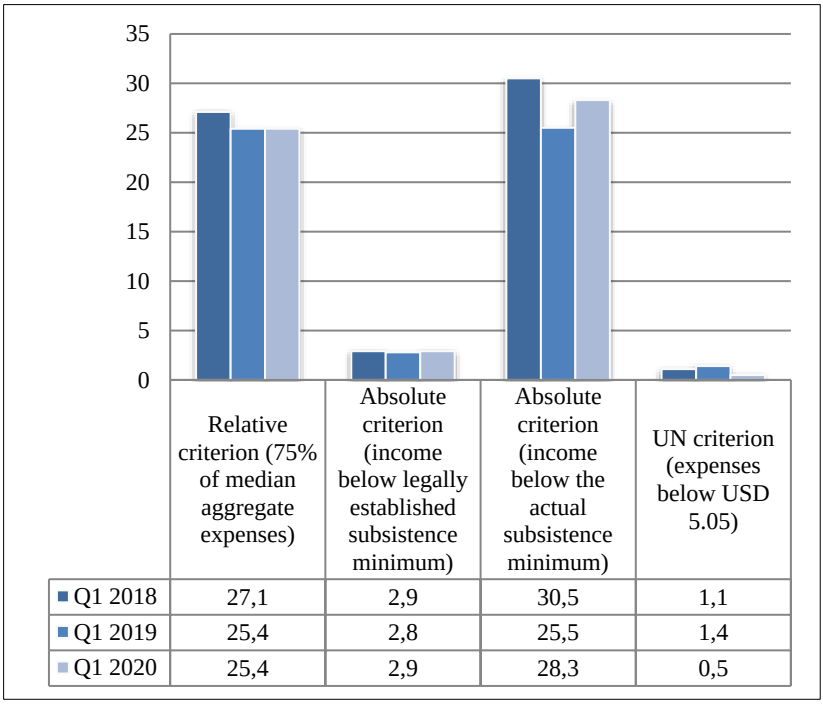
Based on the Constitution of Ukraine and Article 48, which states that "everyone has the right to an adequate standard of living for himself and his family, including adequate food, clothing and housing", it can be argued that the country has an unequal distribution of population into poor and rich, but if we consider the examples of developed countries, it is the middle class that forms the basis for the innovative development of the economy[6].

[6] Borovik, L. (2018). Analiz vplyvu domohospodarstv naselennia na investytsiinu pryvablyvist haluzi [Analysis of the impact of households on the investment attractiveness of the industry]. *Problemy systemnoho pidkhodu v ekonomitsi*, 4(66), 33–38.

3. Poverty rate in Ukraine

An analysis of the poverty rate in Ukraine for the first quarter (Q1) of 2020 reveals a significant increase in this indicator (Minimalna zarobitna plata, 2020). Thus, the expenditure poverty rate is significantly lower than the real living wage – it has increased by 5.7% compared to the first quarter of 2019, and the income poverty rate is 2.8% lower than the living wage. The absolute poverty rate rose by 0.1% to 2.9%. Assessing the poverty rate by the UN international benchmark, a decrease by 0.9% was found (Fig. 2).

For Q1 2020, the relative poverty rate remained at the same level as Q1 2019, at 25.4%, and decreased by 0.1 percentage points to 12.8% by the criterion using the EU equivalent scale (60% of total income median).



	Relative criterion (75% of median aggregate expenses)	Absolute criterion (income below legally established subsistence minimum)	Absolute criterion (income below the actual subsistence minimum)	UN criterion (expenses below USD 5.05)
Q1 2018	27,1	2,9	30,5	1,1
Q1 2019	25,4	2,8	25,5	1,4
Q1 2020	25,4	2,9	28,3	0,5

Fig. 2. Poverty rates by different criteria,%

In view of the above data on poverty indicators, it is advisable to consider them in terms of socio-demographic groups (Figure 3): poverty rate among the working population; poverty rate among persons of pension age; poverty rate among children aged 0–17; poverty rate among persons aged 16–19.

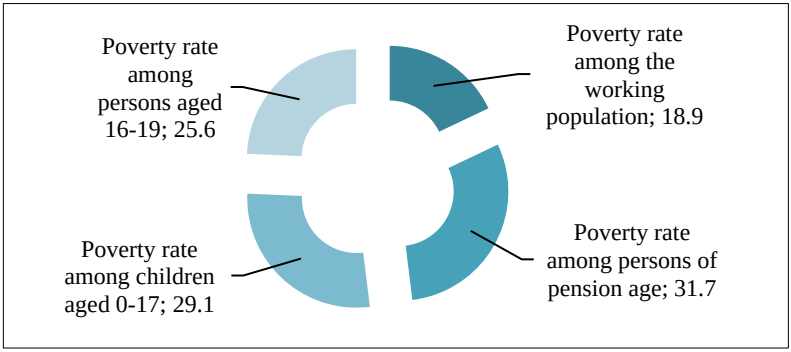


Fig. 3. Percentage of poverty in the breakdown of social and demographic groups in the first quarter of 2020,%

When analysing Figure 3, it has been established that the most vulnerable segments of the population are children aged 0–17 and pensioners, 29.1 and 31.7 respectively, i.e. every third pensioner and every third child lives in poverty.

Considering the above, it has been established that today's Ukraine must develop only if its economic policy is directed at improving the living standards of its people and opening up greater opportunities for the organization of its own future[7]. To this end, priority should be given not only to increasing the minimum wage but also to improving other components of the "standard of living" indicator, namely: maintaining true equality for education and employment; ensuring gender equality for men and women; ensuring a high level of health services; quality nutrition[8], etc.

4. Level of state support for households

The social services system is a crucial category for the different components of quality of life, the importance and role of which can significantly influence perceptions of consumer opportunities. However, the

[7] Karnaushenko, A., Petrenko, V., Tanklevska, N., Borovik, L., & Furdak, M. (2020). Prospects of youth agricultural entrepreneurship in Ukraine. *Agricultural and Resource Economics: International Scientific E-Journal*, *6*(4), 90–117. URL: https://doi.org/10.51599/are.2020.06.04.06

[8] Hetman, A. & Boyko, L. (2019). Sotsialno-ekonomichni problemy silskykh zhinok na suchasnomu etapi [Socio-economic problems of rural women at the present stage]. *Ekonomichnyy rozvytok Ukrayiny v konteksti vprovadzhennya prohresyvnykh informatsiynykh tekhnolohiy ta system upravlinnya: materialy II Vseukr. nauk.-prakt. konf.*, Kyiv, 214–217.

disadvantaged population takes such state aid for granted, without appreciating how much they ultimately cost to society and how much each citizen receives in the form of free services and benefits in addition to the income received from various sources. Furthermore, it leads to a distortion of both state and inter-state comparisons.

Thus, within the framework of a comprehensive analysis of the standard of living of households, it is worth investigating the system of state minimum social guarantees in the implementation of state social policy, including the services whose provision (at the expense of budgets of all levels, as well as state non-budgetary funds) is guaranteed to citizens under the regulatory and legal acts.

The basic minimum social standards that regulate the income sphere on the part of the state are the subsistence minimum and the minimum wage. In the area of pension provisions, the guarantees include a statutory minimum amount of pensions. State minimum guarantees in the area of social security are state assistance for unemployment, benefits for families with many children, social assistance for low-income persons[9], etc.

One of the important indicators of the standard of living of the population is also the volume and quality of consumption of socio-cultural services and an assessment of the state of the relevant sectors. At the same time, it should be taken into account that the population receives almost free medical care, preschool, general, vocational and higher education, assistance to large families, the disabled and other vulnerable categories of persons (free or partially paid medicine, school lunches), and social services that provide the complex of living conditions of people (tariff policy in passenger transport and benefits in the housing and communal services segment).

When implementing social policy by providing social support measures to the population, mechanisms are used[10], such as:

– guarantees – activities to implement this or that provision (e.g. approval of social standards, protection against unemployment);

– compensation – reimbursement of losses caused by reasons for which the state assumes responsibility, as well as monetary payments assigned to citizens in order to provide additional material support in cases recognized by the state as socially significant, related to compensation for loss (reduction) of

[9] Advokatova, N. (2017). Faktory vplyvu mihratsiyi robochoyi syly Ukrayiny v umovakh yevropeys'koyi intehratsiyi [Factorial impact of Ukrainian labor migration in the context of European integration]. *Ekonomichni innovatsiyi: Zbirnyk naukovykh prats,* 64, 12–17.

[10] Derzhavne rehuliuvannia rivnia ta yakosti zhyttia naselennia [State regulation of the level and quality of life of the population] (2020). *Biblioteka ekonomista.* URL: https://library.if.ua/book/72/5283.html

income (e.g. family members of a deceased military serviceman; compensation payments for expenses on housing, utilities and other services; payments for childcare leave, payments for children under guardianship and custody; payments to non-working persons capable of working who care for incapacitated citizens)

– benefits – a preference, partial exemption from or provision of conditions for the fulfilment of established rules, duties or obligations. Benefits are a separate part of social security and deal with the protection of the most vulnerable population groups. It is the most widespread and ramified element of the social support system, including benefits for transport, housing and communal services, education, medical care, etc.

Persons who have rendered distinguished service to their country are entitled to benefits: persons awarded orders and medals, war and labour veterans, veterans of combat operations, citizens who took part in the clean-up of man-made disasters; pensioners, persons with disabilities, children without parental care, etc.

Thus, social benefits and services are diverse. They are differentiated by means of financing, number of beneficiaries, and conditions of provision. All social transfers can be of one-time nature or be paid periodically over a set period of time. Social benefits can take the form of tax exemptions.

Ukraine's current system of social services is inherited from the Soviet Union. Moreover, the transition to a market economy requires the authorities to strengthen this component with budget financing possibilities and to increase the role of citizens in ensuring personal welfare and well-being in modern conditions. The decline in production, the rise in unemployment and forced labour migration have exacerbated social aspects of life. In the context of the transition to a market economy and given the situation in the world at the height of the pandemic, the material situation of many citizens has deteriorated markedly, necessitating an expansion of the list of preferences available to socially vulnerable categories of the population. This process will continue until the COVID-19 pandemic is overcome.

In some cases, benefits are an additional incentive to attract workers to different types of activities or under certain conditions (benefits to attract labour to industries with difficult and hazardous working conditions, as well as to social institutions (education, medicine, social protection) located in rural areas, etc.

Various social support measures (which include benefits, allowances and compensations) are provided to about 30 categories of citizens. The number of persons receiving benefits (veterans, disabled persons, pensioners, large families, students, unemployed persons, children without parental care, persons receiving occupational benefits, etc.) amounts to almost one third of the total population of Ukraine (Table 3).

Table 3

Number of persons receiving social assistance and its average amount

Pos. No.	Name of assistance	Number of people, thousands of people			Average amount of assistance, UAH		
		2017	2018	2019	2017	2018	2019
1	Childbirth benefit	1,560.9	1,313.2	1,143.1	974	946	918
2	Child benefit for single parents	5,538.2	5,091.3	4,914.7	1038	1208	1333
3	Assistance for adopting a child	2166	2669	4984	864	865	863
4	Assistance for children under guardianship or custody	43593	41568	39739	2994	3264	3555
5	State social assistance for low-income families	898.3	796.4	663.5	2519	2748	3019
6	State social assistance for persons disabled from childhood and children with disabilities	417.0	424.0	436.6	1962	2125	2316
7	Temporary state assistance for children whose parents refuse to pay maintenance	33.3	12.6	9.6	863	1114	1319
8	Provision of monthly assistance to persons caring for persons with disabilities	56.5	55.6	56.0	1625	1815	1991
9	Housing subsidies	8,809.4	6,537.7	5,487.9	993.4	713	638.7

When analysing Table 3, it was found that in 2019 the vast majority of state social assistance programmes reduced the number of payments from the state budget. The largest reductions are observed in housing subsidies, the gross value of which has decreased by more than one third compared to previous years. When analysing other social programs of the government, there has been a decrease in the number of persons receiving social support. Only in three state programs (“State social assistance for persons disabled

from childhood and children with disabilities", "Assistance in adopting a child", "Care allowance for a person with I or II disability group due to mental disorder") there is an increase in the number of people who receive state assistance.

By analysing the above social assistance programs, it has been established that in 2019 they had a significant impact on one of the living standard indicators – the poverty rate. With the application of social assistance programs, the poverty rate decreased by 5.2–24.6%. The largest impact on this indicator was the program "Assistance for Children to Single Persons", which indicates the great importance for the persons receiving these benefits.

The social programs "Assistance to low-income families" and "Assistance for Children to Single Persons" show the greatest positive impact on poverty reduction, indicating the better targeting of the programs at low-income persons and the importance of the benefits to their beneficiaries. However, a high performance indicator may indicate that these programs have a demotivating effect on those who are able to work.

According to the Law of Ukraine "On the State Budget of Ukraine in 2020", about 14.6 million people receive monthly social payments, including more than 11 million people who receive pensions. It can be argued that the total amount allocated by the state for social assistance in 2020 is as follows:

– the minimum maternity allowance is UAH 486,710.7 thousand per year;

– assistance for children for whom guardianship or custody has been established amounts to UAH 189 684 thousand per year;

– assistance to persons disabled from childhood and children with disabilities amounts to UAH 1,101,861.48 thousand per annum;

– care allowance for a person with I or II disability group is UAH 118,984.9 thousand per year;

– social welfare assistance amounts to UAH 53,980.7 per year, incl.:

1) benefits and housing subsidies to the population to cover the cost of housing and communal services, amount to UAH 47,628.6 mln.;

2) monthly targeted assistance to internally displaced persons to reduce living costs, including housing and utilities is UAH 3,042.6 mln.;

3) protection of the population affected by the Chernobyl catastrophe is UAH 1.980,9 mln. a year;

4) annual one-time cash assistance for war veterans and victims of Nazi persecution and social assistance for persons who have special and work-related merits to the homeland makes UAH 1.323,7 mln. per year;

5) lifelong government scholarships amount to UAH 4.9 mln. per year;

– allowance for psychological rehabilitation of persons is UAH 116.5 mln. per year;

– housing assistance for certain categories of the population amounts to UAH 753.6 mln. per year;

– pension payments are projected at UAH 172,576.3 mln. which is about 70% of the total accrued annual state assistance fund for social protection.

The large social payments are a burden on the state budget, which in Ukraine is in deficit and cannot meet its obligations without external assistance; on the other hand, the real average amount of most social transfers, while spending considerably on social transfers, remains very low in comparison to European Union countries. The limited budgetary resources force the state to take unpopular decisions to suspend a number of legally established benefits that have not been fulfilled for some time (e.g. the one-time program of natural childbirth assistance "Baby Package", which has been suspended since early 2020 and only became operational in summer 2020.

The rising cost of living is forcing the Ukrainian authorities to allocate more funds to social transfers. Over the ten-year period since 2010, the share of social transfers (in monetary terms) in the structure of aggregate resources of households on average per month per household income increased from UAH 12.9 to 19.3 in 2019, and their volume in absolute terms increased by 1.4 times, while the wage fund – only 6.6 times[11](Table 3.2).

When analysing Table 4, it is found that on average UAH 54.1 and 56.7 are accounted for by one household for 9 months 2018 and 2019 respectively for wages, and UAH 20.4 and 19.3 are accounted for by pensions, scholarships, allowances and subsidies provided in cash for 9 months 2018 and 2019 respectively. The above-mentioned indicators of wages and pensions take a key place in the structure (Figure 4).

For 9 months of 2019, the average cash income of a Ukrainian household is UAH 11,930.4–62% of total cash income; pensions, scholarships, allowances, etc. account for 21%, income from entrepreneurial activity and self-employment – 7%, income from the sale of agricultural products – 3%. Thus, pension provision (which is based on a distribution financial mechanism) is the state's most widespread social program aimed at providing payments to the elderly population of Ukraine.

In modern society, the non-productive social sphere, including educational, health-care, cultural, artistic and social welfare institutions, plays

[11] Sotsialno-ekonomichne stanovyshche domohospodarstv Ukrayiny (za danymy vybirkovoho obstezhennya umov zhyttya domohospodarstv) [Socio-economic situation of households in Ukraine (according to a sample survey of living conditions of households)] (2020). *State Statistics Service of Ukraine*. URL: http://www.ukrstat.gov.ua/operativ/operativ2018/gdvdg/Arh_soc_ek_stan_dom.htm

an enormous role in human life. The Constitution of Ukraine provides for free secondary education and free use of public health facilities.

Table 4

Structure of aggregate household resources on average per month per household

Indicator	Average household income for 9 months of 2018	Average household income for 9 months of 2019	Growth rate 2019 to 2018
Total aggregate resources, UAH	9,702.3	11,930.4	1.23
Cash income incl.:	89.7	91.4	1.02
- wages	54.1	56.7	1.05
- Income from entrepreneurial activity and self-employment	5.9	6.4	1.08
- Income from the sale of agricultural products	2.6	2.5	0.96
- Pensions, grants, scholarships and subsidies provided in cash	20.4	19.3	0.95
- monetary assistance from relatives and other persons	4.0	3.9	0.98
- other cash income	2.7	2.6	0.96
Cost of products consumed from private households and from self-production farms	3.6	3.6	1.00
Non-cash benefits and subsidies for housing and communal services, electricity and fuel	2.8	0.8	0.29
Non-cash benefits for goods and services for health care, tourist services, recreational facilities, etc., for transport and communication services	0.5	0.6	1.20

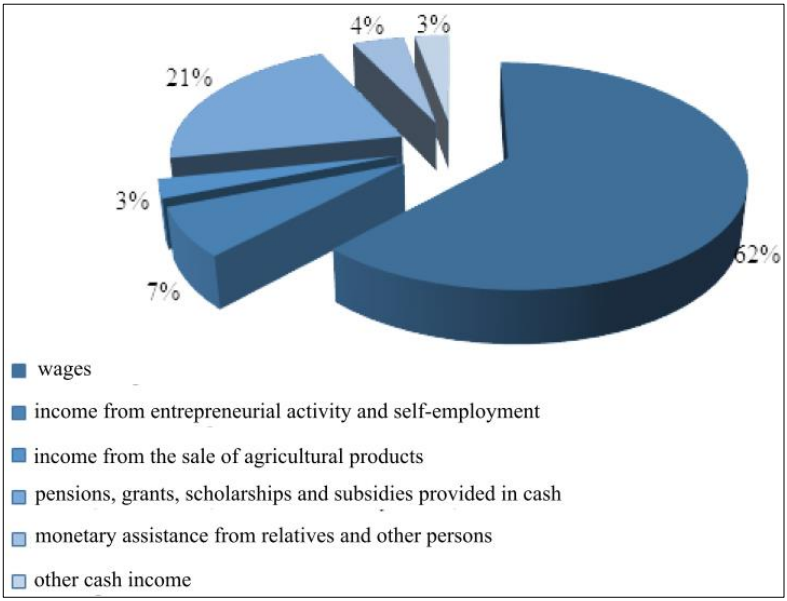


Figure 4. Structure of average household cash income for 9 months of 2019

More than 25% of the employed persons work in the social infrastructure sectors. Traditionally, the social sphere is financed from the budget. The material basis of the state's participation in the provision of social services depends on the volume of national production and the part of it that is redistributed through the state budget for these purposes.

The study of the dynamics of state budget expenditure in this area provides important information about the priorities of state policy and the imbalance that occur as a result of the distribution of financial resources. For the maintenance and development of health care, education, culture and art institutions, about one third of all budgetary allocations are allocated annually from the state budget. Most of the state expenditures on social payments and benefits are financed under a separate item "Social policy" (13.9% of the consolidated budget expenditures)[12].

[12] Vytraty i resursy domohospodarstv Ukrainy (za danymy vybirkovoho obstezhennia umov zhyttia domohospodarstv Ukrainy) [Expenditures and results of households in Ukraine (according to a sample survey of living conditions of households)]. (2020). *State Statistics Service of Ukraine.* URL: http://www.ukrstat.gov.ua/operativ/operativ2018/gdvdg/Arh_vrdu_u.htm

The share of social expenditure in total general and special budget expenditure in 2020 was in the range of 50%. Due to the COVID-19 pandemic, there is a reallocation of expenditure within the social sector in 2020 and there has been a reduction in state subsidies for education and culture, and these amounts have been directed towards supporting medicine and increasing the salaries of health care workers.

Overall, the government has reduced funding for the Ministry of Education and Science by almost UAH 3 billion, with total payments amounting to UAH 39 billion, according to the present demands. In addition, the government has cut the payments for the social protection of teachers by UAH 1.55 billion. Support for education, science and sport, which had been earmarked for UAH 500 million by the Presidential Fund, has been withdrawn. In 2020, funding for higher education institutions was reduced by UAH 250 million, research spending was cut by UAH 400 million, funding for the New Ukrainian School project was reduced by UAH 361 million, and there will be a UAH 1 billion reduction for the school capable of better results.

Spending on many other social sectors has also been cut, in particular the Ministry of Culture will receive 50% of the planned expenditure, around UAH 7 billion, and the Institute of Books will receive only 34% of the planned expenditure.

CONCLUSION

In the context of limited budgetary resources, the task of building a market economy with a social orientation is of particular importance in order to improve the living standards of households. The issues of improving the living standards of households do not lose its relevance, since they are the most important component of the economy of a modern country. A significant drop in the material well-being of a large part of Ukraine's population has caused an intense economic stratification of society.

Thus, the problems of improving households' living standards are important today both for the citizens themselves and for the Ukrainian government. The strategic development priorities of Ukraine determine the need for state intervention and regulation of issues related to the improvement of living standards at the national, regional and territorial levels.

Having considered the aforementioned aspects of state social support, we can conclude that, despite the difficult situation in the country and the world, the state is conducting many social programs aimed at developing the social sphere and supporting the population. On the one hand, concern for the welfare of the entire population is a priority of government policy. On the other hand – given the particularities of the benefits and subsidies policy manifested in relation to a large number of citizens, and social payments and social sphere financing exceeding 40% of GDP, it is difficult to count on

adequate development of the production segment and to forecast investment growth from domestic sources.

A vicious circle emerges, when socio-economic policy is not aimed at creating conditions that allow economically active citizens to provide a decent standard of living through their own labour, but at freezing the existing condition, when a significant amount of budgetary resources is required to achieve a more or less acceptable standard of living not only for categories of the population who for objective reasons cannot support themselves and therefore need support (disabled, elderly people, large families, etc.), but also of the employable population, most of whom have become socially vulnerable in the current context.

In this regard, the priority of socio-economic policy should be to provide opportunities for the economically active population to increase their income on their own. Of course, it is necessary to support families that are in a difficult financial situation due to the presence of temporarily unemployed people of working age. At the same time, the policy should not generate social dependency – conditions should be created to enable its participants to move later on from being recipients of social assistance to being taxpayers.

SUMMARY

In the course of the research it was established that the state plays an important role in forming the standard of living of households. The purpose of the research is to reveal the role of the state in improving the standard of living of households and to analyse the current state of the level of state support for the population. The research reveals that the socio-economic development indicators of Ukraine directly affect the standard of living of households. When analysing the level of the Human Development Index, which is one of the main indicators of the standard of living of the population, it has been established that Ukraine occupies the 85th position in the ranking. Having compared the indicators of the leader of the ranking – Norway – with those of Ukraine, a large gap between the indicators of Norway and Ukraine was established; especially it is noticeable in the indicator "Expectation of life at birth". When analysing the poverty rate in Ukraine, it was found that the most vulnerable groups are children aged 0–17 and pensioners, 29.1 and 31.7 respectively, i. e. every third pensioner and every third child lives in poverty. A study of the state support for households in Ukraine found that about 30 categories of citizens receive social support from the state. The number of persons receiving benefits is almost one third of the total population of Ukraine. It is therefore very important that the state supports not only the socially vulnerable population, but also stimulates the productive sector of the economy.

REFERENCES

1. Advokatova, N. (2017). Faktory vplyvu mihratsiyi robochoyi syly Ukrayiny v umovakh yevropeyskoyi intehratsiyi [Factors influencing labor migration in Ukraine in the context of European integration]. *Ekonomichni innovatsiyi: Zbirnyk naukovykh prats*, 64, 12–17.

2. Borovik, L. (2018). Analiz vplyvu domohospodarstv naselennia na investytsiinu pryvablyvist haluzi [Analysis of the impact of households on the investment attractiveness of the industry]. *Problemy systemnoho pidkhodu v ekonomitsi*, 4(66), 33–38.

3. Chervona, S. (2020). COVID-19 ta yoho vplyv na riven zhyttia naselennia Ukrainy [COVID-19 and its impact on the living standards of the population of Ukraine]. *Stratehiia rozvytku Ukrainy: finansovo-ekonomichnyi ta humanitarnyi aspekty: materialy VII Mizhnarodnoi naukovo-praktychnoi konferentsii*. 400–403.

4. Derzhavne rehuliuvannia rivnia ta yakosti zhyttia naselennia [State regulation of the level and quality of life of the population]. (2020). *Biblioteka ekonomista*. URL: https://library.if.ua/book/72/5283.html

5. Hetman, A. & Boyko, L. (2019). Sotsialno-ekonomichni problemy silskykh zhinok na suchasnomu etapi [Socio-economic problems of rural women at the present stage]. *Ekonomichnyy rozvytok Ukrayiny v konteksti vprovadzhennya prohresyvnykh informatsiynykh tekhnolohiy ta system upravlinnya: materialy II Vseukr. nauk.-prakt. konf.*, Kyiv, 214–217.

6. Human Development Report. (2020). Electronic resources Retrieved, December 15, 2020. URL: http://hdr.undp.org/en/content/2020-human-development-report-next-frontier-human-development-and-anthropocene

7. Karnaushenko, A., Petrenko, V., Tanklevska, N., Borovik, L., & Furdak, M. (2020). Prospects of youth agricultural entrepreneurship in Ukraine. *Agricultural and Resource Economics: International Scientific E-Journal*, *6*(4), 90–117. https://doi.org/10.51599/are.2020.06.04.06

8. Mesto pod solntsem: Top-20 ekonomik mira [A place in the sun: Top 20 economies in the world] (2020). *Faktograf*. URL: https://www.factograph.info/a/30825544.html

9. Minimalna zarobitna plata [Minimum wage] (2020). *Minfin*. URL: https://index.minfin.com.ua/ua/labour/salary/min/

10. Reyting stran mira po urovnyu Valovogo vnutrennego produkta [Rating of countries in the world by the level of Gross Domestic Product] (2020). *Humanitarnyy portal*. URL: https://gtmarket.ru/ratings/rating-countries-gdp/rating-countries-gdp-info

11. Sotsialno-ekonomichne stanovyshche domohospodarstv Ukrayiny (za danymy vybirkovoho obstezhennya umov zhyttya domohospodarstv) [Socio-economic situation of households in Ukraine (according to a sample survey of living conditions of households)]. (2020). *State Statistics Service of Ukraine*.

URL: http://www.ukrstat.gov.ua/operativ/operativ2018/gdvdg/Arh_soc_ek_stan_dom.htm

12. Vytraty i resursy domohospodarstv Ukrainy (za danymy vybirkovoho obstezhennia umov zhyttia domohospodarstv Ukrainy) [Expenditures and resources of households in Ukraine (according to a sample survey of living conditions of households)] (2020). *State Statistics Service of Ukraine*. URL: http://www.ukrstat.gov.ua/operativ/operativ2018/gdvdg/Arh_vrdu_u.htm

Information about the authors:
Karnaushenko Alla Serhiivna,
PhD in Economics,
Senior Lecturer at the Department of Economics and Finance
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0003-1813-2792
Petrenko Viktoriia Serhiivna,
Doctor of Economic Sciences, Associate Professor,
Associate Professor at the Department of Finance,
Accounting and Entrepreneurship
Kherson State University
27, Universitetskaya str., Kherson, Ukraine, 73000
orcid.org/0000-0001-8336-7665

DOI https://doi.org/10.36059/978-966-397-239-8-11

THEORETICAL AND METHODOLOGICAL APPROACHES TO CONSTRUCTION OF SYSTEM RISK MANAGEMENT BY AGRICULTURAL SECTOR ENTERPRISES

Kyrychenko N. V.

INTRODUCTION

Currently, the agricultural sector has the most risky area of activity. The risks of agricultural enterprises are the subject of scientific research, as they have a huge impact not only on the activities of economic entities, but also on the food security of the state as a whole. Conditions for the functioning and development of agricultural enterprises are quite specific, which are not typical of other industries, it is dependent on natural conditions, seasonality of production, the complexity of innovation, regional, sectorial, functional, technological, organizational factors and features of living organisms in the production process[1]. It should be noted that mostly general principles of management of enterprises and production in conditions of uncertainty and risk are presented in the domestic and foreign economic literature. However, the conceptual and methodological foundations of identifying, analyzing and overcoming risks in the activities of agricultural enterprises are presented only in fragments. In the economic literature, insufficient attention is paid to the study of the methodological foundations of the risk management system in the agricultural sector, as well as modeling, forecasting and risk management, mostly research in this area relates to financial institutions. In this regard, there is an urgent need to define and develop a concept of risk management, which would take into account existing scientific advances, taking into account the specifics of the agricultural sector. In developing an effective methodological approach, it is also equally important to improve the classification of risks in agriculture for a better understanding of them. A sufficient number of scientific works of domestic and foreign scientists are devoted to the problems of determining economic risks and their classification. Among them are E. Altman, K. Baldin, K. Golovach, F. Knight, J. Keynes, L. Tepman, M. Tugan-Baranovsky, V. Khokhlov, J. Schumpeter and others. V. Ambrosov, R. Bilovol, M. Demyanenko, V. Grosul, I. Epifanova, O. Zaitseva, P. Makarenko, O. Tereshchenko and others devoted

[1] Tanklevska N.S. and Kyrychenko N.V. (2015), Aktyvizatsiia ta efektyvnist vprovadzhennia innovatsij ahrarnymy pidpryiemstvamy [Activation and efficiency of introduction of innovations by agrarian enterprises: monograph]. Hrin D.S. Kherson, Ukraine. 216 p.

their works to the study of theoretical and applied principles of risk management of enterprises. But so far, despite the significant number, thoroughness and complexity of research, some issues focused on the development of effective tools and mechanisms for predicting the risks of their classification in the operation and development of agricultural enterprises in the economic literature have not received unequivocal opinions. This is what led to the choice of tasks and objectives of this study, which consist in improved classification of risks and in-depth theoretical and methodological principles of identification, analysis and overcoming them in the agricultural sector.

1. Theoretical foundations and classification of risks of agricultural enterprises

The lack of unity in the interpretation of the essence of the concept of "risk of agricultural enterprises" makes it difficult to identify the crisis. According to O. Andrushko, this is mainly due to the fact that the crisis is a set of many crisis phenomena[2]. K. Tsapko emphasizes that "the crisis of the enterprise is an unplanned and undesirable, time-limited process that can significantly hinder or even prevent the operation of the enterprise"[3]. The crisis state of the enterprise evolves from manifestations of risk to the onset of crisis phenomena, which turn into a crisis situation and a state of risk and, in the absence of qualified management influence, ends with a critical point – bankruptcy. Manifestations of risk are deviations of actual performance indicators from the planned ones, which can cause significant changes in the functioning and condition of the enterprise. In turn, the crisis phenomenon is understood as the deterioration of certain indicators of the enterprise, which have a negative impact on the processes of its life and become a moment of exacerbation of contradictions that arise in the interaction of individual elements of the enterprise, both internally and externally[3]. If the destabilizing impact of external and internal factors of entrepreneurial activity intensifies (increase in number, increase their strength, especially for economic entities in the agricultural sector, which also depend on climatic and anthropogenic factors), and the risk management system does not have time to implement the necessary effective management decisions, the company begins to lose profits and sometimes property[4].

---

[2] Andrushko O.B. (2005), Analysis of models of diagnostics of crisis state and threat of bankruptcy of the enterprise. *Bulletin of the National University "Lviv Polytechnic": Collection of scientific works, Management and Entrepreneurship in Ukraine: Stages of Formation and Problems of Development.* № 547, P. 9–21

[3] Tsapko K.O. (2012), Research of scientific approaches to definition and an estimation of a crisis condition of the enterprise. *Development management.* № 2. P. 173–176.

[4] Babina N.O. (2014), Anti-crisis financial controlling as a factor of economic security of the enterprise. *Effective economics: electronic scientific professional publication*. № 5. URL: www.economy.nayka.com.ua

The main task of risk classification is to maximize the optimization of the presented information about risks as a basis for determining the use of certain methods and methods of managing them. To date, there is no general opinion on the selected features and principles of risk classification. They are mainly guided in their description by two principles: the specific content of each type and type of risk or the sphere of economic activity and their division into groups in order to manage them depending on the source and stage of occurrence and the possibility of using the method.

Risks by area of activity depending on the nature of the expected result are classified into two main groups: net and speculative. In turn, taking into account the relationship of risks, each group is divided into subgroups, species and varieties. This classification is necessary at the very beginning, at the stage of risk identification, as it represents a wide list of them and provides a basis for characterizing the possible consequences. However, despite the level of detail, it does not allow to identify and characterize all existing potential risks due to their inevitable duplication, which complicates the choice of general approach and method of management. And since the operating conditions of agricultural enterprises have specific features that are not inherent in other industries (depending on weather (climatic) conditions, seasonal nature, features of technology and specific means and forms of production), we believe that it is more appropriate to classify the risks of the agricultural sector dividing them into groups (Fig. 1).

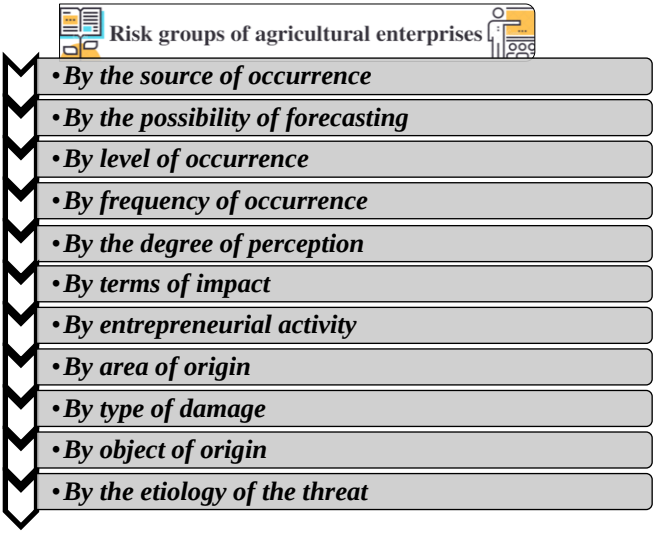


Fig. 1. Classification of risks of agricultural enterprises by groups

The results of the proposed classification approach indicate the possibility of creating an original method by which the company can independently group their own risks, based on relatively clear definitions of individual risk groups, conditions and specifics of their activities. The main component of this method is the practical distribution of risks of an individual enterprise according to its own management system. Based on this approach, when considering the risks of agricultural enterprises, we can identify eleven general groups, which in turn contain their own subgroups and can be grouped into separate categories (by area of activity of the enterprise). Thus, the group of risks identified by the terms of exposure can be divided into long-term, medium-term and short-term (single).

The classification feature of the division of business activities involves business and non-business risks, which indicates the differences between the types of activities that can be carried out by economic entities. Entrepreneurial risk is understood as the risk that arises as a result of financial and economic activities of the enterprise for profit, and in practice there are non-profit organizations (charitable foundations), which may also be affected by risk.

According to the degree of perception, the risks are divided into minimal (level of possible losses and negative consequences up to 20%), acceptable (possibility of losses up to 40%), unacceptable (characterized by the level of possible negative consequences up to 65–100%).

By the frequency risks are systemic (usually due to the system itself and the degree of their manifestation can't be reduced) and non-systemic (occur rarely and can be eliminated).

The level of risk also plays an important role in decisions about the choice of approaches and methods of managing them. According to this group, risks are divided into sectorial and intersectorail – depending on the field of activity, and in the agricultural sector can be divided into crop or livestock risks and operational (production) risks (micro level), regional (meso-level), state (macro level) and global.

According to the possibility of forecasting, risks can be divided into predictable (which can be predicted) and unpredictable (occur spontaneously due to force majeure).

According to the source, they depend on the factors of internal and external environment of the enterprise. In agriculture, it is also possible to identify risks that depend on the object of origin: crops grown and processed by the enterprise, the species of animals kept and the equipment and facilities of the agricultural enterprise. According to the etiology, the risks of the agricultural sector are classified into anthropogenic (depending on human impact) and natural (caused by natural forces).

The following risks are distinguished by type of losses:

1. Material risks – costs that arise under unforeseen circumstances of the project or production plans, additional or direct costs of property, equipment, energy and resources.

2. Labor risks – usually associated with the cost of working time, labor, etc.

3. Financial risks – associated with the receipt of monetary damage caused by unforeseen payments (payment of fines), or non-repayment of debts, or non-receipt of funds for products sold, and so on. They are directly related to the financial activities of the enterprise (working capital financing; raising financial resources; investment financing; accumulation of receivables; accounting or tax accounting; loan servicing; placement of free financial resources and profit distribution). For a more convenient classification of types of financial risks, we propose to summarize them and present them in groups: credit; liquidity risks; investment; tax; planning risks.

The broadest classification of risks includes grouping by area of origin.

It should be noted that the risks of agricultural enterprises are very specific and due to the conditions of their management. The classification of risks of agricultural enterprises has a sectorial color and at the same time combines the generally accepted types of risks that are inherent in any business entity.

The proposed classification can be adapted and restructured for each individual enterprise depending on the case or situation in which it is located. For each task, the classification of risk can have an independent solution, as the nature of the risk is accompanied first by the type of activity and has its own specifics, which determines the appropriateness of the presence in the classification system of certain features. Based on the above, we can conclude that the proposed classification may be of practical interest to economic entities and be used as a model to create their own qualification table taking into account the sectorial characteristics of agricultural production and become one of the tools for management decisions to build an effective risk system of management at the enterprise.

2. Methodical bases of construction of system of risk management at the enterprises of agrarian sector

Specific features of the functioning of agricultural enterprises cause the presence of a significant number of risks, which in turn with a certain probability lead to the emergence of certain circumstances that adversely affect the activities and results of the industry. Thus, the first stage of risk assessment is to build a model of the market situation and determine its elements. In a risk situation, there are three main components: factors that

affect the manifestation of risk, individual groups and types, and consequences of risks[5].

In order for businesses to be able to quickly build the risk management process of their enterprise and organize appropriate departments to build a long-term risk management strategy, we propose to build a risk management system of an agricultural enterprise, which is an algorithm for organizing the risk management process based on clearly presented nature of risks, the place of the risk management system in the overall management system of the enterprise, a set of available tools for risk management and understanding the specifics of agricultural production when considering risk management[6].

The proposed algorithm of integrated risk management contains five main stages:

1. Determining the feasibility of creating a risk management system (setting goals and objectives);
2. Identification of potential risks (information collection, classification and ranking of risks);
3. Risk assessment;
4. Selection and determination of methods of influence and coverage of risks;
5. Construction of a system for monitoring the effectiveness and adjustment of policies and procedures based on the results of monitoring (Fig. 2).

At the first stage of creating a risk management system it is necessary to first determine the feasibility of creating a risk management system, to determine the most suitable for the company type of system (centralized, decentralized, selective or complex), to form a budget for creating and using risk management system and identify its users. Effective implementation of the first stage will allow clearly formulating the requirements for the final product of the system, focusing on the most critical points and target orientation and saving resources.

The goals and objectives of risk management may vary depending on the type and specialization of the enterprise, but must be defined before the process of building systems begins.

Identification of potential risks is the second stage of the general algorithm of work with risks. This process includes: collecting information about the risks of the enterprise; formation of a tree (map) of enterprise risks; ranking of risks and their positioning within the enterprise, etc.

---

[5] Shamin D.V. (2020), The risk management system is a tool for the successful implementation of international megaprojects. *Strategic decisions and risk management*. Vol. 11(1), P. 98–103.

[6] Vasilenko V.A. (2005), Diagnostic system for sustainable development of enterprises. Culture of the peoples of the Black Sea region. № 66. P. 7–16.

Fig. 2 Algorithm for construction and operation of the risk management system of an agricultural enterprise

Thus, according to the results of research presented in the previous section, we proposed an original approach by which the company can independently classify its own risks, based on relatively clear definitions of risk groups and the specifics of activities. The main element of this approach is the practical distribution of risks in the further direction of their management, i. e. the binding of the risk classifier to its own risk management system.

Based on the proposed method of classifying risks by groups, we concluded that for easier identification and overcoming those risks by agricultural enterprises they should also be summarized in separate categories, and we surveyed more than 115 respondents from among agricultural professionals, representatives of medium and small business, as well as teachers of the Agricultural University. As a result of the expert assessment questionnaire, five generalized categories of risks and their consequences were identified (Table 1).

Table 1

Expert risk assessment of agricultural enterprises

Risk category	Consequences
1	2
Natural and climatic risks: *(agrometeorological events; hydrogeological emergencies; animal diseases; plant diseases and lesions)*	Negative impact on the economic performance of agricultural enterprises and reducing the investment attractiveness of the industry; damage, loss of property as a result of a natural disaster; damage, death of crops or animals as a result of natural factors or epidemics; forced downtime or interruption of production due to natural factors, etc.
Operational risks: *(production risks; logistics or transport risks; environmental risks; liability risks; technological risks)*	Forced downtime or interruption of production activities due to production factors; damage or loss of the possibility of restoration of agricultural machinery; increase in production costs; increase in unit cost; unstable crop yields; industrial safety and labor protection; risks associated with the modernization of production and innovation; damage or loss during transportation of goods; environmental pollution; reduction of soil fertility; increasing the level of responsibility (financial sanctions), etc.
Financial risks: *credit risks; investment risks; tax risks; planning risks; liquidity risks)*	Negative impact on the financial support of business structures; risk of loss of competitiveness; reduction of investments in fixed assets and technologies; lack of funds to cover liabilities; errors in accounting and tax accounting; non-fulfillment of the revenue budget; exaggeration of current expenditures over budget ones, etc.

Table 1 (ending)

1	2
General business (Business risks): *(strategic risks; commercial risks; legal risks; personnel risks; information risks; political risks)*	Decreased profitability; gradual capture of market share by competitors; aging processes; lack of production capacity; stagnation of the industry due to lack of highly qualified personnel; reduction of the total rural population; abuse of office, theft and fraud; loss of important information and essential databases; lack of information support for decision-making; negative actions of competitors, etc.
Market risks: *(risks of changes in the value of agricultural products; risks of changes in the value of materials, fuel, raw materials, etc.; risks of changes in the value of tariffs; interest rate risks; currency risks)*	Negative impact of changes in the cost of products, materials, tariffs on the economic and financial results of agricultural enterprises; increase in interest expenses on floating interest rate loans; long-term increase in interest rates; increase of operational currency risks, etc.

The above data show that natural and climatic risks and related adverse natural factors have a significant impact on the results of entrepreneurial activity in the agricultural sector. The main sources of climatic risks are adverse agrometeorological conditions (drought, frost, excessive rainfall, etc.), natural fires of all kinds, hydrological emergencies (floods, groundwater levels), infectious diseases of animals and plants. The stable influence of adverse natural and climatic factors has a negative impact on the production and economic performance of business structures of the agricultural sector and affects the investment attractiveness of the industry.

Operational risks are the risks of direct or indirect damage as a result of inadequate or ineffectively constructed production processes and systems, as well as the occurrence of catastrophic events related to the main production activities of the enterprise, i.e. the risks associated with the production activities of the organization and its software. We have identified the main operational processes of agricultural enterprises:

1) production and technological process (processing and production of finished products, cultivation of crop and livestock products, tillage, etc.);

2) the process of supplying raw materials (ensuring the production process);

3) logistics or transport processes;

4) processes of impact on the environment (internal and external), including the responsibility of enterprises to contractors and the environment.

Financial risks[7]include a wide range of risks (credit, tax, liquidity and planning risks, investment, etc.), this category is very significant for all industries, especially for the agricultural sector, these risks mostly have a negative impact on business support and may contribute to loss of competitiveness. It is advisable to pay special attention to investment risks, they provide for the possibility of deterioration of the financial position of the enterprise due to insufficient investment. Some agricultural enterprises have a shortage of financial resources, which in turn affects the ability to develop and improve production. Systematic financing of the investment process should consist in the organic unity of sources of financing of investment activities and investment methods. The methods of investment include: budget, credit, self-financing, as well as combined. The main sources of funding for enterprises in the agricultural sector are own funds, which can include retained earnings, depreciation and regional and state budgets. By attracting borrowed capital, companies increase investment risks. During the implementation of investment projects there may always be costs or force majeure. In addition, using borrowed funding sources, the company bears additional risks associated with debt service, which also increases the investment risk. One way to manage investment risk is to properly assess the most effective way to build up fixed assets, while assessing the conditions under which they are attracted and the cost associated with that financing. It is necessary to compare the net discounted income of the enterprise with different methods of financing.

In today's market, a huge threat and at the same time the greatest opportunities are corporate or business risks[8]. They are related to doing business. Depending on the specifics of the enterprise, the composition of these risks can be huge. The main negative consequences of this category include: reduced profitability, gradual seizure of market share by competitors, aging processes, lack of production capacity, stagnation of the industry due to low innovation and lack of highly qualified personnel, abuse of office, embezzlement and fraud, loss of important information and essential databases, lack of information support for decision-making and negative actions of competitors. Particular attention should be paid in this category to strategic risks that are manifested in the activities of enterprises and associated with the implementation of the strategy[9]. Strategic risks can

[7] Demianenko M. Ya. (2010), "Financial crisis in the agrarian sector of the agro-industrial complex", Ekonomichni nauky. Ceriia Oblik i finansy. vol. 7 (1), pp. 408–414.

[8] Granaturov V.M. and Litovchenko I.V. (2005), Upravlenie predprinimatelskimi riskami: voprosy teorii i praktiki [Business risk management: theory and practice]. MUP Jeven. Odessa. Ukraine.

[9] Klymenko S.M. and Dubrova O.S. (2005), Obhruntuvannia hospodarskykh rishen ta otsinka ryzykiv : navch. posib. [Establishment of state solutions and assessment of risiks]. KNEU. Kyiv. Ukraine.

be divided into types: industry, technology, brand, competitive, customer, project, innovative, etc.

Respondents paid special attention to market risks, as they believe that they have a significant impact on the activities of enterprises, as they pose a threat associated with fluctuations in market factors, such as changes in the cost of raw materials or finished products, fuels, tariffs, adverse changes exchange rates or interest rates, etc.

The third stage of the algorithm for building a risk management system is their assessment. The study showed that in the modern economic literature there is a fairly wide range of methods for assessing individual risks, but for the most part they are usually focused on the activities of financial institutions. In particular, there are qualitative and quantitative methods of risk assessment.

Qualitative risk analysis is considered the most difficult stage of assessment, as it involves a wide range of general issues on which to find sources and causes of risk, identify and identify areas and types of risk, determine the practical benefits and possible negative consequences of work, processes or projects. Qualitative assessment, in most cases, focuses on the process of risk, which requires a rapid response. This risk assessment allows you to determine the degree of importance of the risk and choose ways to respond to it. Thanks to the existing information, it is possible to set priorities quickly and efficiently for different risk categories. Qualitative risk assessment of the organization can be carried out in the following areas: the nature of the business; due to the analysis of the external environment; management quality analysis; nature of activity; stability of work; stability of the financial condition of the enterprise[10], etc.

Basically, qualitative risk analysis is conducted in two stages, according to which:

1. The expected positive results and possible negative consequences are compared.

2. The influence of the decisions made at the stage of strategy development is determined and the subjects for whom the occurrence of this or that risk will be beneficial are determined.

In practice, expert methods based on a subjective assessment of the expected parameters of activity are most often used for qualitative risk assessment. The most common method is the method of expert assessments, which provides the necessary information about the risks of the enterprise. This method is used in the analysis of problems that can't be formalized, due to lack of reliable information that would allow the use of more accurate and clear methods of assessing the level of risk.

[10] Makarenko I.O. (2005), "Algorithm for anti-crisis management of an enterprise". Aktualni problemy ekonomiky, vol. 3, pp. 104–109.

As for quantitative methods, they involve risk assessment in absolute and relative terms. In absolute terms, the risk is measured by the frequency or size of possible losses in monetary terms. The most universal and common quantitative methods of risk analysis include: the method of expert assessments, the method of analogies, the decision tree method, statistical, analytical, rating methods and more. As a rule, in practice, several risk assessment methods are used to select the most optimal and acceptable option.

Conventionally, all the most commonly used techniques can be grouped into three categories:

1. Statistical – based on the analysis of statistical data using economic and mathematical modeling, mathematical statistics and probability theory. They are characterized by high accuracy of calculations, the ability to simulate different scenarios, but involve significant costs for obtaining information and analysis. And there is a possibility of risk in determining the adequacy of the selected model. In practice, it is most often used in the analysis of market and investment risks.

2. Analytical – based on the collection and objective analysis of information and decisions, based on a comprehensive analysis of both quantitative and qualitative indicators. They are characterized by the possibility of an individual set of indicators for analysis, are widely used, and allow achieving an objective assessment at a low cost, but due to a certain subjectivity of assessments, it is not always possible to measure some indicators. These methods are often used in the analysis of credit, operational and investment risks.

3. Experts – based on subjective analysis of quantitative characteristics using methodologies for ranking and comparing estimates. They have a fairly low cost and speed of results, do not require the collection of a huge amount of information. These methods still have a number of disadvantages, as they are highly dependent on the human factor (professional competence of the expert) and the difficulty of obtaining and calculating financial risk. Used in risk audit of production risks, in the compilation of risk maps and selected priorities.

The choice of methodology, tools and scope is determined by the tasks facing the expert who reviews the overall risk management strategy, as well as plans the budget for the risk management infrastructure.

At the fourth stage of our proposed algorithm of the risk management system of the agricultural enterprise, it is planned to choose the method of covering risks or influencing them and creating conditions for the development of a system for monitoring the effectiveness of risk management. Despite the large number of risk mitigation methods and tools that can be used, there are four main solutions in this area. Within the framework of these decisions, variations in the choice of instruments, degree of influence, etc. are

possible, but in principle, when analyzing the risks, the manager must make the primary choice from the proposed positions.

1. Risk avoidance – the refusal of certain actions or decisions that are characterized by a high degree of risk.
2. Risk control and prevention – retention of risk with active influence on it by the enterprise, which is aimed at reducing the likelihood of risk or reducing the potential loss from the risk.
3. Risk conservation – used in cases where the level of risk is at an acceptable level, and the impact on it is not possible or economically unprofitable.
4. Transfer of risk – involves the transfer of risk to third parties in cases where the impact on it is not possible or economically unprofitable, and the level of risk exceeds the allowable level. Risk transfer is most often carried out through insurance, as well as through financial markets in the case of hedging, or through contractual arrangements.

The fifth final stage of the risk management process is the construction of a system for monitoring the effectiveness of management and adjusting policies and procedures based on the results of monitoring. The main objectives of this stage are to monitor the implementation of the decision on the impact on risk; control of changes in risk assessment and adjustment of risk impact methods; control of changes in the environment; monitoring the effectiveness of the risk impact process (assessment of risk reduction and the effectiveness of its financing) and adjusting the procedures and tools used; identification of new risks.

Within the framework of the proposed methodology, we pay great attention to the organizational aspects of building a risk management system of an agricultural enterprise, the timeliness of the organization of a structural unit for risk management. The analysis of the experience of agricultural enterprises has shown the urgent need and importance of organizing a decision-making system within the business entity on the basis of the proposed five-step algorithm for building an effective risk management system.

CONCLUSIONS

The agricultural sector is one of the most risky, so the economic activity of agricultural enterprises is always at risk due to specific operating conditions. Usually, managers of agricultural enterprises are reluctant to make decisions in risky situations, except when there is a likelihood of receiving certain income. As a rule, high income is directly associated with high risks. Therefore, there is a need (as far as possible) to manage risky situations that can be profitable. Risk management is a set of certain methods, techniques and measures used to identify, assess and, if necessary, influence the risks in order to reduce losses or increase profits. Entrepreneurs, risk managers,

insurance specialists and other stakeholders can use various techniques and methods of management to exercise targeted influence on the objects of management (risks). At the same time, there is an urgent need for systematization and classification of risks by groups and improved methodological principles for identifying, analyzing and overcoming them in the agricultural sector.

The analysis of different approaches to the systematization and classification of risks and the effectiveness of their management allowed us to propose an original approach by which agricultural enterprises can independently classify their own risks, based on relatively clear definitions of risk groups and specifics. The main element of this approach is the practical distribution of risks in the further direction of management, ie the binding of the risk classifier to their own management system. Thus, eleven general and specific risk groups were identified, which are specific only to the agricultural sector.

Based on the proposed method of classifying risks by groups, we came to the conclusion that for more convenient identification and overcoming by agricultural enterprises, they should also be summarized in separate categories. According to expert surveys, the five most important risk categories for the agricultural sector and their consequences were identified. These included: 1) natural and climatic risks; 2) financial risks; 3) operational risks; 4) general business (business risks); 5) market risks.

Studies have shown that a well-established risk management system in the enterprise allows you to identify potentially possible situations associated with undesirable developments; obtain characteristics of possible losses (losses) or lost opportunities associated with adverse developments; take into account in decision-making significant organizational efforts, time and costs associated with risk assessment and rational impact on its level.

In order for businesses to be able to quickly build the risk management process of their enterprise and organize appropriate departments to build a long-term risk management strategy, we have proposed a risk management system for agricultural enterprises, which is an algorithm for organizing risk management process taking into account the specifics of agricultural production.

The proposed integrated risk management algorithm contains five main stages. At the first stage of the algorithm, it is proposed to determine the feasibility of creating a risk management system (set the goal, objectives, type of system, calculate the budget, etc.). The second stage involves identifying potential risks (collecting information about the risks of their classification and ranking). In the third stage, it is proposed to evaluate them. The importance of this stage, in our opinion, is characterized by the fact that the measures taken during it allow to obtain a certain result of both quantitative

and qualitative nature, which will further affect the choice of methods of risk exposure and ultimately the effectiveness of the risk process. The assessment itself should be performed on the basis of the goals and information received, therefore, depends on the correctness of these actions. Thus, risk assessment occupies one of the key places in the risk management process and has a clear relationship with other stages of the process. Risk assessment at any agricultural enterprise can be performed according to its own methodology.

During the implementation of the fourth stage, the selection and determination of methods of impact and risk coverage is carried out. The last stage of the enterprise risk management algorithm requires the construction of a monitoring system to monitor the implementation of decisions, methods of influencing and adjusting risks, procedures and tools used, analysis of financing efficiency, and so on.

SUMMARY

The study examines the components of risk in the agricultural sector of the Ukrainian economy. The conceptual apparatus of the chosen topic is thoroughly analyzed. An original approach to the classification of risks, taking into account the specific conditions of agricultural enterprises, is proposed, which provides for the classification by groups and the most significant categories of risks for agricultural enterprises. The main element of this approach is the practical distribution of risks for further areas of their management, that is, linking the risk classifier to its own management system.

A methodology for organizing a decision-making system within an economic entity is proposed on the basis of a five-stage algorithm for constructing an effective risk management system. Within the framework of this methodology, considerable attention is paid to the organizational aspects of building a risk management system for an agricultural enterprise, guidelines are given for organizing a structural unit for risk management.

REFERENCES

1. Tanklevska N.S. and Kyrychenko N.V. (2015), *Aktyvizatsiia ta efektyvnist vprovadzhennia innovatsij ahrarnymy pidpryiemstvamy* [Activation and efficiency of introduction of innovations by agrarian enterprises: monograph]. Hrin D.S. Kherson, Ukraine. 216 p.

2. Andrushko O.B. Analysis of models of diagnostics of crisis state and threat of bankruptcy of the enterprise. *Bulletin of the National University "Lviv Polytechnic": Collection of scientific works, Management and Entrepreneurship in Ukraine: Stages of Formation and Problems of Development.* № 547. 2005. P. 9–21

2. Tsapko K.O. Research of scientific approaches to definition and an estimation of a crisis condition of the enterprise. Development management. № 2. 2012. P. 173–176.

3. Babina N.O. Anti-crisis financial controlling as a factor in ensuring the economic security of the enterprise. *Effective economics: electronic scientific professional publication*. №5. 2014. URL: www.economy.nayka.com.ua

4. Shamin D.V. (2020), The risk management system is a tool for the successful implementation of international megaprojects. *Strategic decisions and risk management*. Vol. 11(1), P. 98–103.

5. Vasilenko V.A. (2005), Diagnostic system for sustainable development of enterprises. *Culture of the peoples of the Black Sea region*. № 66. P. 7–16.

6. Demianenko M. Ya. (2010), "Financial crisis in the agrarian sector of the agro-industrial complex*", Ekonomichni nauky. Ceriia Oblik i finansy*. Vol. 7 (1), pp. 408–414

7. Granaturov V.M. and Litovchenko I.V. (2005), Upravlenie pred-prinimatelskimi riskami: voprosy teorii i praktiki [Business risk management: theory and practice]. MUP Jeven. Odessa. Ukraine.

8. Klymenko S.M. and Dubrova O.S. (2005), Obhruntuvannia hospodarskykh rishen ta otsinka ryzykiv: navch.posib. [Establishment of state solutions and assessment of risiks]. KNEU. Kyiv. Ukraine.

9. Makarenko I. O. (2005), "Algorithm for anti-crisis management of an enterprise". *Aktualni problemy ekonomiky*, vol. 3, pp. 104–109.

Information about the author:
Kyrychenko Natalia Valeriivna,
PhD in Economics,
Associate Professor at the Department of Management
and Information Technologies
Kherson State Agrarian and Economic University
23, Stritenska str., Kherson, Ukraine, 73006
orcid.org/0000-0003-1721-258X

DOI https://doi.org/10.36059/978-966-397-239-8-12

BUILDING CULTURAL COMPETENCE OF FUTURE ECONOMISTS BY INTRODUCING INTERACTIVE TEACHING METHODS

Varnavska I. V.

INTRODUCTION

In the conditions of integration and globalization of Ukraine, the professional training of future specialists of economics in educational institutions of all levels acquires professional training. According to the Concept for development of the digital economy and society for 2018–2020 in Ukraine, the main tasks at all levels of higher economic education need to be revised not only in terms of developing digital competences of future specialists – the ability to use the latest technologies in further professional activities, but also the formation of their key competences, that will ensure continuing personal and professional growth, their effective social adaptation, high-quality professional development and life activities in general, competitiveness in the world labour market.

One of the key competences, the formation of which, under the basic normative documents (the Laws of Ukraine "On Education", "On Higher Education", Resolution of the Cabinet of Ministers "On approval of the National Qualifications Framework", Recommendations of the European Parliament and the Council of Europe on the Formation of Key Competences for Lifelong Learning), is an educational priority, a certain cultural competence as the ability of a person to reflect on his/her activities, effectively manage time and social information, work with others in a constructive direction.

Consequently, the problem of developing the cultural competence of future economists in the process of training becomes particularly acute, because it determines the ability of a specialist to work in a team, interact effectively in a digital society, achieve the goals set, make decisions, design their own social, personal and professional growth, respond constructively to stress, etc.

Cultural competence is an integral quality of a person, which manifests itself in the general ability and capacity of a person for a variety of activities, socially orientates a person towards independent and successful life activities. The assessment of cultural competence is based on a set of pedagogical approaches – normative, competence-based, personal, technological.

The principles of cultural competence assessment are integrity, dynamism, continuity, informativeness, cyclicality, consistency, effectiveness. The main directions of competence assessment are activities for the identification of a)

competences related to an individual as a personality, subject of activity and communication; b) competences relating to the social interaction of a person and social environment; c) competences relating to a person activity. The assessment technology includes some components: a goal that takes into account a large number of indicators of the assessed object; an output object (cultural competence), described through a set of defined characteristics; a sequence of assessment operations described in the form of a flow chart; assessment tools (incoming, intermediate, final diagnostics); feedback.

1. Innovative components of building cultural competence of future economists

The formation of the cultural competence of future economists is complicated when applying traditional forms for educational institutions and methods of training, which are mainly focused on knowledge, without context, which are directed to passive memorization of the material, and do not cause any emotions. Results of analysis of scientific researches on the problem of professional training of future specialists in educational institutions in general (Pometun O.I.[1], Komar O.A.[2], etc.) and the formation of the social competence of a personality enables that the methods of successful formation of cultural competence of future economists in the learning process should meet the following modern requirements, as to be:

– competence-based in nature, i.e. meeting all the principles of the competence-based approach in education;

– effective in terms of the set educational objectives, i.e. those that ensure the achievement of program learning outcomes defined by the standards of higher education speciality and institution of higher education;

– contextual, professionally-oriented, reflecting the realities of future economic activities;

– developing, such as activating self-development and self-organization processes of an applicant, his learning and professional motivation and reflection;

– complex, such as those, which are aimed at future specialists' gaining necessary professional knowledge and skills, as well as acquiring professional experience;

– universal, such that can be used in the process of professional training of students of different economic specialities.

[1] Pometun O.I., Pirozhenko, L.V. (2002) *Interactive Learning Technologies: Theory, Practice, Experience*. Kyiv : NAPN, 2002.

[2] Komar O.A. Interactive technologies in Higher Studying Institutions. URL: http://dspace.udpu.org.ua:8080/jspui/bitstream/6789/375/1/interaktuvni_tehn_vnz.pdf.

Unfortunately, social orientation as a modern requirement for the learning process is not traceable.

Among such innovative (contrary to traditional) methods that correspond to the above-mentioned requirements, in our opinion, interactive teaching methods occupy a special place.

Such training effectively contributes to the formation of professional values, skills and abilities, creates an atmosphere of cooperation, interaction, allows applicants to master socio-professional norms and models of social interaction.

The purpose of using teaching methods in the training of applicants is to provide a comfortable psychological and pedagogical environment that contributes to better and more effective preparation for future activities, the formation of skills necessary and sufficient for solving professional problems, the development of critical thinking and the formation of a personality.

According to A. Verbitsky[3], interactive forms and methods can stimulate students' interest in learning and knowledge, since they help to solve some tasks that are not always possible during traditional training. This concerns the formation of not only cognitive, but also professional motives and interests; the upbringing of systemic critical thinking of specialists, which consists in a holistic sense, firstly, nature and society, and, secondly, more important, itself, its place in the world; to give a holistic idea of professional activity and its separate fragments; to teach collective mental and practical work, to develop the ability and skills of social interaction and communication, and supported decision-making, etc.

Based on the research of L.V. Pirozhenko, O.I. Pometun[4], all teaching methods used in the process of forming the social competence of future economists are divided into the following types: 1) by the number of participants in direct interaction: cooperative (group, paired) and frontal; 2) by the learner-content interaction – game, learning discussions (debating) and project.

Among the cooperative teaching methods most effective for forming the cultural competence of future economists, in our opinion, there is a method for analyzing socio-professional problem situations (methods of socio-professional incidents). Its feature is the use of the "dilemma-based approach", that is, the social and professional dilemma for analyzing and finding ways to solve them.

---

[3] Hura O.I. (2006) Psychological and pedagogical competence of the higher educational establishment teacher: theoretical and methodological aspect : monograph. Zaporizhzhia : GU "ZIDMU", 332 p. [in Ukrainian].

[4] Pometun O.I., Pirozhenko L.V. (2004) Modern lesson. Interactive Learning Technologies. Kyiv, ASK Publ. 192 p.

Here is an example, within a special course "Cultural competence of future economists" on practical classes claimed to analyze and solve such relevant social and professional dilemmas as:

What is it that exceeding power and can give it some higher dignity? *It is a component that exceeds power, and we call it authority. Authority is the control we submit to, not just out of sheer (visible or hidden) but through the voluntary recognition.* The submission to authority is already a moment of positive appreciation, which is not the case in submitting to mere power.

I do obey power because I cannot disobey it. I can rebel against authority, and if I do obey it because I believe it belongs to me to obey it. So I accept a certain attitude or I obey a certain team that this attitude or this team is expressed by a person I respect, whom I generally believe, whose value I generally recognise. Therefore there is already a moment of voluntariness or will. But on the other hand, there is no true freedom here: I still obey here with someone else's view and someone else's word, taking it to faith as some of the outside given to me. It is impossible not to obey power.

It is worthwhile to obey any word because it is expressed by a person who enjoys my recognition. But even more worthy to obey the same word because I, giving it my consideration, recognized it correct.

Subordination to one's mind and the consistency of one's activities are the highest degrees of subordination or autonomy. Power – authority – mind in the broadest sense of this word, includes science, art and morality – these are the degrees of control and subordination that carry out an increasing degree of freedom and personality. Only a personality, that is, a being who treats himself and those around him critically, can achieve the highest degree of subordination – subordination of the mind as a considerably personal beginning. Subordination of the mind, as the highest form of subordination, does not diminish the importance of authority. Existence, absolutely rejecting authority, would be truly impossible. One can have political views and be critical of the law and the courts, but to reject the authority of the legislator and the courts altogether would be to reject the right itself. It is possible to have own scientific beliefs, but to reject the authority of another scientist altogether, to disregard someone else's word without verifying its correctness would be to make scientific work extremely difficult, to scatter work on trifles, not to get to the most important and essential. Subordination of authority is harmful when authority is the highest authority. However, since in general, the mechanism is useful, as a component of liberty, so far and subordination of authority is useful if it is in the service in the service, which personality ultimately subordinate.

If the directly increased power of authority is the control of authority, then how should we understand the rule of organisation of power we have established: namely, the power which surrounds the child must be organised so that future

authority can be observed in it? A few well-known examples easily explain this statement. When we demand one thing from children and act differently ourselves, it is obvious that the force with which we force them to do so and not otherwise will be "naked force" for them: if our demands can be violated by elders and even by ourselves, why can't they be violated by children? *Only when the teams of elders are steadily obeyed by those around us, when they are not mere orders and words but an objective reality, invariably and always repeated, which can even be imagined differently, as one cannot imagine the nature that surrounds us – the teams will not be something merely due, but a kind of formulation of what exists.* This is the basis of the value of example and imitation with the steady precision of the routines of life. If today I forbid something and tomorrow I allow the same if one child is allowed what another is forbidden, then again, the team and prohibitions will be for the child "naked force", the arbitrariness of the strongest – there will be no proper regularity or authority in them. Conversely: authority must be submitted in the form of an immutable natural need. "Allow to accept with pleasure," Rousseau says – *refuse* versus reluctance. However, let all your refusals be final, let nothing sweat them. Let no, once said, will be solid as iron, which a child, exhausting several times his power, will not continue trying to go in court." The sequence in action includes a sequence in words provided by truthfulness in attitude towards children[5].

The students in pairs and groups analyzed (following the example of the discussion method) situations in terms of "pros" and "cons" at three levels (aspects) of the problem corresponding to the levels of the social competence functioning: personal (from the position of certain people), educational-professional (from the position of social-professional and educational-professional interests, economic directions of organizations and enterprises) and the social itself (from the position of the state and society). After that, they can provide possible solutions.

The accent has been made on the fact that in the process of problem situation processing the analysis had general stages of its solution: 1) definition of a problem situation; 2) realization of a problem situation; 3) search for a problem solution; 4) decision-making; prediction of possible consequences and prevention of possible next problems. Observation of work in groups has proved that this specified "movement" contributes to the formation of metacognitive and reflective skills of future economists, motivates their social and professional self-development.

In turn, a method of situational analysis, aimed at forming skills to analyze social information, to make decisions on itself, to design their activities and

[5] Hessen S.I. (1995) Fundamentals of pedagogy: Introduction *to* the applied philosophy: manual. Moscow : Shkola Press. P. 233.

development, to predict the process and the result of social, educational and professional interaction. After its development, the decision provided for a meaningful description of the situation at the following stages:

1) preparatory – a clear definition of the situation, the formulation of the goals of its solution;

2) procedural, which contains: analysis of information provided in a content description, searching analogues, preparation of analytical inspection of information; Analysis of strengths and weaknesses (according to SWOT analysis method: strong (Strengths) and weak (Weaknesses) of the situation, opportunities (Opportunities), opened in various ways of developing the situation, and threats (Threats) associated with their implementation); development of scenarios for a possible deployment of the situation (according to the methods of brainstorming, schematization of events, etc.) of the expert forecast of changes in factors and indexes characterizing the situation presented in the form of the most likely scenarios of its development; general assessment of the situation to achieve the goal, generation of decisions; processing data according to various decisions, coordination of thoughts of various experts;

3) final – decision-making and presentation of the decision.

The content of such situations, which were subjected to situational analysis, has been important for the formation of cultural competence of future economists, besides the process of "movement" itself according to the above-mentioned stages, providing development of both metacognitive and behavioural and regulatory and reflexive and social interaction skills. They were intended to provide the formation of appropriate social knowledge – social awareness and social identity – and to be contextual and socially and personally relevant. Therefore, the situations provided for situational analysis were based on the principle of the influence diversity, i.e. they were aimed at three levels of the social competence functioning: personal, educational-professional and social itself.

Here is an example, the students were presented with this situation:

The Pedagogical Council decided to introduce a dress code for students and to introduce fines for violating it (working off socially useful work) because last year the appearance of students has become unacceptable in the opinion of teachers: students come in shorts and flip-flops to classes and exams, students sit in sports uniforms after training and PE in lectures, they wear camouflage clothes, jeans down, in classrooms, they keep their hoods and caps on, female students wear miniskirts and deep necklines. The way out of this situation, from the teachers' point of view, is to introduce a dress code for students.

The students in the groups analysed this situation with the above-mentioned stages. In doing so, each group received additional information about the essence and the socially personal meaning of a dress code:

– dress code (from Eng. – dress code) is an unwritten rule, a regulation in dress indicating a person's belonging to a certain professional or social group; it is a language by which a person sends certain signals to others; it depends on the activity, age, gender, religion, hygiene requirements, etc;

– clothing is a "social marker" of society, providing ready-made behaviour patterns (a leader, an elderly person, a pregnant woman, a clergy member, etc.).

Psychologists have proven that only 7% of information about a person is verbal information, which is perceived in the first 30 seconds, 30 seconds is an impression of the person with whom we communicate at a subconscious level, 38% is appearance, 50% is facial expressions, intonation, gestures; there are different styles of dress – free, business, strict dress code; a dress code is a great potential for those who want to learn to use appearance as an additional tool for communication.

Considering that one of the teaching methods of forming students' cultural competence is the method of social interview, students were given tasks in groups, which consisted in getting a semi-structured interview on a certain topic (for example, "white salary is an advantage for a person, enterprise, country, society", "social responsibility – how I understand it", etc.), which required to develop an interview structure, choose interviewers and present possible employers the economic efficiency of future work. During the training social interview, students learned how to formulate questions, prepared in advance, recorded possible answers, formulated situational questions, and chose the right strategy and tactics to conduct the interview.

Based on the fact that frontal teaching methods involve the entire student body working together to discuss a particular problem and find ways of solving it. Among the most effective methods that can be used to develop cultural competence are the following:

"*Microphone*" (each applicant has been allowed the opportunity to express his/her opinion on a certain problematic topic or unfinished sentence); such topics are: "in a difficult life situation I …", "in my opinion, social institutions …", "in social laws, I am surprised by …", etc;

"Brainstorming", based on some psychological and pedagogical patterns, involves collective discussion, search for solutions, encouraging participants to interact through free expression of opinions to solve the tasks at hand. Observation of students showed that the use of brainstorming facilitates the development of students' oral speech, communicative and regulatory skills; it encourages them to actively search for the best options to express their views on the task at hand. The prerequisites of the method were adhered to, e. g. limited time for thinking about tasks, the prohibition of criticism, involving all students in the process, recording all ideas and assumptions for further discussion and synthesis;

"*Teaching-to-learn*", which involved introducing each other to meaningful information contained in cards prepared in advance by the teacher or by themselves on a particular problematic topic.

For example, information blocks were suggested on such problematic issues as "Cultural identity of modern Ukrainian youth", "Social mobility", "Moral and ethical and professional norms", "Culture of manager's behaviour", etc.;

"Jigsaw", which is based on the interaction of students in two types of groups – home and expert and, accordingly, mastering two types of roles – an equal member of the homegroup who gathers and analyses information and an expert who presents and justifies information at expert level to both other experts and homegroup members.

Here is an example, with this interactive teaching method, students determined the characteristic features of such phenomena as "professional competence", "life competence", "personal competence", "social competence", "civic competence". The student group is united by a random method in four groups (homegroups). Each group received a task using the Venn diagram to determine the common and special characteristics of such phenomena as:

1) professional competence and social competence;
2) life competence and social competence;
3) personal competence and social competence;
4) social competence and civic competence.

After working in "homegroups", the students dispersed to the expert groups, leaving one of them in their homegroup to record the expert opinion. After working in the expert groups, the students returned to their homegroups, made corrections to the diagrams and, after appropriate preparation, presented a group vision of the general and special (specific) characteristics of the above phenomena. The specified method provided, first of all, the formation of such skills as social interaction (possession of means of verbal and nonverbal communication, mechanisms of mutual understanding, ability to work in a team, ability to negotiate, ability to carry out collective creativity) regulatory skills (realization of regulation of own emotional state in situations of social interaction, ability to regulate emotional state in a stress situation, manage own social activity; to assert their position; ability to enter the state of others, to put oneself in the place of another) and reflexive skills (critical analysis of one's actions, deeds, actions and deeds of others, determination of the level of one's social competence, mechanisms of its development). Besides, it provided the actualization of knowledge about the essence of the social competence, its structure and mechanisms of development, reproduction of a situation of various social information reception, the necessity of critical attitude to it (at the reception of false information from an expert group which does not correspond to the information of a homegroup).

Several interactive game-based methods use business games, role-playing games and imitation games. Their application goal is to train collective thinking and practical work, to form skills and abilities of social interaction, individual and collective decision-making. Students independently chose their role in the game; made an assumption about the probable development of events, created a problem situation, looked for ways of its solution, taking responsibility for the chosen decision. The teacher in the game model acted as an instructor (acquaintance with the rules of the game, consultations during the game), a referee (correction and advice on role distribution), a trainer (hints to students to speed up the game), a presiding officer and a game master (organizer of discussion).

We have noticed that game methods are important for the formation of cultural competence of future economists because they provided not only the successful formation of social, moral and ethical knowledge at all levels but also provided an opportunity to acquire social skills, to practice them in various simulated situations, to master the experience of real social interaction, to try on various social roles, to actualize important personal and professional qualities of students of all groups[6].

The main feature of game-based methods is the presence of role interaction, which structures the group; the role assigns to each participant of the game a certain position in the group, stipulated by the function. The role in the game is not only the sum of functions, but also of patterns of behaviour, and the participants in the game form a certain system of expectations regarding the bearer of a certain role.

In terms of structure, the game class consisted of four stages: orientation (introduction of the students to the topic, familiarisation with the rules of the game, general overview of its flow), preparation for the game (familiarisation with the game scenario, the definition of game tasks, roles, oriented ways to solve the problem); the main part – conducting the game; discussion of the result[1].

During class, students adhered to the basic requirements for games to form the social competence of future economists. Such requirements, in our opinion, are[7]:

– distribution of roles between the participants in the game according to the degree of sociality;

– joint activity of the participants in the game in conditions of differentiation and integration of functions are simulated;

[6] Romanyk A. (2004) The role of student self-government in Ukraine and countries of Western Europe. Student's self-government in Ukraine. Kyiv : "Molodizhna al'ternatyva", pp. 6–10 [in Ukrainian].

[7] Ibid.

– cooperation of the participants in the game under conditions of differentiation and integration of functions, simulated;

– dialogue between partners as a condition for making joint decisions;

– presence of a common game goal for the whole game group (game system), which is the background for the deployment of social and educational-professional conflicts and contradictions;

– flexible time scale;

– introducing improvisations (contingencies that simulate possible unpredictable social processes) into the game;

– usage of a system of assessment of game performance and professional knowledge to ensure competitiveness;

– presence of a system of social and other incentives that motivate the reproduction of established social skills in real-life situations;

– dynamism, continuity and emotionality;

– focus on the formation of social awareness, social identity and social experience of students.

2. The most effective interactive teaching methods in building the cultural competence of future economists

The most effective interactive teaching method used in the study has become a teaching discussion that is a way to organize joint activities that contributes to the development of a common solution to a problem; by learning, which increases the effectiveness of the educational process due to public discussion of an important issue, exchange of views, including students in a collective search of the truth. The most effective discussion has been found in the classes of economic disciplines since it develops independent thinking, the ability to argue own opinion, analyze and confirm or deny the statement, critically assess the information received.

Scientific conclusions and data requiring additional training on sources that contain more detailed information than the textbook have been discussed during the teaching discussion.

Note that structurally the discussion consists of three stages – orientation (familiarisation of participants with the discussion problem, formulation of objectives, setting of rules and regulations), assessment (presentation of participants, discussion, answers to questions) and consolidation (analysis of results, agreement of opinions and assumptions, formulation of conclusions, summing up and decision-making).

In the experimental activity, the advantages of discussion were confirmed because it is aimed at both learning new knowledge and creating an emotionally rich atmosphere, which contributed to deep penetration into the truth.

One of the innovative interactive technologies of teaching students and pupils, forms of learning discussions, which is an effective means of the formation of cultural competence of future economists is a debate.

Debating technology is defined today by scientists and practitioners as the most effective in the aspect of the formation of their civic competence, development of critical thinking and communicative skills is debating technology (A. Yermolenko[8], O.V. Zyma[9], N. Claxton, A. Crawford, O.I. Pometun[10], A. Schneider, etc.). Despite somewhat different approaches of scholars to the categorical definition of the essence of debate in pedagogical research, in particular in their attribution to special pedagogical methods (A. Crawford, A. Schneider, M. Schnurer, etc.), teaching strategies (S. Scott, D. Steinberg, A. Frilli, etc.) or a separate pedagogical technology (S. Imzharova, O. Pometun, etc.), it is debate as a special educational tool that has great potential to ensure successful professional learning and professional development of future specialists.

Following O.I. Pometun, debates (from French) is understood as a special pedagogical technology that consists of a specially organized, clearly structured public discussion on a topical issue, aimed at developing (development of cognitive, emotional-volitional, communicative, organizational and managerial, moral qualities of a personality), didactic (formation and actualization of knowledge, its transformation into a personal form, formation of learning, self-educational abilities and skills) and socialization (mastering social roles and norms, forms of education).

Considering the debate as a pedagogical technology that is being implemented in the educational process, we note that they relate to academic can be conducted in the following common forms in the direction of the number of participants, the presence of time-outs and others.

Various forms of academic debate based on the same principles have been taken into account in implementing the model. Let us elaborate in more detail. These are the principles of:

1) educational orientation – orientation on the formation, updating of knowledge, mastering participants with new educational and professional skills, development of personal and professional qualities; 2) taking into account the age and individual psychological characteristics of participants – students; 3) humanistic orientation – recognition of unconditional value, the capacity for self-development and self-education, competence, the activity of each participant, respect for opponents, tolerant attitude; 4) partner communication of organizers and participants; 5) contextual approach – actualization of

[8] Yermolenko A. B. (2015). Debate Technologies: Pedagogical Practice. *Postgraduate education in Ukraine*. № 1 (36), pp. 81–85.

[9] Zyma O.V. (2013). The concept of "debate" in scientific literature, their application at the lessons of social science subjects. URL: https://www.narodnaosvita.kiev.ua/Narodna_osvita/vupysku/18/statti/zima.htm

[10] Ibid.

students' future professional activity in their learning activity; 6) game modeling – construction of debate scenario according to business game requirements; 7) integration – selection of debate topics considering integration of educational and professional content, interdisciplinary context; 8) reflection – obligatory conducting of reflection procedures, activation of participants' reflexive skills. The important structural elements of academic debates were adhered to during interaction. These are the subject of the discussion (the resolution, the arguments of the opponents, the cases of the parties), the subjects of the discussion (the participants in the debate in various functional roles), the activity space (the organisation of the communicative situation) and the activity time (the duration of speeches, the presence of time-outs).

Within the special course "Cultural competence of future economists" conducted a debate on the "Socio-cultural competent behaviour of modern economist", "Cultural identity of a young person", "Projected socio-professional development of a student." Each of the debate has been built on the following program:

Introduction (peculiarities of debating; tips on how to build a successful presentation using video speeches by today's most successful speakers, including N. Vujicic, etc.);

Preparation for the debate (announcement of the problem to support or deny, division of participants into teams: the "*Judges*" team: 3 qualified experts (chairman, technical secretary, expert) the "*Confirmation*" team: 3 speakers, 3 assistant speakers; the "*Objection*" team: 3 speakers, 3 assistant speakers; the "*Timekeepers*" team: 2 members; announcement of tasks to the teams:

– the "Confirmation" team's task: the team has to define the topic, i. e. define its meaning. The confirmation team should define the topic as a normal person would. The assertion speaker does not have to define every word of the topic, but to be able to explain the meaning of the topic and why it is needed;

– the "Objection" team's task: to argue with the confirmation team's case. The objection team can only question the definition of the topic if they feel that the definitions of the topic are unfair to them. Definitions, which are inconsistent with the topic, can be unfair, too specific or make the team's case uncontroversial. The objection team can refute any parts of the case statement and present its case.

Debating according to the following scheme:

The first speaker of the "Confirmation" team (should announce the concepts of the topic (definitions, criteria) and present a case (arguments, main ideas) assertion that supports the topic. The rest of the team members can repeat his ideas, expand on them, but no new arguments are allowed (except from the objection team), the question of the third "Objection" team speaker to the first "Confirmation" team speaker;

The speech of the second "Confirmation" team speaker (two tasks – 1) to refute all the arguments of the objection team; to refute all the arguments of the objection team. If the arguments of the "Objection" team do not refute, they can be considered as agreed.

The second speaker of the confirmation team has to extend his arguments with new supporting material – the question of the first "Objection" team speaker to the second of the "Confirmation" team speaker;

The speech of the second "Objection" team speaker (two tasks: to continue refuting the approval case and answer the refuting of his team case. The second "Objection" team speaker should also expand the arguments of his team – the question of the first "Confirmation" team speaker to the first "Objection" team speaker;

The speech of the second "Objection" team speaker (two tasks: the speech of the third "Confirmation" team speaker (the task is to summarise the debate and show the judge why his team has won. If the speaker in his/her speech uses new ideas, facts, evidence or arguments that were not in the speeches of the previous speakers, the judge does not take them into account and can reduce the speaker-points of the participant;

The speech of the third "Objection" team speaker (the task is to summarise the debate and show the judges why his team has won).

Judges' assessment (based on the assessment sheets).

Summing up the results. Announcement of the winners.

Our monitoring has shown that innovative, interactive teaching methods such as project-based teaching methods are important for shaping the cultural competence of future economists.

In general, the term "project" has several meanings: 1) it is a preliminary (allowable text of any document) 2) it is a certain action, a set of activities united by one programme, or an organisational form of purposeful activity (like projection, project activity); 3) it is an activity to create (develop, plan, construct) some system, object, model. Educational project management, as S.U. Honcharenko[11]has noted, is aimed at creating models of planned (future) processes and phenomena (as opposed to modelling, which can be extended to experience to comprehend it more deeply).

In the pedagogical science of the XXI century, the projection as a special educational method of scientists is considered in different ways, in particular as a means of achieving the didactic goal due to the detailed development of a problem that should end with a real, tangible practical result, executed in one way or another way (E.S. Polat); the creative work of students within a

[11] Honcharenko S.U. *Pedagogical research*: *Methodological advice to young scientists*. Kyiv-Vinnytsia, Ukraina: DOV "Vinnytsia". Kyiv-Vinnytsia : DOV "Vinnytsia", 278 p.

given theme that has an integrated character (V.N. Sternberg); the special system of teaching, according to which students acquire knowledge in the process of planning and implementing gradually complicated practical tasks – projects (H.M. Kodzaspirova,), etc.

Because the projection is a special human activity aimed at creating an image, a model of any object/phenomenon or process, the project method is a special pedagogical means of developing professional competence of future specialists in the process of their independent creation and implementation of projects to solve a certain problem of professional education[12].

Leaving aside the debate on the project management as a method or technology, we note that its basic attributes are:

– the existence of a socially/professionally/personally significant problem that determines the topic of the project; a specific addressee – the project customer;

– the independent, individual nature of students' activities;

– the meta disciplinary nature of the project;

– the structure of the work, the presence of a specific projection technology;

– the application of research, search methods for solving creative problems.

During the project activities, the methodological foundations of the project management in education (I.A. Kolesnikov, etc.) are taken into account:

– the anticipation, perspective approaches, embedded in the word "project" itself – a throw into the future;

– the potential difference approach – between the actual state of the subject/process and the desired one;

– the step-by-step approach – the gradual approach of the desired future image;

– the compatibility, cooperation, pooling of resources approaches and efforts in the projection;

– the extended activity of participants approach in the process of joint action (by W.H. Kilpatrick).

The basic principles of the projection in higher education to ensure its effectiveness are taken into account. These include predictability (aiming at a future desired result) innovativeness (lack of analogue) meticulous (manufacturability, availability of an action program); rationing (need to pass stages within regulated procedures) feedback (constant reflection of activity and its intermediate outcomes); pragmatism (performance, obligatory focus

[12] Kolyadenko S.V. (2016) Digital economy: preconditions and stages of formation in Ukraine and in the world. № 6, pp. 106–107.

on the applied result) cultural analogy (adequacy of the projection results to a certain cultural environment); and the ability of the projection to be effective.

Following the basic requirements for the projection in higher education that ensure its effectiveness, in our opinion, there is the social and personal significance of the problem that requires solving integrated professional and research tasks; the practical professional, theoretical, cognitive significance of the expected results; the combination of different forms of individual, group and teamwork of students; step-by-step structuring of work according to the general structure of activity and stages of thinking and decision-making activity (development of project task, project implementation, registration of results; project presentation and defence, general reflection) usage of different research methods; organization of educational space according to all requirements of training environment; thorough preparation of teachers, etc.

In general, the projection as a method of professional training of future specialists in higher education has been implemented in the following stages that determine and preparing a teacher, namely:

1) organizational and preparatory, which involves awareness of a student situation, methodological processing of information and wording of the project task, creation of graphic pre-project analysis in the form of a scheme; 2) searching, the content of which is to nominate the hypothesis, the search for ways to solve the problem, search, produce and create sketch ideas, schemes/models of the project solution; 3) solving that ensures the creation of a project program, its analysis and implementation, creating a holistic project solution; and 4) reflexive, which involves analysing the relevance of the objective and the project solution, making adjustments, carrying out additional research, and the presentation of the solution itself, which can take the form of a separate educational event inviting employers, specialists and the public.

Based on the general typology of projects in higher education, the following were considered during the formative experiment: 1) according to the dominant activities – research, search, creative, role-playing, application, orientation, information projects; 2) by subject-matter area – mono projects (within a single field of knowledge) and interdisciplinary and meta-disciplinary projects; 3) by the nature of project coordination – direct (rigid, flexible) and implicit (implicit, imitating participants); 4) according to the nature of the participants' contacts – from the same group on different grounds (intra-university, student) and inter-group (inter-university, mixed); 5) according to duration – mini-projects (one study unit), short-term, long-term.

The general criteria has been taken into account when assessing the results of the implementation of the project method in higher education, according to the D. Kirkpatrick Model (levels of reaction, learning, behaviour and outcome), which are: 1) the satisfaction with participation in the project

(positive impressions, participants' willingness to continue work); 2) the extent to which the participants have mastered the projection procedures (at the level of knowledge and skills in problem-solving, goal-setting, anticipation, decision-making, reflection, presentation of results, etc.); 3) the quality of the project result as a whole – its social significance, creativity and innovation; 4) the positive shifts in the personal level of participants (dynamics of personal and professional qualities); 5) the synergy effect – the appearance of a project team; 6) the establishment of social partnerships – building social ties between professionals, students and partners.

In our opinion, the basic condition for successful implementation of the projection as a means of developing professional competence of future specialists in higher education is special training of teachers who are proficient in game, activity, reflexive, problem-based learning methods, and can be active members of the project team. It is important to involve specialists from different spheres of activity to participate in students' project work, ensures its meta disciplinary, applied, professionally significant character.

In our opinion, the feasibility of applying the project method to develop the cultural competence of future economists is justified by the following provisions:

– projection is a universal, meta-disciplinary type of human activity, carried out by the stages of solving any problem situation, and then provides the formation of socio-professional knowledge of future economics students at all its levels, as well as metacognitive skills;

– group work on a socially significant problem: provides activation of social motives of the behaviour of future specialists, the motivation of their social and professional self-development; contributes to overcoming social stereotypes, attitudes;

– correctly structured process of student interaction in group work ensures that students' interest in social interaction and communication and desire for social interaction is intensified;

– passing all the stages of the projection ensures the formation of cultural competent behaviour of students.

In the process of forming cultural competence of future economists, both separate project methods in the disciplines of humanitarian and general economic training, and as an independent educational activity – socio-cultural youth projects – have been used.

Thus, during 2019–2020, socio-cultural youth projects have been organised and implemented that goal to shape the cultural competence of applicants for economic professions:

– "Student Initiative Center", which provides for the development and presentation of projects aimed at sustainable development of the city and the

region in such areas as industry; economy and entrepreneurship; agriculture; education, science, culture; health care; sports, tourism;

– Housing and communal services; nature management; social services; youth policy, patriotism, volunteerism, civil position;

– "Kherson Vector of Student Initiatives", which also envisaged the development and presentation of projects aimed at sustainable development of the city of Kherson and Kherson oblast in such areas as:

– green tourism of the Kherson region (to offer new ideas and projects and mechanisms for their implementation in practice);

– cultural and entertainment infrastructure of Kherson (to diversify and suggest for implementation the best know-how from the world cities experience);

– improvement of the environmental situation and quality of life standards of Kherson residents (to suggest mechanisms for solving specific environmental problems and long-term social programmes).

CONCLUSIONS

Organizational and pedagogical conditions that ensure the effectiveness of formation of cultural competence of future economists are determined by 1) updating the content of humanities and general economic cycle disciplines based on meta-disciplinary approach; 2) cross-curricular implementation of interactive teaching methods in the classroom and extracurricular activities of future economists; 3) creation of an enriched socio-professional environment. Each of the organisational and pedagogical conditions is ensured by a complex of various forms and methods of teaching and is implemented by the logical unfolding of the founding and motivational, content-operational and control-reflexive stages. The criteria for the formation of cultural competence of future-student economists have been defined as 1) social identity as a result of the development of its value component; 2) social awareness as a result of the development of its cognitive component; 3) socially competent behaviour as a result of the development of its constructive component. Each of the criteria has specific and diagnostic indicators, appearing at three levels: low (initial), medium and high.

The application of interactive teaching methods in the teaching of future economic specialists contributes to better and more effective preparation for the activities of specialists, forms the abilities and skills that are necessary to solve complex problems in professional activity, the development of critical thinking and personality formation.

SUMMARY

At the present stage of development of Ukrainian society, the problem of forming cultural competence of future economists in the process of training

becomes particularly acute because it determines the ability of a specialist to work in a team, to interact effectively in the digital society, to achieve the goals, to make decisions, to project their own social, personal and professional growth, to respond constructively to stress, etc. The article analyses cultural competence as an integral quality of a personality, which manifests itself in the general ability and capacity of a person to diverse activities, socially orientates a personality to independent and successful life activity. The assessment of cultural competence is based on a set of pedagogical approaches – normative, competence-based, personal, and technological.

The conclusions point out that the principles of cultural competence assessment are integrity, dynamism, continuity, informativeness, cyclicality, consistency, effectiveness. The main directions of assessment are defined as the activity to identify a) competences related to a person as an individual, subject of activity and communication; b) competences related to the social interaction of a person and social environment; c) competences related to a person's activity.

REFERENCES

1. Varnavska, I.V. (2021) The value of cultural competence in the professional activity of a manager**.** Integration of Education, Science and Business in Modern Environment: Winter Debates: abstracts of the 2nd International Scientific and Practical Internet Conference, February 4–5, 2021. Dnipro, Ukraine, 2021. P. 1. P. 233–235.

2. Hessen S.I. (1995) Osnovy pedagogiki. Vvedenie v prikladnuyu filosofiyu. [Fundamentals of pedagogy: Introduction to the applied philosophy: manual]. Moscow : School-Press, 448 p.

3. Honcharenko S.U. (2008) Pedagogical research: Methodological advice to young scientists. Kyiv-Vinnytsia, Ukraina : DOV "Vinnytsia" [Pedahohichni doslidzhennya: metodolohichni porady molodym naukovtsyam]. Kyiv-Vinnytsia : DOV "Vinnytsia", 278 p.

4. Hura O. I. (2006). Psykholoho-pedahohichna kompetentnist' vykladacha vyschoho navchal'noho zakladu: teoretyko-metodolohichnyj aspekt]: monohrafiia [Psychological and pedagogical competency. The main responsibility of the main mortgage: theoretical and methodological aspect]. Zaporizhzhia, Ukraine : HU "ZIDMU" [in Ukrainian].

5. Yermolenko, A. B. (2015). Debatni tekhnolohii: pedahohichna praktyka. Pisliadyplomna osvita v Ukraini. [Debate technology: pedagogical practice]. № 1 (36), pp. 81–85.

6. Zyma, O. V. (2013). Ponyattya "debati" u naukoviy literaturi, ikh zastosuvannya na urokakh suspilstvoznavchikh predmetiv. [The concept of "debate" in scientific literature, their application at the lessons of social science subjects]. URL: https://www.narodnaosvita.kiev.ua/Narodna_ osvita/vupysku/18/statti/zima.htm [in Ukrainian].

7. Kolyadenko, S.V. (2016), Digital economy: preconditions and stages of formation in Ukraine and in the world. [Tsyfrova ekonomika peredumovy ta etapy sanovlennia v ukraini ta sviti. Ekonomika. Finansy. Menedzhement]. № 6, pp. 106–107.

8. Komar, O. A. Interaktivni tehnologiyi u vischih navchalnih zakladah. [Interactive technologies in Higher Studying Institutions]. URL: http://dspace.udpu.org.ua:8080/jspui/bitstream/6789/375/1/interaktuvni_tehn_vnz.pdf

9. Pometun, O.I., Pirozhenko, L.V. (2002). Interaktivni tehnologiyi navchannya: teoriya, praktika, dosvid: [metodychnyi posibnyk]. [Interactive technologies of teaching: theory, practice, experience]. Kyiv. 237 p. [in Ukrainian].

10. Pometun, O.I., Pyrozhenko, L.V. (2004). Suchasnyi urok. Interaktyvni tekhnolohii navchannia: nauk. – metod. posibnyk. [Modern Contemporary Lesson: Interactive Learning Technologies]. Kyiv : Vydavnytstvo A.S.K., 192 p.

11. Romanyk, A. (2004). Rol studentskoho samovriaduvannia v Ukraini ta v krainakh Zakhidnoi Yevropy [The role of student self-government in Ukraine and in countries of Western Europe. Student's self-government in Ukraine]. Studentske samovriaduvannia v Ukraini. Kyiv: "Molodizhna alternatyva", pp. 6–10 [in Ukrainian].

Information about the author:
Varnavska Inna Viacheslavivna,
Candidate of Pedagogical Sciences, Associate Professor,
Associate Professor at the Department of Professional Education
Kherson state Agrarian and economic University
23, Stritenska st., Kherson, Ukraine, 73006
orcid.org/0000-0002-3061-0665

DOI https://doi.org/10.36059/978-966-397-239-8-13

ADAPTIVE MANAGEMENT AS A TOOL OF SUSTAINABLE DEVELOPMENT

Zhosan H. V.

INTRODUCTION

Ukraine's economic situation is currently characterized by financial instability and high levels of risks, and, as a result, companies operating in the domestic market are forced to implement innovative types of management that can provide competitive advantages in a rapidly changing competitive environment, as well as the most effective interaction with external and internal environment, and ultimately the long-term survival of the enterprise.

The micro and macro environment of any modern enterprise presupposes a high degree of complexity, dynamism, and uncertainty. Regardless of the goals and strategy of the enterprise, whether it is a survival or maintaining a competitive position or development, it needs to look for ways to adapt to the environment. Therefore, the ability to adapt to changes in the external environment is the main success factor for an organization in business.

An effective management tool in an unstable economic situation, market unpredictability, and crisis will be adaptive management, which allows solving complex problems and make original and non-traditional management decisions.

Most Ukrainian enterprises do not realize the importance of adaptive management, and, accordingly, are not engaged in the development of adaptive management systems, tools, and methods of adaptation, as well as studying the problems of its improvement.

The formation of adaptive management of trade enterprises is a rather difficult task that requires appropriate methodological tools and a clear understanding of the internal mechanisms for the development of adaptive management processes. Thus, the issues related to the practical implementation of adaptive management in trade enterprises determine the relevance of the topic of the dissertation work.

To date, general theoretical foundations have not been developed in the field of adaptive management; there are no uniform approaches to determining the essence of adaptation and adaptive management, principles, classifications.

The following foreign authors have paid attention to the formation of adaptive management: G. Assel, B. Berman, S. Beer, P. Dixon, P. Drucker,

R. Kanter, D. Callog, M. McDonald, T. Moth, D. North, M. Olson, M. Porter, K. Tateisi, J. Evans.

Theoretical and methodological problems of development of the system of adaptation of the mechanism of functioning of enterprises were covered by well-known specialists Alekseev S., Kozachenko A., Budnik M., Savina T., Kravchenko O., Krysko Zh., Antonov, Raevneva O., Stepanova Yu., Turitsa N. and others.

Despite the significant contribution of the above researchers to the theoretical and practical aspects of the formation of adaptive management, it can be stated that the issue has not been adequately studied.

1. The relationship between sustainable development and adaptive management

A modern knowledge-intensive enterprise is a complex socio-economic system operating in conditions of uncertainty, due to the constant variability of conditions, the emergence of new connections, the rapid reorientation of functioning in response to the dynamics of market needs. The need to take into account changes in the external environment in conditions of uncertainty leads to the need to apply adaptive management methods. In our opinion, the adaptive approach to management, integrating the most important elements of the process, system, and situational management approaches is their logical continuation. The main goal of adaptive management is to create additional capabilities of the system to respond to rapid changes in the external environment, to ensure the sustainable functioning and development of the organization. It can be argued that adaptive management is capable of orienting a knowledge-intensive enterprise to the demands and requirements of the market through the release of competitive products, which ensures its stable position. This approach requires considering the relationship between the economic categories “competitive advantage”, “competitiveness”, “economic sustainability”.

The current level of development of market relations and increased competition in domestic and foreign markets make the problem of finding sources of maintaining economic sustainability, first of all, of the enterprises of the real sector of the economy especially urgent.

The economic sustainability of an industrial enterprise affects the entire economic system of the country, preserving its potential, ensuring its qualitative rise, entering international markets with new competitive products.

The scientific direction that studies the economic sustainability of industrial facilities is quite young. For the first time, the term “economic sustainability” arose in connection with the consideration of the problem of limited resources, which became a consequence of the global energy crises of 1973 and 1979. During its existence, this direction of economic thought turns

into a separate discipline, which is called “ecosestate” (“economic security of state”)[1].

The problem of economic sustainability is actively considered in many scientific studies. The authors share the approach to the essence of economic sustainability proposed by Zaitsev O.N.: it is such a state of the enterprise, which retains the ability of effective functioning and stable progressive development under the negative impact of the external environment[2].

Sharing this opinion, the authors offer their own concept of the economic sustainability of an enterprise – this is the ability of an enterprise to function effectively and develop steadily, being in equilibrium or close to it condition under the influence of external and internal environmental factors and offers their own approach to the essence of economic sustainability. This approach is conceptual in nature, since it assumes, when assessing economic sustainability, not only take into account the influence of the internal and external environment factors on the enterprise, but also manage these factors, creating a competitive advantage of the enterprise, the competitiveness of its products and ensuring economic sustainability in the future, that is, sustainability in functioning and sustainability in development of the enterprise. To achieve the economic sustainability of an enterprise, the ability of effective functioning and stable progressive development determines a constant renewal of products based on innovative potential, an increase in the technical and technological level of production, the use of modern methods of organizing and managing production, strengthening human resources, which allows the enterprise to be competitive and strengthen its position in market.

Sustainable development reflects the dynamic state of the economic system, which takes into account the time factor. The sustainability of the economic system at the current moment (sustainability of functioning) and sustainability of development (sustainability of the system in dynamics) is ensured by an adequate response to changes in the factors of the external and internal environment of the enterprise, which allows the enterprise to survive in a competitive environment and obtain a sufficient amount of profit for further functioning. Consequently, the sustainable development of an enterprise is based on the effective management of the enterprise’s resources,

[1] Kozachenko A.V., Ponomarev V.P., Lyashenko A.N. (2013) Ekonomycheskaia bezopasnost predpryiatyia: sushchnost y mekhanyzm obespechenyia [Economic security of the enterprise: essence and mechanism of maintenance]. Kiev : Libra. 280 p.

[2] Kravchenko O. (2010) Pryntsypy pobudovy adaptyvnoi systemy upravlinnia pidpryiemstva v umovakh nestabilnosti ekonomiky [Principles of construction of adaptive management system of the enterprise in the conditions of instability of economy]. *Collection of scientific works DETUT. Economics and Management Series*. Ed. 15. P. 213–218.

the range of products, which will ensure its competitive advantages and sustainable development.

The modern concept of competitive advantage is rooted in the early days of classical economics. Absolute advantage, focused on natural advantages, is the first step in the evolution of scientific views on competitive advantage. In this regard, Adam Smith's theory of relative advantage has played a fundamental role in the development of competitive advantage.

The first, who used the concept of competitive advantage was the famous American economist, academician of the Harvard Business School and member of the Presidential Commission on Industrial Competition Porter M[3].

Porter M. in his research for the first time introduces the concept of "competitive advantage". By his concept, "competitive advantage is expressed in lower costs than competitors, or in the ability to change and control the price with a markup that exceeds the additional cost of price changes".

Since economic sustainability and competitiveness are interrelated concepts, the study of opinions on the issue of external and internal factors affecting the competitiveness, and, consequently, the economic sustainability of the enterprise, is of particular relevance.

It should be noted the great practical value of M. Porter's theory for substantiating the factors affecting competitive advantages and ensuring the competitiveness of economic entities set forth in M. Porter's monographs "International Competition", published in 1993 and "Competition", published in 2000.

The problem of assessing the competitiveness of an enterprise is more complicated than the problem of assessing the competitiveness of products, since it includes much more factors affecting the enterprise. In this regard, David Krevens suggests grouping factors according to the direction of functional processes: external (directed from the external environment to the inside of the organization), internal (coming from within the organization) and bilateral. External processes connect the organization with its external environment, providing feedback to it and forming external connections. Internal processes are aimed at meeting the needs of consumers. External processes also direct the competence of the organization, determined by internal and bilateral functional processes. The processes under consideration are characterized by many factors. This approach allows an organization to build its management structure focusing on cross-functional interaction[4].

[3] Chandler A. (1964) Strategy and Structure: Chapters in the History of the American Industrial Enterprise. N.Y. : Newcomen Award, 347 p.

[4] Dumont G., Huzmezan M. (2002) Concepts, methods and techniques in adaptive control. American Control Conference, Vol. 2. P. 1137–1150.

Based on the classical theory of M. Porter and the analysis of available works on the problem of competitiveness and competitive advantages, it is advisable to assume that the competitive advantage of high-tech production is expressed in lower costs of production and operation of high-tech products than competitors. Competitive advantages are the basis of the competitiveness of the products of a science-intensive enterprise and are provided through adaptive management based on the effective (economical) use of the enterprise's resources at all stages of the life cycle of a science-intensive product. Taking this into account, the following formulation of the essence of "product competitiveness" is proposed – it is the correspondence of product properties to the parameters of consumer demand, achieved as a result of adaptive management of competitive advantages in market conditions.

The author's concept of the category "competitiveness of a science-intensive enterprise" is the effective activity of an enterprise for the production and sale of high-tech science-intensive competitive products that are in demand in the market and fully satisfy consumer demand on the basis of adaptive resource potential management through the effective use of competitive advantages. The factors affecting the competitiveness and economic sustainability of the enterprise should be divided into direct and indirect factors. Direct influencing factors include consumers, competitors, suppliers, and the legal framework. Indirect factors are the general state of the economy within the geographic boundaries of the market, the political climate, the level of technologies used in the industry, the availability of a labor market and qualified personnel. All these factors do not depend on the activities of the enterprise and therefore they can be attributed to external factors.

The concepts of competitive advantage and competitiveness are closely interrelated and mutually defining concepts. External and internal factors affecting the competitiveness of an enterprise also determine its economic sustainability.

Competitive advantages are provided by the enterprise due to the management of internal factors through the efficient use of enterprise resources. The competitiveness of products and the competitiveness of the enterprise are the basis for economic sustainability. Based on this, the following classification of internal factors that form its competitive advantages and affect the sustainability of high-tech production is proposed (Fig. 1.1). The economic sustainability of high-tech production is primarily ensured by innovative sustainability – this is a general line, a system of strategic measures to ensure sustainable development and operation of the enterprise. Research and development works are the basis for the creation and development of new products, materials, the modernization of products, and the development of new, progressive technological processes, the improvement of the used technological processes, complex mechanization

and automation of production processes. Organizational and managerial sustainability, according to the authors, is aimed at improving the organization of production and management to increase the efficiency of the use of material, fuel and other resources of the organization, improve cooperation and division of labor, organize the maintenance of workplaces, and introduce advanced techniques and methods of labor. Technical sustainability provides for the renewal and modernization of fixed assets, an increase in the level of use of fixed assets and production capacities. Financial sustainability is characterized by the ability of an enterprise to meet its financial obligations. Personnel sustainability provides for the sustainability of the personnel composition, stability and qualification potential of the personnel. Consequently, in a broad sense, the economic sustainability of a knowledge-intensive manufacturing enterprise is interpreted as a set of levels of financial, innovation, technical and personnel sustainability, the presence of which allows the subject to conduct fundamental and applied scientific research, to a large extent form external conditions, improve the performance of science-intensive products and ensure its competitiveness in the long run.

External and internal factors affecting the enterprise are interrelated. On the one hand, external factors affect the internal, on the other – the management of internal factors has a positive effect on external ones.

Thus, the company can manage internal factors to smooth out the negative effects of external factors, i.e. due to competent management the enterprise can adapt to changes of external environment and remain in a steady condition. The main lever of adaptive management should be the innovative potential of the enterprise. The sustainable development of a knowledge-intensive enterprise is primarily ensured by the desire for new knowledge, an increase in the technical state, and competition at the same time acts as a stimulating function. It is the competition, which, as K. Marx noted, is of a coercive nature that makes the enterprise look for new, more advanced technologies and techniques, create new ones, and improve old goods and services. Competition is a powerful force that stimulates the process of renewal and development that lead to the achievement of a competitive advantage of the enterprise. Thus, competition and innovation are not identical, but interrelated and interdependent.

A huge role in the development of competition was played by the transition to a market orientation in the 30s of the last century. In relations between the consumer and the manufacturer, the role of the consumer has sharply increased, and the manufacturer was forced to look for ways to survive in the face of market uncertainty.

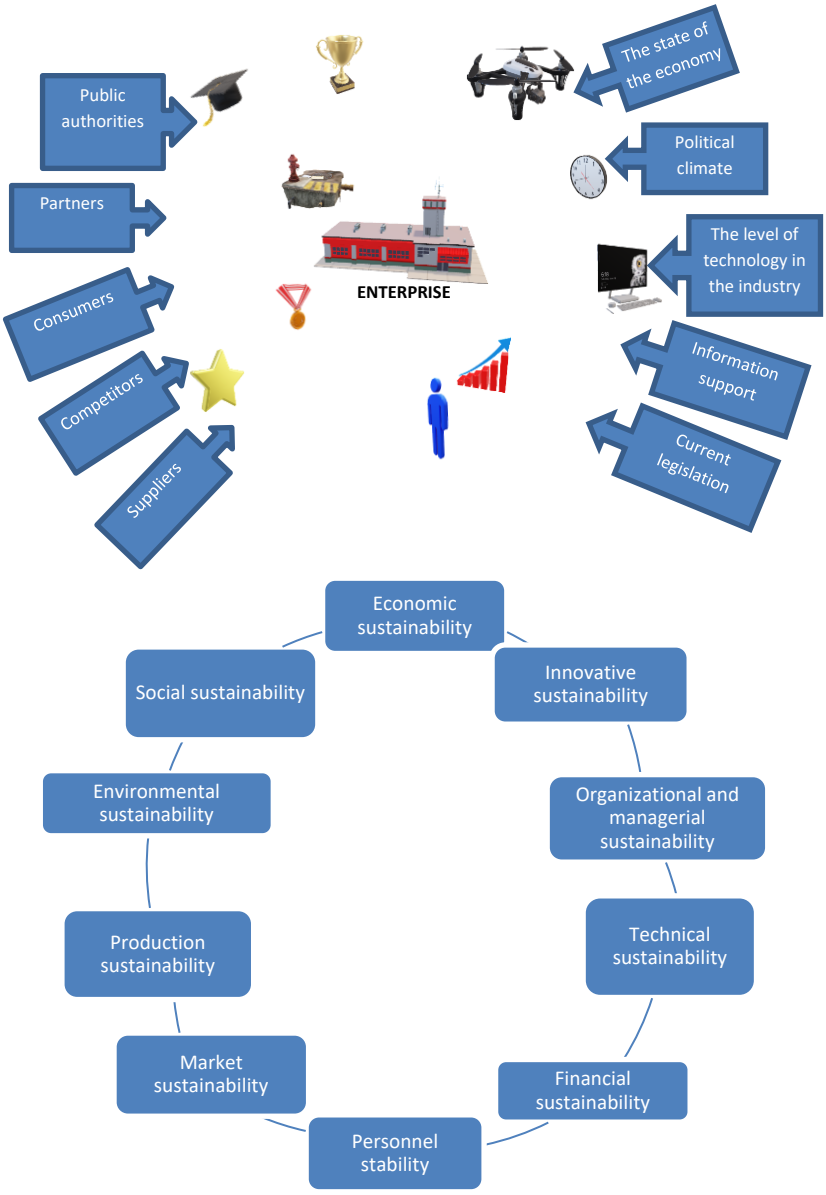


Fig. 1.1. Factors influencing the sustainability of enterprise development

As Ansoff notes, for successful functioning the manufacturer was forced to develop new types of products, quickly change the assortment. Thus, as a result of a greater focus on the demands and requirements of the market, there was a significant increase in the diversity of both the external and internal environment of the enterprise, and the existing management systems were unable to cope with this[5].

Consequently, adaptive management appeared in response to the need of an enterprise to take into account the influence of factors of competitive nature and take proactive measures to ensure competitive advantage, competitiveness and achieve a stable state of the enterprise through effective management of internal factors of sustainability.

Following the proposed concept of competitive advantage, the authors believe that the concept of adaptive management should be built on the economical use of the resources of a knowledge-intensive enterprise, using the most of the internal reserves.

Thus, adaptive management can be viewed as a means of ensuring the sustainable operation and development of an enterprise.

Each component of economic sustainability should become the object of adaptive management. The mechanism for implementing adaptive management is the adoption and implementation of management decisions. Only on the basis of scientifically grounded approaches to making and executing managerial decisions will the directions of research and development work on the development of new products, new technological processes and improvement of manufactured products and applied technology, and improvement of production organization be selected. In his book "Management decisions" Fatkhutdinov R.A. names 20 scientifically based approaches to management decisions to manage the competitiveness of an enterprise.

As one can see, the adaptive approach to management appeared in response to the increased diversity of the external and internal environment of the enterprise, to its need to adapt to the demands of the market and as a means of ensuring a sustainable state and development. Since the adaptive approach to management appeared relatively recently, therefore, many theoretical and methodological provisions of this approach have not yet been sufficiently developed, which requires a deeper consideration of the theoretical foundations of adaptive management.

The relationship of enterprise sustainability with competitiveness and adaptive management is shown in Fig. 1.2.

[5] Sulek A. (1994) Do czego su sondae? Wykorzystanie bada opinii publicznej w kampanii wyborczej 1993. Kultura i Spoeczestwo, vol. 38(3). P. 103–117.

Fig. 1.2. Relationship between sustainability, competitiveness and adaptive management

2. Adaptive management as a tool to increase the sustainability of enterprise development

In nonlinear dynamic systems, which include business entities, the external environment always plays a decisive role in relation to the structures located in it and affects the rate of their self-organization. In this case, the most important condition is constant adaptation to the requirements of the external environment[6]. Evolution is associated with the achievement of a stable state of the system, in which the latter enters into equilibrium with the environment. This process is due to the fact that the rate of change in external conditions, as a rule, is lower than that of the system. Adaptation usually results in increased system versatility. Thus, the adaptive approach involves considering the system from the standpoint of its preservation and development, despite the ongoing transformations. At the same time, a reduction method is used, which at its core is design, knowledge based on existing developments of different directions. The need for its application is due to the fact that any theory is correct only for some time, and then gives way to a new one, as evidenced by the entire evolution of sciences. In contrast to the reduction method, the complementary method in theories is considered as a transitional one, since, examining the subject from the point of view of the constructions available in various sectors of science, it defines a new direction.

[6] Doing Business – 2020. (2019) Zavdiaky chomu Ukraina pidnialasia v reitynhu na 64 skhodynku [Due to which Ukraine rose to 64th in the ranking. Union of Ukrainian Entrepreneurs], Economic Truth. URL: https://www.althoughda.com.ua/publications/2019/10/24/652929/ (access date: October 24, 2019).

Adaptability, as a form of system behavior, contributes to its self-organization, the consolidation of the property that determined the creation of an object, its successful existence and development in evolutionary transformations.

Adaptive systems belong to the class of self-organizing and are characterized by the ability to change the order and structure depending on the nature of the influence of external factors. The principles of self-organization, being dominant in the emerging synergetic concept of management, mark the emergence of a new approach based on the classical (cybernetic) one.

It also features the uncertainty of the environment, the network nature of structures, and the virtualization of business processes. A comprehensive consideration of the essence, content of finance as an economic category and the provisions of systems theory allowed us to highlight the properties of their adaptive impact.

It should be taken into account the cost nature of resources, theirs presentation and adaptive focus of functioning. The provisions relate to non-formalized constructions, and the adaptive design of the activities of an economic entity is a formalized material. This concept assumes both an analytical consideration of the situation and its figurative vision, depending on the degree of personality development and the experience of the leader.

According to Astrom K., the essence of management is design, which, in turn, involves creative freedom of action, the ability to make changes to the system. Design "… means managing the levers that determine the level of division of labor and coordination mechanisms and thus the functioning of the organization." It is also logical that "it is easier to pre-program development than to significantly change the dynamics of an already fully formed system".

The design of financial flows should be based on the social division of labor as the primary reason for the formation of rational management influences in this area of the enterprise.

This approach, as well as the presentation of the system as dynamic (assuming the determination of reproductive processes in the elements) allows taking into account the peculiarities of its functioning. Design as a formalized program of actions cannot take into account all the parameters of the system under consideration. With its adaptive implementation in terms of the financial activity of the enterprise, the following main elements of the system become important: an object, a subject, and a management process.

The allocation of an object – financial resources – is due to the fact that, being exposed to managerial influence, it orients the system towards achieving a goal (which has a cost estimate), predetermines the order and parameters of functioning that correspond to external conditions and constraints. The initial parameters of the object determine the principles of derivative construction, structuring and integration of the system. The decisive influence of the

structure of financial resources on the form of business organization, its integration into the macrosystem is important. The expression "the end determines the means" applies here. The goal is in terms of value, and the means are all other components of the financial base of the enterprise.

Since the resources of an enterprise are a value formation, then when using them as a defining element, parameters are taken into account that increase the effective assessment of the business (minimum costs and maximum profit for any type of resources), corresponding to the form of attracted funds, and the objective, essential characteristics of the education received become profit and cost. It seems expedient to measure the efficiency of the functioning of the system by means of comparing the costs associated with the use of the entire set of resources and the profits. These characteristics become universal for any elemental set, the form gives an idea of the costs and benefits obtained as a result of considering various combinations of resources. The matrix, assuming the arrangement of funds (real, potential) within the selected set of them, makes it possible to control the state of the system, calculate the efficiency of value growth and reproduction of financial resources.

When designing the subject of control (control subsystem), it is necessary to achieve full compliance of its activities with the specifics of the functioning of the object. This is how the potentialities of value education are fully realized in the chosen target direction. The subject of management initiates the processes of structure formation, ensures the implementation of the reproductive process of the system (stages of formation and use), which predetermines its viability and implementation of functions.

According to the provisions of cybernetics, the diversity of control systems is less than the diversity of the control object in terms of information "capacity". The framework of adaptive behavior is due to the fact that the control system is smaller than the object it is designed to streamline, therefore, only in an ideal case, detailed control of financial flows is possible. This feature of the functioning of the system presupposes the presence of a limit of diversity, below which the effective performance of the functions of the system is impossible. The uncertainty in the behavior of the controlled object is reduced due to the diversity of the control body. There is also a limit to such differentiation, otherwise the costs of the management subsystem may exceed the income received from the management of the object. Diversity is achieved by matching the characteristics of the control object.

The methodological principle of the formation of the system and its management, implemented in the process of adaptive design, takes into account the following theoretical and practical requirements for the corresponding functions: differentiation in relation to the focus on the control object; no duplication; compliance with the object of influence; determination of the form and content of financial resource management.

Thus, the management function as an objective category, formed at the intersection of one of the phases of the management cycle and the stage of the reproductive process, is an area of the information population. The amount of information by function depends on the element base of the resource system and is determined by a set of tasks set by the subject. It is obvious that the state of financial resources characterizes the degree of division of labor as a particular level of elemental decomposition of the reproduction system. Specialization processes can be attributed to specialized management functions, and cooperation – to their interconnection. Such interpretations make it possible, from a scientific point of view, to approach the distribution of functional responsibilities of financial managers and to design organizational structures for managing resource flows in their relationship with management objects, thereby achieving compliance of the controlled and controlling subsystems, taking into account the diverse features of functioning and reproduction. This solves the problem posed by J.C. Dumont: "The complexity of the structure of an organization as a social system is manifested both in the functional division and coordination of activity horizontally, and in the hierarchy of its structure along the vertical".

The complex nature of financial activities at an enterprise implies, in addition to the specialization of management personnel, the need to coordinate all processes (this is the prerogative of the highest level of management – top management). The system must have a professionally trained leading subject of management, ensuring its development as a holistic entity and preventing the processes of disintegration, imbalance, restructuring, and bankruptcy. The coordination contour combines the management and design of the financial activities of the enterprise in order to "… balancing competing goals, to achieve the optimal result for the company as a whole". Its functions include: forecasting, decision-making, drawing up a general work plan, recruiting, coordination, monitoring performance and motivation.

For the development of self-organizing processes and the formation of synergistic properties of the system in the arsenal of the adaptive concept, there is a number of management technologies: cost reengineering methods, a variety of types of organizational structures, appropriate strategic management tools, spatio-temporal coordination of components in financial and credit transformations of an evolutionary economy. The implementation of management functions, depending on the level of consideration, has certain specificity. Strategic and tactical activities of managers are carried out through the use of various types of budgets, reflecting the state of the resource system relative to the planned level, bringing analytical indicators and monitoring tools for individual work areas.

The projected parameters should take into account the main promising directions of development of finance for foreign companies: strategic planning

focused on value growth; system of budgets and balanced scorecards. An integral part of adaptive design should be considered taking into account the cyclical factor of the existence of the system, which means the implementation of an evolutionary approach to its development. Interesting from the point of view of ideas on the cyclical functioning of the system and the growth of its cost should be considered the position of A. Chandler, who singled out in the version of the life cycle phases characteristic of relationships with the external environment: expansion of operations and accumulation of funds; rationalizing resources; expansion into the sphere of new markets, creation of new structures.

The life cycle of any system includes the stages of birth, maturity, and death. Processes internal to the system and its stages presuppose such phases (waves) as rise, crisis, and depression. The cycles external to the system are determined by the parameters of the environment that determine it and assume waves similar to the internal ones. This determines the main cyclical fluctuations.

The adaptability of the system increases with an increase in its size and degree of diversification, which determine the objective processes of expansion and a permanent influx of ordered information, which increases the levels of its entropy and viability. Integrated formations make it possible to smooth out many cyclical fluctuations that are possible with separate functioning of participants, by improving capital turnover in industries, reorienting funds from unprofitable industries to growing market segments, eliminating seasonality, etc.

Design features are not just a collection of specific methods of management and reengineering of finance, philosophy and corporate culture, but already an intangible asset, a kind of business system that streamlines information and financial relationships to increase the value of the organization. Thus, the category of adaptability involves considering the system of financing an economic entity from the standpoint of preservation and development, despite the negative changes in its external environment. The peculiarities of the functioning of the financial mechanism of an enterprise are determined by the types of designed structures. The scheme for including a tunable model in the control loop ensures the constancy of the dynamic characteristics of the system as a whole when changing the environmental parameters. This compares the results with the metrics obtained using the custom model. The difference between them is introduced into the negative connection circuit, after which the control actions are adjusted.

CONCLUSIONS

Successful development of enterprises in the conditions of constant changes of environment, formation and improvement of potential are conditioned by force of interconnection and effective interaction of business processes. The obligatory consideration of the synergetic effect from the interaction of all elements of business allows not only to approach the use of resources economically, but also to improve the mechanism of adaptive strategic management, to justify the vectors of development.

In accordance with the above, customizable models can be used to compensate for the harmful effects of delays in the control object on the sustainability of the process itself, laying in them the possibility of anticipating events (including undesirable). To solve this problem, it is promising to use the methods of neural networks that predict the behavior of the system at given perturbations and various control laws, which will allow selecting self-tuning optimal control options.

For this purpose, branched algorithms can be used, where controls and models are attributed to their procedural part. There can also be a choice of alternative business plans, risk analysis. The above models must operate in the mode of periodic solution of the control problem in an accelerated time scale to search all options in a format not exceeding the period of discreteness. A systematic approach, combined with adaptive management tools, will undoubtedly help to increase the sustainability of economic entities.

SUMMARY

The article considers adaptive management as a tool for sustainable development. The successful development of enterprises in the conditions of constant changes in the environment, the formation and improvement of capacity due to the strength of the relationship and the effective interaction of business processes are researched. The obligatory consideration of the synergetic effect from the interaction of all elements of business allows not only to approach the use of resources economically, but also to improve the mechanism of adaptive strategic management, to justify the vectors of development.

REFERENCES

1. Doing Business – 2020. (2019) Zavdiaky chomu Ukraina pidnialasia v reitynhu na 64 skhodynku [Due to which Ukraine rose to 64th in the ranking. Union of Ukrainian Entrepreneurs], Economic Truth. URL: https://www.althoughda.com.ua/publications/2019/10/24/652929/ (access date: October 24, 2019).
2. Savina T.N. (2015) Kontseptualni zasady metodolohii doslidzhennia sotsialno vidpovidalnoho investuvannia [Conceptual bases of methodology of

research of socially responsible investing]. Economic analysis: theory and practice. 2015. № 9. P. 52–61.

3. Lvova N.A. (2019) Otvetstvenniy investytsyy: teoryia, praktyka, perspektyvy [Responsible investments: theory, practice, prospects]. Scientific journal of ITMO National Research Institute. Series: Economics and Environmental Management. 2019. № 3. P. 76–86.

4. Maibutnie, yake na nas chekaie. Chomu bez prohram staloho rozvytku v biznesi nemaie perspektyv [The future that awaits us. Why there are no prospects in business without sustainable development programs.] URL: https://nv.ua/eng/biz/markets/maybutnye-dlya-biznesu-staliy-rozvitok-shcho-potribno-znatipro-nogo-vzhe-sogodni-eksperti-50083754.html (access date: April 26, 2020).

5. Orlova N.S., Kharlamova A.A. (2014) ESG-pryntsypy vedennia biznesu vykhodiat na pershyi plan. Yak ekolohichni, sotsialni ta upravlinski kryterii vplyvaiut na stalyi rozvytok kompanii. Shcho potribno znaty pro nykh vzhe zaraz [ESG-principles of doing business come to the fore. How environmental, social and management criteria affect the company's sustainable development. What you need to know about them now.] URL: http://elibrary.kubg.edu.ua/id/eprint/13031/7/N_Orlova_M_2_IS.pdf (access date: April 26, 2020).

6. Otvetstvennoe ynvestyrovanye stanovytsia vse bolee vlyiatelnoi ydeolohyei [Responsible investing is becoming an increasingly influential ideology.] URL: https://investinfra.ru/novosti/otvetstvennoe-investirovanie-stanovitsya-vse-bolee-vliyatelnoyideologiey. html (access date: June 7, 2019).

7. Budnik M.M. (2012) Adaptatsiia promyslovykh pidpryiemstv do rynkovykh umov hospodariuvannia [Adaptation of industrial enterprises to market conditions of management]: author's ref. dis. … Ph.D. in Economics: special. 06/08/01 Kharkiv, 19 p.

8. Kozachenko A.V., Ponomarev V.P., Lyashenko A.N. (2013) Ekonomycheskaia bezopasnost predpryiatyia: sushchnost y mekhanyzm obespechenyia [Economic security of the enterprise: essence and mechanism of maintenance]. Kiev: Libra. 280 p.

9. Stepanova Yu. L. (2007) Poniattia adaptatsii pidpryiemstva [The concept of enterprise adaptation.] Economy. Management. Entrepreneurship. № 18 (II). P. 57–61.

10. Turitsa N.A. (2009) Stratehichni chynnyky adaptatsii pidpryiemstv do zovnishnoho seredovyshcha (na prykladi miasopererobnykh pidpryiemstv) [Strategic factors of adaptation of enterprises to the external environment (on the example of meat processing enterprises):] author's dis. … Ph.D. in Economy: special. 08.00.04. Odessa, 20 p.

11. Antonov V.N., Terekhov V.A., Tyukin I.Y. (2001) Adaptyvnoe upravlenye v tekhnycheskykh systemakh [Adaptive control in technical systems]. Saint-Petersburg: St. Petersburg University Press, 244 p.

12. Grunin O. A., Kuprin A.A. (2010) Formyrovanye adaptyvnosty system upravlenyia orhanyzatsyei predprynymatelskoho typa [Formation of adaptability of management systems of the organization of business type.] St. Petersburg: Asterion, 188 p.

13. Kravchenko O. (2010) Pryntsypy pobudovy adaptyvnoi systemy upravlinnia pidpryiemstva v umovakh nestabilnosti ekonomiky [Principles of construction of adaptive management system of the enterprise in the conditions of instability of economy]. Collection of scientific works DETUT. Economics and Management Series. Ed. 15. P. 213–218.

14. Orlova K.E. (2015) Vyznachennia mekhanizmu adaptatsii pidpryiemstv do umov zovnishnoho seredovyshcha [Definition of the mechanism of adaptation of the enterprises to environmental conditions.] Innovative economy. № 5. P. 174–178.

15. Pogorelov Yu. S. (2019) Modeliuvannia rozvytku pidpryiemstva. [Modeling of enterprise development.] Current economic problems. № 10. P. 51–59.

16. Gonchar O.I. (2015) Funktsionalno-orhanizatsiini aspekty upravlinnia potentsialom pidpryiemstva na zasadakh synerhetyky [Functional and organizational aspects of enterprise potential management on the basis of synergetics.] Scientific Bulletin of Polissya. № 1 (1). Pp. 77–84. URL: https://www.google.com/search?newwindow=1&rlz=1C1CHBD_ruUA908 UA908&sxsrf (access date: June 7, 2019).

17. Sulek A. (1994) Do czego su sondae? Wykorzystanie bada opinii publicznej w kampanii wyborczej 1993. Kultura i Spoeczestwo, vol. 38(3). P. 103–117.

18. Tyukin I.Y., Terekhov V.A., (2008) Adaptatsyia v nelyneinykh dynamycheskykh systemakh [Adaptation in nonlinear dynamical systems.] SPb. : LKI, 384 p.

19. Astrom K.J., Wittenmark B. (1994) Adaptive Control. N. Y.: Addison-Wesley Publishing Company. 652 p.

20. Efimov D.V. (2005) Robastnoe y adaptyvnoe upravlenye nelyneinymy kolebanyiamy [Robust and adaptive control of nonlinear oscillations.] Saint Petersburg : Nauka, 314 p.

21. Yurevich E.I. (2007) Teoryia avtomatycheskoho upravlenyia [Automatic control theory.] Saint Petersburg : BXB-Petersburg, 560 p.

22. Dumont G., Huzmezan M. (2002) Concepts, methods and techniques in adaptive control. *American Control Conference*, Vol. 2. P. 1137–1150.

23. Chandler A. (1964) Strategy and Structure: Chapters in the History of the American Industrial Enterprise. N.Y. : Newcomen Award, 347 p.

24. Zhosan G., Kyrylov Y., Tanklevska N., (2018) Viral management as a subset of creative management in conditions of financial instability. Scientific Bulletin of Polissya. № 2 (14). Part. 2. P. 160–164. URL: http://irbis-nbuv.gov.ua/ASUA/0067396

Information about the author:
Zhosan Hanna Volodymyrivna,
PhD in Economic,
Associate Professor at the Department of Management
and Information Technologies
Kherson State Agrarian and Economic University
23, Stretenskaya str., Kherson, Ukraine, 73006
orcid.org/0000-0002-3577-6701

NOTES

Publishing house “Liha-Pres”
9 Kastelivka str., Lviv, 79012, Ukraine
44 Lubicka str., Toruń, 87-100, Poland

Printed by the publishing house “Liha-Pres”
Passed for printing: November 5, 2021.
A run of 150 copies.