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ELABORATION OF THE REGIONAL CLUSTERS IN HOTEL ECONOMY

Svitlana Zhuravlova

Department of International Tourism

Zaporizhzhya National Technical University

64 Zhukovs'kyi str., Zaporizhzhya, Ukraine, 69063

s_n_zhuravlyova@mail.ru

Absrtact

The modern approach to the cluster methodology usage in the sphere of hotel economy is presented in the article. It was proved, that the one of forms of such integration is a formation of hotel cluster. Just in the hotel cluster (association) and not at the level of separate hotel enterprise are formed such processes as: integration of objects, organization of unitary informational system; selective support by the local budget of building hotels and other lodging means; innovative policy and introduction of new technologies; allotment of the territory for building; revision of transport routes; development of engineer-technical nets and so on. There are presented the data about the situation and dynamics of development of the hotel services sector in Zaporizhzhya region. The analysis of hotel economy of Zaporizhzhya region testifies that the causes of significant fluctuations of the number of guests in hotels were not only the general economic crisis but also the appearance of new form of competition between autonomous hotels, hotel nets and private apartments of lodging type. The number of placed foreign citizens that are the source of currency costs and services export also changed. The results of analysis indicate the essential discrepancies between the main characteristics of the hotels of different, types, the comfort level and the state of material-technical base that is insufficiently developed.

The analysis of financial-economic activity of hotel complexes, especially, profitability of their work, testifies that the special attention of enterprise leaders must be paid to the reduction of spendings on exploitation of hotels that form the cost price of hotel services and, accordingly, their price. The features of inclusion of small hotels to the general strategy of hotel economy reorganization are determined.

Keywords: clusterization, hotel complexes, regions, process approach, innovations, enterprise of hotel economy, strategic management, hotel service, hotel cluster, integration.

DOI: 10.21303/2504-5571.2016.00202

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1. Introduction

In the modern conditions of economy globalization the hotel business is under the influence of external and internal changes that compel the enterprises of hotel economy to search the new strategies, instruments and methods of the management, based on the systemic and complex approaches. For the development of hotel economy of Ukraine, the processes of combination and integration of hotel enterprises, formation of new modes and structures of the management become topical. In such connection the elaboration of principally new approaches to the development of regional hotel economy using new organizational forms and managerial methods become urgent.

2. Analysis of recent studies

The questions, connected with cluster analysis of hotel economy enterprises are considered in the work [1]. It presents the system of quality management as a totality of mutually dependent methods as to the satisfaction of requirements to the quality and reduction of costs on it. The segmentation of hotel economy market was considered in the work [2]. In the work [3] is described the methodology of strategic planning of clusters, based on the deepened understanding of the features of clusters as economic systems. The foreign and native scientists-economists also considered the role of clusters in creation of new type of business in the work [4]. The main example of creation of trade and productive clusters that have economic success in developed countries is presented in the work [5].

The special attention to the essence of market self-regulation and methods of state price regulation was paid in the work [6]. In the work [7] was considered the formation of organizational-economic principles of functioning of hotel economy as an important sector that can actively influence economy, economic, social and humanitarian base of the country.

3. Aim and tasks of research

Aim of the article is in the study of formation of clusters relative to the objects of hotel economy taking into account the features of regional policy in this service sector and in separation of prototype of the future cluster.

The following tasks were formulated to achieve the set aim:

1. To consider the notion “clusterization of hotel economy”.
2. To analyze the sector of hotel services in Zaporizhzhya region with further formation of cluster of the regional hotel complex.
3. To discover the cluster models that can be developed at the regional level.

4. Materials and methods of research

The research was based on the method of comparative and system analysis for the study of the system of hotel services and structural changes of hotel enterprises; method of correlative-regressive analysis was used for the study of dynamics of the volume of hotel services and their influence factors; economic-mathematical methods allowed to study the dynamics and tendencies of development of hotel economy enterprises, to assess and to elaborate the models of their further development. The informational base of research is: the publications of foreign and native scientists on the problems of hotel enterprise management; monographic economic literature; thematic publications in periodic issues; statistical materials and reports of State statistics of Ukraine; legislative and regulatory acts; the data of statistic reporting of separate hotel economy enterprises.

5. Results of research

The one of tested abroad and really effective forms of economic management of structural groups of objects is cluster methodology. In developed countries with market economy the clusters of regional type has been created during decades. The cluster kernel was the strong enterprises with qualified management and high level of corporative culture. The inclusion of non-uniformly scaled enterprises in the cluster favored the transfer of experience of management and corporative culture of basic enterprise – cluster kernel. The big enterprises in cluster conditions widen the horizon of their market possibilities and strengthen the existent potential. Small and middle ones strengthen their competitiveness and position at the markets. At the same time the one of tasks of cluster creation including small and middle enterprises in hotel economy is their adjustment of the continuous changes of competitive environment, market demand and investment climate.

The formation of real clusters in the region needs correspondent conditions, first of all, economic ones. There are conditions of strengthening of competitive dependence between the participants of hotel business, unitary infrastructure, need in the raise of service quality “class”. The preparatory work for clusters creation needs not only the presence of “coercive objective factors” but also the coordinated work in the region for development of these conditions in the direction of positive changes [4].

The clusters including enterprises of small and middle business in the sphere of hotel economy can be created on the base of self-organization in the result of natural integration and cooperation of production or with the help of strategic planning, realized by the regional and municipal power. Enterprises – the potential participants of possible clusters – often produce the similar or attendant types of commodities (services) and are competitive relative to each other at the commodity markets and self-organization of entrepreneurs is realized in such case usually by initiative of entrepreneur-leader. In this connection the entrepreneurs’ fear to lose the own business at inclusion in cluster is completely grounded and it gives the special role to the mechanism of coordination of conditions and interactions.

The high guarantees of observance of mutual duties are attained under condition of participation of the regional power bodies in this process. Administrations of the regions and municipal bodies make prognoses of clusters formation taking into account the spatial placement and specialization of hotel enterprises and organize the business contacts between entrepreneurs. Such organizational work also favors the strengthening of confidence between the probable participants of the cluster.

The attainment of arrangements between entrepreneurs on formation of cluster assets and “rules of the game” is rather complicated moment at the initial stage of its creation. The combining factors of economic interests of cluster creation are the arrangements on unitary price policy at the commodity market, widening of the volumes of production of commodities and services by its participants, unitary marketing policy, common planning of introduction of innovative technologies, maintenance, supply and so on [4].

Clusterization of the hotel economy in the regions of the country and cities is closely connected with the process approach to the management. The transition to the process approach in management reflects the striving of concerned participants to integrate all types of activity as to the solution of managerial tasks into the unitary chain that was broken as the result of “excessive enthusiasm” for functional approach when the functional teams work beyond the connection between each other. At the process approach the attention is concentrated on interconnection of separate actions, each of them, in its turn, is a process. Thus, the management in cluster is presented as a dynamic process that changes in space and time but keeps logistical and net connection between cluster links that have intention to the common realization of accepted mission that is to solve the group tasks of enterprises in whole.

The managers, whose work is in organization and guidance of the efforts of the whole staff for attaining aims provide the conditions for effective and productive labor of workers of organization and obtaining final social and economic results. As far as management is also the ability to attain the set aims, using intellect and motives of human behavior, the attention to such factors as organizational culture (corporate culture), participation of workers in profit distribution, in making decisions, in choice and support of guidance style is strengthened in the cluster.

The use of clusterization methodology in the sphere of hotel services is widely used in Western countries, especially in the USA. For example in SAR is a practice of creation of tourist clusters at the national and local level and also the development of thematic tourist clusters (sport, adventure, cultural-cognitive, vine and other). Thus, the famous economist of XX century Alfred Marshall wrote in his works that the significant role in clusterization is played by the entrepreneurs’ associations (for example, in Italy and series of European countries) [5].

The useful organizational-methodical support for the clusters formation is given by “Association of the small hotels and apartments of Ukraine” that unites near 50 enterprises. This public organization can be considered as the prototype of future cluster or rather protocluster. Its special role is in fact that relative to the status public organizations occupy the special place in the development of dialog between the business and power that is underlined by many famous theoreticians of cluster approach in economy. The complex of tasks of UPO “Association of the small hotels and apartments of Ukraine” is presented on the **Fig. 1**.

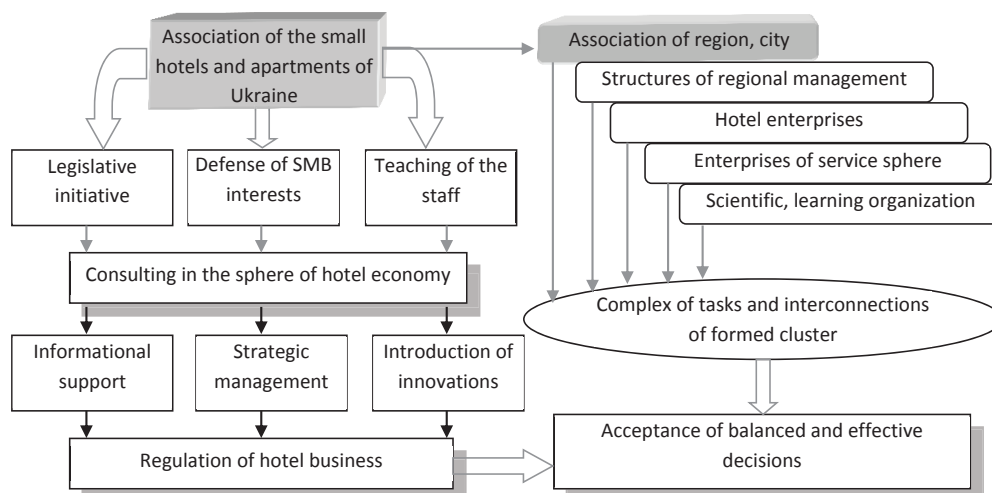


Fig. 1. The tasks of UPO “Association of small hotels and apartments of Ukraine” and its participation in clusters creation

Thus the created UPO “Association of the small hotels and apartments of Ukraine”, its activity and analysis of the structure allow separate the series of signs of combining-defending function of such associations, especially: striving for creation of the net form of organization by the horizontal and territory (geographic) signs; dialog with power structures; production of initiatives for the development of small hotels segment; striving for guaranteeing and support of competitive enterprises [2, 8].

As to the very order of formation of cluster of the regional hotel complex, the following logic can be accepted:

- inventorying of the main funds, assessment of productive structure, analysis of external environment;
- determination of economic and innovative potential of each potential cluster separately;
- marketing of the regional environment and benchmarking in the sphere of hotel services;
- organizational-legal and psychological preparation for integrative interconnections;
- determination of balance of positives and negatives, especially risks and benefits;
- elaboration of strategies of cluster development;
- coordination of norms and conditions of inclusion in cluster and activity in it;
- preparation for the conclusion of treaties.

In Zaporizhzhya region in the nearest future can be created the clusters of three types:

1. Groups of small hotels.
2. Leader and its net.
3. Special clusters (for example, including such enterprises as hostels, tourist bases, camping, dormitories and other).

At clusters creation the formed economic connections between hotel enterprises and suppliers must be taken into account. At the same time it is necessary to carry out the preparatory work that must include:

- creation of structural kernel for formation of cluster models;
- marketing work;
- elaboration of the policy and strategy in the field of the quality of offered services;
- elaboration of informational system and mechanisms of internal economic policy;
- determination of the order of working procedures of interaction between enterprises that demonstrated the desire to enter in the hotel cluster including internal standards.

Especially in Zaporizhzhya region the hotel service sector can be characterized in the following way.

The important parameter of development of hotel economy is a commissioning of new hotels in the region. There was also observed the change of structure of the property category of the hotel fund [3, 7].

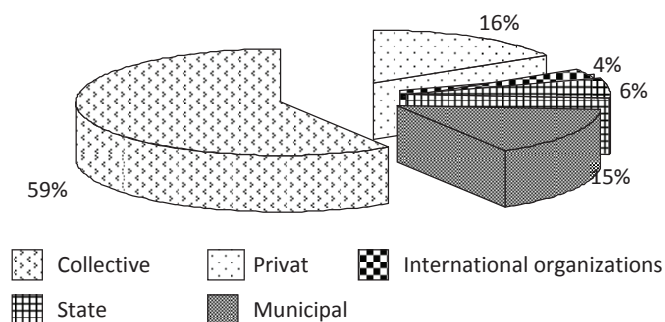


Fig. 2. The structure of property categories of hotel economy of Zaporizhzhya region in 2015

For today the most hotel enterprises of the region (59 %) have collective (joint-stock) property category, more than 16 % are the private hotels, the other – municipal, state property and property of international organizations. The change of property categories was reflected also on the parameters of material-technique state of the regional hotel sector (**Table 1**).

Table 1

The dynamics of main parameters of material-technique base of hotel economy in Zaporizhzhya region

Parameters	Years			Changes, 2013/2011	
	2013	2014	2015	(+/-)	(%)
Number of hotels, units	166	197	221	31	118,6
Disposable lodging capacity, places	12883	13020	15234	137	101,0
Housing space of accommodation, thousand m ²	106	108	113	2	101,8
Mean area of accommodation, m ²	16,3	16,9	16,9	0,6	103,6
Mean lodging capacity of hotel enterprise, places	78	83	89	5	106,4
Mean level of load, %	20	19	20	-1	95,0
Newly arrived that were placed, persons	25316	29879	32534	4563	118,0

The analysis testifies to the growth of the number of hotel enterprises in region (for the period 2013–2015 by 18,7 %) mainly at the expense of building new establishments with low lodging capacity and raised comfort and reconstruction of the series of existing hotels into the higher classes “luxе” and “semi-luxe” that also caused the lowering of general lodging capacity of establishments.

For the establishing the economic effectiveness of the activity of different types of hotels (net, autonomous and small hotels-private apartments) there was carried out an analysis of their financial condition and reporting according to the form 1-hotel, presented in the **Table 2** that allows define the place of concrete hotel in economic environment and the effectiveness of business relation with business partners.

Table 2

The main economic parameters of the activity of studied hotel economy enterprises in Zaporizhzhya region

Parameter	Autonomous hotels	Hotel nets	Small hotels
Number of examined hotels, units	7	4	8
Mean lodging capacity of hotel, places	134	98	23
Mean area of accommodation, m ²	18,3	16,7	15,4
Price of accommodation “standard”, grn for a day	430	580	280
Number of staff, persons for accommodation	1,1	0,8	0,6
Loading coefficient, %	25	47	36
Part of housing area, %	43	51	54
Profit for accommodation, grn for a day	176	337	96
Profit for worker, thousand grn	169	421	466
Price for a day of staying, grn	460	550	290
Especially of foreigners, grn	1280	1380	380
Profit for unit of costs, grn	32	64	43
Level of service quality (from 5 points)	3,6	4,1	3,5

The financial analysis demonstrated that the economic activity of net hotels is generally more effective comparing with autonomous ones [9].

The further widening and diversification of material base of hotel economy of the region will take place, from the one side, at the expense of elaboration of the net of high-class 4-star hotels in the main centers of tourist demand concentration, and from the other one, at the expense of development of small private hotels in rural area. It will allow raise the general level of the net of lodging accommodation of hotel type, widen and diversify the supply nomenclature and give Zaporizhzhya region the competitive positions among the main markets of hotel services of Central-Eastern Europe.

The processes of denationalization and further segmentation of the market of hotel services influenced the change of property category (mainly by corporatization way) and model of managerial structure of the hotels. The old material-technical base, insufficient financing of the state lodging accommodations, low competitiveness and high price cost of hotel services of cost-accounting enterprises led to the unprofitableness of most lodging establishments of the region, decrease of their number, reduction of the staff.

Thus for today the development of supply of lodging services in region takes place by the way of successive optimization of their quality-price criteria: creation of more comfortable conditions of staying, improvement of service quality at keeping relatively moderate prices and diversification of service assortment. On the base of world standards of quality there takes place also the transformation of organizational and technological principles of the activity of hotel economy enterprises [1, 6].

The main aims of the hotel complex development in region are:

- the supply of newly arrived persons with lodging services, high-quality rest, conditions for renewal of intellectual and emotional forces;
- stimulation of stable socioeconomic development of the region;
- raise of the effectiveness level of the hotel potential usage;
- raise of the hotel service quality.

Realization of these objective directives is intellectually and financially based, but they can help the hotel economy enterprises of the region to move to the new desired level of effectiveness and social usefulness.

The certain structure of the clusters of different type flows from the analysis of situation in the hotel economy of Zaporizhzhya region. We talk, first of all, about the different positions of participants of cluster organization for today. Such participants can be the associations with wide spectrum of connections in interregional space, hotel enterprises, already created in the world net structures, large regional hotel structures that must occupy the dominating positions in region by the volume of given services. The own cluster model can be created by the structures of small business that have the significant list of different small enterprises. It is expedient to form the cluster model of hotel economy enterprises gradually: to form the kernel of hotel cluster, regional and branch organizations combined with the hotel and other enterprises for giving additional and attendant lodging services.

The forms of organization and conditions of inclusion in cluster are unequal for the different forms of cluster organization [10].

6. Discussion of results

The advantage of the article is the analysis of: material-technical base and economic parameters of hotel enterprises and also the property categories of hotel economy of Zaporizhzhya region that allow form the mechanisms of development of hotel clusters, forms of organization of interaction and conditions of integration of enterprises.

At the same time, analyzing the organizational-economic conditions of cluster association of hotel economy enterprises it would be necessary to present the stages of hotel clusters formation in more details.

The studies of the article give managers a possibility to make the grounded managerial decisions as to the integration and formation of cluster model by the hotel economy enterprises and the raise of effectiveness of their activity at the hotel service market.

This article is a part of scientific work that was introduced in the hotel enterprise in the city Zaporizhzhya.

7. Conclusions

Clusterization can be considered as the factor of stabilization and stable development of regional economy because its main result is not the formal reorganization but the effect of interaction synergy. The prototype of further cluster – “Association of the small hotels and apartments of Ukraine” – was separated.

It was revealed, that at the regional level it is expedient to create temporal or permanent structure that will be responsible for the work of analytic assessment of situation, strategic planning of integrating process, preparatory work. The cluster models in hotel complex must be formed gradually in three stages: kernel creation (I), inclusion of the blocs of informational support and cultural service (II), attraction of the small firms, health-improving centers, elements of bank service and so on to the influence zone (III).

The development of enterprise in the net hotel business and especially introduction of the new objects of net lodging means must be realized taking into account the prospects of their stable development on this territory, destination profile, prospective directions of tourism development, resource potential of the territory for avoiding degradation changes in anyone of three components of destination structure: political-economical, physical-ecological and socio-demographic.

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THE SYSTEM OF THE MANAGEMENT OF STABLE DEVELOPMENT OF RURAL TERRITORIES: COMPARISON OF THE NATIVE AND FOREIGN EXPERIENCE

Irina Lutsenko

Postgraduate Student

*Department of Audit and Economic Analysis
University of the State Fiscal Service of Ukraine
31 Universitetska str., Irpin, Ukraine, 08200
lutsenko_iryana@ukr.net*

Abstract

The article elucidates the problems and tendencies of formation of the native system of the management of the stable development of rural territories in the context of budgetary policy and general European experience.

The author has systematized the types of state support of the stable development of the rural territories by the forms of budgetary regulation and their legislative support. The world experience of the state support of budgetary regulation of the development of rural territories and the features of the influence of state subventions on the economic safety of local territories were studied. The main problems and tendencies of the management of the stable development of rural territories were analyzed and the weak places – dependence of rural economy on agrarian production, decrease of effectiveness of existent resources usage and worsening of social-productive and ecological infrastructure of the villages were determined.

Alongside with it the inconsistency of the level of development of Ukrainian agrarian sector and rural territories in general to the world level and the standards of EU countries was revealed that is for today the significant obstacle on Ukraine's way to the membership in European Union. It can be explained especially by the general policy of development of the rural territories in European Union that is realized within the Common Agrarian Policy (CAP). Thus, on the way to the finish of administrative-territorial reform and decentralization of the power authorities Ukraine must take into account the priorities of CAP of EU countries as the target orientation points for the formation of the system of the management of stable development that would provide the balance of agricultural and rural development.

Taking into account the experience of development of EU agrarian policy, based on the domination of the development of rural territories over the other tasks, Ukraine must adapt its policy to the European standards and to follow the course of changes of agricultural development of EU countries for the timely modernization of the forms of state support of the stable development of rural territories.

Keywords: management of the stable system of rural territories, regulation, decentralization, budgetary system, state support, European integration.

DOI: 10.21303/2504-5571.2016.00206

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1. Introduction

The notion “management of the stable development of rural territories” is not new by its essence for the native science. Already in the first half of XX century the famous Ukrainian academician V. Vernadsky has formulated the conception of the further synchronous harmonic development of society in three directions: economic, environmental and social. He called his doctrine “noosphere” (sphere of mind), which essence was in the reasonable management from one generation to the other: the quality and safety of the human life must not decrease; the state of environment must not worsen; social progress must take place. So, if biosphere is a cover of earth together with natural resources and all living organisms that can accumulate the solar energy, compensating the own consumption, it evolves at the human rational activity into the qualitatively new level – noosphere that provides that the human mind it is a center of Universe. The theory of noosphere that was offered by V. Vernadsky in Sorbonne (1922–1923) it is a first step in the creation of the modern conception of stable development.

As it is stated in the work [1] «...the world and native experience testify that the stable development of rural territories is the one of main factors of stabilization of the socioeconomic relations, creation of conditions for the stable economic growth of the state. That is why the main components of the state policy on the support of rural development in Ukraine are the complex of legal, orga-

nizational and economic arrangements, directed on the raise of effectiveness of the functioning of agrarian economic sector, solution of socio-ecological problems of the rural population and the support of impetuous stable development of the rural territories.

In several countries the state support of the system of the management of stable development of the rural territories is a component of local self-government and is a totality of different instruments and key factors, the one of which is financial mechanism and budget that is an efficient key factor, especially for the central power bodies, using which they stimulate the development of socio-economic processes on the separate territories and in the country as a whole. But the task of effective usage of state budget, as a key factor of the influence on socioeconomic processes, remains unsolved in Ukraine till now.

2. Analysis of the literary data and statement of the problem

The solution of the problem of state support of the development of rural territories is realized in scientific works of many scientists and practitioners, concentrated in scientific environments that deal with the study of the different aspects of the management of the stable development of national economy, namely: Institute of economy of the management of nature and stable development, NAS of Ukraine, Institute of economy and prognostication, NAS of Ukraine, NEC “Institute of agrarian economy”, NAAS of Ukraine, Institute of demography and social studies, named after M. V. Ptukha, NAS of Ukraine and others. Detailing the contribution of aforesaid centers in the formation of the modern theory of stable development of Ukrainian national economy, let's accent the importance of the following studies of this problem. Especially in the works [2] and [3] the essence of innovative development of economy of the rural territories and their prospects were explained and in the works [4, 5] and [6] the problems that decelerate European integration were considered, and in [1, 7, 8] and [9] the theoretical fundament of the state management of development of rural territories was laid and the environmental aspects were not accented.

All mentioned publications have a common feature – they need the deep analysis of the world experience of the state support of stable development of rural territories at the deficit of free budget costs under modern conditions of transformation of the national economy that is insufficiently studied.

But in these publications the task of budget usage as an instrument of active influence on economic situation at the local and regional levels, simulation of the development of enterprise, involvement of investments in the regional economy, priority development of depressive and problem territories is not solved.

3. Aim and tasks of research

The aim of research is in elucidation of problems and tendencies of formation of the native system of the management of stable development of rural territories in the context of budget policy and general European experience.

For attaining the set aim the following tasks were formulated:

- to deepen the theoretical principles of conception of formation of the system of management of the stable development for elucidation of the economic essence of main notions;
- to ground the scientific principles of the system of support of the stable development of rural territories on the base of processing of the prominent economic theories.

4. Materials and methods of research

The main methodological base is the methods of economic studies, basic principles, scientific theses and modern achievements of economic theory that allow formulate the scientific results on the base of historical, abstract-logical and formalized methods.

5. Results of research

The analysis of conclusions and propositions of Rio+20 conference gives a possibility to state that it is obligatory to take into account the environmental component at the management of the development of city settlements and rural territories. That is why in further at the formation of

theoretical and methodological bases of the strategy of socioeconomic development of rural territories let's take into account by default the environmental factors and correspondent consequences for environment without special references.

As it was noted in the work [8] "...the fixing a quota for the volumes of agro-production directly supports the level of profitability of farms, limits the levels of monopolists' market prices by introduction of rigid antimonopoly legislation and so on. In other words, neither in the USA, nor in EU countries or Japan, the market anarchy in such relation is not allowed: the strict economic mechanism that optimizes the effect of market and state regulators functions there".

We agree that between urbanized and rural territories must take place the balance of capital investments in infrastructure, budgetary costs and also the increase of financing of programs of economic development of rural territories [2, 4, 10–12].

In organization of the rural territories development acts the European working group (ARGE), especially financed from the programs of European regional development fund (ERDF), European social fund (ESF), European agricultural guarantees fund (EAGGF), Financial instrumental fund of fishing guaranteeing (FIFG) and so on [2].

The construction of the systems of local self-government of modern states is based on their administrative-territorial order that is the one of most important components of the state organization. The aim of division of the state territory in correspondent administrative-territorial units is a creation of conditions for formation of most effective system of public administration, based on the taking into account of geographic, demographic, economic, social, cultural and other special features of territorial units, realized for the provision of its maximal correspondence to the needs of population. Then, the rational territorial state organization it is a base of formation of effective system of public administration in whole and local self-government in particular.

The study of transformational processes in the European space in XXI century gives grounds to make a conclusion that the effectiveness of state regulation of agricultural development is directly connected with the improvement of administrative-territorial order.

The crisis situation in Ukraine states a question about the facilitation of managerial structure, rationality and more effectiveness of regional management. Taking into account the fact, that such transformations have a system character and touch the questions of functioning of public power bodies of the different territorial levels and the review of the spheres of their subject dependence, the renewal of legislation on the local self-government, local state power bodies and branch legislation, first of all budgetary one, takes place in parallel.

The Cabinet on Ministries of Ukraine by the resolution of 19.09.2007 accepted the State target program of development of Ukrainian village till 2025 that must raise the effectiveness of such Ukrainian laws as:

- "On the priority of social development of the village and agro-industry in the national economy";
- "On the stimulation of agricultural economy for the period 2001–2004";
- "On the state support of agricultural economy of Ukraine";
- "On the main principles of the state agrarian policy for the period till 2015" and other.

But the analysis of own observations and publications of colleagues (see, for example, [13]) confirms the low effectiveness of this program.

Taking into account the systematization of the main Aims of Stable Development at the national level, announced by the President of Ukraine Petro Poroshenko [14] at the UNO summit, when the general conception of the new orientation points of development till 2030 were presented, we consider in the further research the stable development of rural territories as a continuous process, at which any economic activity of the rural territories is directed on satisfaction of growing needs of Ukrainian population under condition of preservation of the resource base of aforesaid territories (or joint communities), co-evolutional development of settlement net, production technologies, external environment and other factors that influence the formation of proper life space for the modern and future generations.

Alongside with it in the research [15] was established exacerbation of problem with the one of main components of stable development – social safety of rural territories. For today the critical

level of asocial capital that decelerates the management of stable development and intensifies the social stratification that favors the formation of dangerous precariat class, is accumulated within the rural territories. The negative influence of precarization on the main social groups was proved in [16] and [17] on the base of empirical data for the period 1994–2013.

It proves that the problem of the management of stable development is the one of most topical, and the significant attention, paid to the stable development, objectively testifies to the political and scientific topicality of this problem. But the problem of stable development does not disappear with time but, on the contrary, grows and becomes more complicated, because the innovative world needs the new approaches in the study and research of the notion of stable development.

Despite the presence of resources and reserves for the stable development and the program of the state support of village, the negative tendencies in the development of rural territories has been intensified last years: reduction of population, decline of production, deceleration of its intensification, insufficient introduction of innovations, weak diversification of economy, unstable environmental situation, worsening of socio-cultural equipping of the villages.

Thus, the inconsistency of the level of development of Ukrainian agrarian sector and rural territories in general to the world level and European standards is for today the significant obstacle on the way of Ukraine to the membership in European Union.

6. Discussion of the results of research

The received results continue the new scientific direction of work in the sphere of formation of theoretical basis for the state management of the stable development of rural territories for the strengthening of national economy under conditions of European integration.

The author's understanding of the solution of the problems that decelerate the stable development and make impossible the adequate management will be useful for the leaders of newly created territorial communities and village headmen that for today have no methodical recommendations for the stable development of rural territories.

7. Conclusions

According to the set aim and tasks, the theoretical principles of the modern conception of formation of the system of management of the stable development of rural territories were essentially added. Especially, it was proved, that Ukraine is on the way to the finish of administrative-territorial reform and decentralization of power authorities. It was grounded, that taking into account the favorable geographic, climatic, resource and other preconditions of the development of rural territories, Ukraine is potentially able to become a state with priority development of agrarian economy and one of the main supplier of eco-friendly food products on the world markets.

The analysis of the main problems and tendencies of the management of the stable development of rural territories demonstrated the weak places – dependence of rural economy on agrarian production, reduction of the effectiveness of existing resources usage and worsening of socio-productive and environmental infrastructure of villages, which solution allows intensify the stable development of rural territories.

On the base of processing of the contribution of famous economists there were grounded scientific principles of the system of support of the stable development of rural territories that is expedient to be modernized in the direction of formation of Western European model of the stable rural development in Ukraine that must become the finish of decentralization of budgetary system and local power bodies. They must have not only duties but the real control over the local situation that is impossible without the strong financial base. The policy of support of rural population must be radically changed, because this problem is not properly studied and has not the wide support.

Thus, taking into account the experience of development of EU agrarian policy, based on the domination of the development of rural territories over the other tasks, Ukrainian policy must be adapted the European standards and to follow the course of changes of agricultural development of EU countries for the timely modernization of the forms of state support of the stable development of rural territories.

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INNOVATIVE ACTIVITIES OF AGRICULTURAL CONSULTATIVE NETWORKS AS A FACTOR IN STRENGTHENING THE ECONOMY OF RURAL AREAS OF UKRAINE

Valentyn Martynenkov

*Taras Shevchenko National University of Kyiv
64/13 Volodymyrska str., Kyiv, Ukraine, 01601
ibeerless@gmail.com*

Abstract

The article highlights the scientific substantiation of perspective ways of innovative development of national agricultural advisory services in the context of stimulating economic development in rural areas of Ukraine in the conditions of decentralization of power. The study allowed to establish the existing imbalance in the ratio of the main types of agricultural enterprises and agricultural service cooperatives, falling on one advisory service, as well as to determine the causes of significant imbalances in the regional context, the determination of which offers a number of key innovation priorities, activating the integration of education, research, marketing, economic and financial, consulting and other services necessary to provide a complete infrastructure of the economy of rural areas with the potential of basic institutions of NAAS and MES.

Keywords: agricultural advisory service, economy of rural areas, innovative development, innovation, advisory and consulting services, agricultural enterprises.

DOI: 10.21303/2504-5571.2016.00198

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1. Introduction

The global experience of the development of advisory services of economic entities of rural areas highlights the importance of creating the efficient regional network of information and advisory service based on innovation technologies with regard to service delivery to small farm enterprises (FE), family farm enterprises (FFE), private farm enterprises (PFE) and other agricultural enterprises, which is an essential factor in the system of strengthening food and socio-economic security of each developed country. However, the development of domestic agricultural consultative network is characterized by certain dualism. On the one hand, we have around a third of Ukrainian rural population, 4 million private farm enterprises and almost 40 thousand officially registered farm enterprises in need of government support, particularly in the area of professional consultative service delivery, and on the other hand, a number of highly profitable fields of agricultural production (in the first instance, crop growing, poultry breeding etc.) are under full control and dependent on the policy of huge agricultural holdings. Their vast majority is transnational companies having their own consulting companies and the need for advisory services according to Law of Ukraine On agricultural advisory service is questionable. In this regard, the need arises to study the evolution of national agricultural advisory services and determine perspective ways of innovative activities of agricultural consultative networks in Ukraine.

2. Analysis of recent studies and publications

The general problems hampering the robust development of advisory and consulting services in different financial and economic aspects are being studied in many scientific centres of Ukraine and the world. Among others, we can point out the research works of such economic scientists [1–7]. In international studies, the issue related to importance of agricultural advisory services is not controversial because specialized consulting firms have long been regarded as the main driving force of promoting the innovations in the agricultural production at the inter-regional and national level. Moreover, most of publications chiefly concern the determination of scientific projects related to “institutional environment of consulting services for agriculture; determination of the structure required for the operation of the advisory system as well as approaches, methods, tools and content of consultative activities etc.” [8–11]. In [12–19] were formed the methodology elements of creating an innovative platform for cooperation between scientists, government officials and business.

However, in Ukraine the subject of consulting service delivery for agricultural enterprises is not scientifically highlighted enough, especially in the area of innovative development of agricultural advisory services.

3. The aim and objectives of research

The article is to highlight the theoretical and methodological problems of formation of conditions for innovative activities of agricultural consultative networks as in context of strengthening the economy of rural areas of Ukraine.

To achieve this goal the following tasks were set:

1. Scientific substantiation of perspective ways of innovative development of national agricultural advisory services to boost the economy of rural areas in the conditions of decentralization of power and upgrade of the system of the National Academy of Agrarian Sciences of Ukraine.
2. Detected significant imbalance in the ratio of farming enterprises, private farming enterprises and agricultural service cooperatives per advisory service, residual principle of financing as well as absence of mechanisms of mutually effective cooperation of the agricultural consultative networks with local self-government bodies are the main reasons slowing down the pace of rural development. In this regard, one of the key strategic priorities is to choose the innovative way of solving the above-mentioned issues through more active integration of educational programs.

4. Materials and methods of research

The theoretical basis of the study was the fundamental position of leading scientists in the field of rural development and extension services in agriculture. The normative legal documents of strategic nature were used. Methodological research framework is covering general scientific principles and methods of knowledge, analysis, synthesis, specifically inductive, deductive abstract, dialectical, system, functional, task-targeted, synergistic method and SWOT-analysis.

5. Research results

Given the definition of consulting services as the process of financial and economic consulting at the local level (financial analysis, accounting, audit, taxation) and at the global level (strategic development, reorganization, innovation process), one of the main official documents related to the consultation of the network of agricultural enterprises is Law of Ukraine On agricultural advisory activities (see the details, for example, in [1] and [12]). Besides, it is pertinent to single out a number of productive research studies of the national scientific centre of the Institute of Agrarian Economics of the National Academy of Sciences of Ukraine scientifically substantiating that the “advisory service is the key element of the system of dissemination of agricultural knowledge” [13], and constructively formulating the basic organizational and methodological principles of monitoring the delivery of socially oriented agricultural advisory services significantly streamlining the organization of work related to “...implementation of the State target program on the agricultural advisory activity and plans (programs) developed for its implementation, aimed at the delivery of socially oriented advisory services in Ukrainian regions (oblast) in line with: the State target program on the development of Ukrainian rural areas for the period until 2015” [2].

The importance of outlined issues in the context of the EU integration aspirations of Ukraine is stressed with the fact that the Council of Europe sets high priority for the government support to state agricultural services. Alongside with that, the State budget of Ukraine for 2015/2016 does not provide for the funds to finance the state target program on the agricultural advisory activity, delivery of socially oriented advisory services despite the direct obligations stipulated by Article 8 of Law of Ukraine On agricultural advisory activity [2]. Furthermore, according to the data of the National Institute for Strategic Studies (NISS), in the context of implementation of measures stipulated by the State target program on the development of Ukrainian rural areas in terms of advisory support, we have that “...during 2008 – 2011 7 million hryvnias were actually used from the state budget or 15.6 percent of the forecast volume, in particular in 2008 – 3487.6 thousand hryvnias (33 percent of the planned volume), in 2009 – 1863 thousand hryvnias (17.3 %), in 2010 – 1659.4 thousand hryvnias (14.9 %). In 2012 1600 thousand hryvnias were used from the

state budget out of the planned 2 million hryvnias, and in 2011 and 2013 the funds were not allocated for the government support to the agricultural advisory service” [3].

The comprehensive analysis of the current financial and economic situation in Ukraine is indicative of almost zero probability of improvement of the government financial support to advisory services for domestic agricultural enterprises. In this regard, it is proposed to actualize the experience of well-known consulting firms whose number was 1251 units as of 31.12.2013 according to the data of the Audit Chamber of Ukraine, and “in Ukraine as a whole the number of auditing firms and auditors entitled to carry out audit activities and having relevant obligation to submit the report to the Audit Chamber of Ukraine under form No. 1 – audit was 1488 entities” [14].

The analysis of the statistic data characterizing the scope of delivered services with regard to tasks aimed at giving confidence to economic entities in the field of agriculture, hunting, forestry, fishing and fish breeding indicates the need for additional consideration of the reasons which caused the fact that in 2013 Kirovohradska Oblast suddenly became an absolute leader having delivered the services (exclusive of VAT) in the amount of 50 million UAHs (91 percent of all operations), but Kyivska Oblast (including the capital city) turned into an outsider [14]. Even if we assume that we are dealing with a technical error, because Kyivska Oblast has most of audit organizations and in 2012 the relevant services were delivered in the amount of 49 million UAHs, however, it confirms hyper-high level of centralization of consulting services for economic entities in the field of agriculture, hunting, forestry, fishing and fish breeding as the lion’s share of all operations in Ukraine is systematically performed in one region.

It is pertinent to lay a special emphasis on the importance of continuing the technical assistance project launched in 1996 in the framework of bilateral agreements between Ukraine and Germany DGRV/GIZ “Support to rural finance in Ukraine”, whose implementation phases should be agreed with the operation of the network of domestic agricultural consultative networks as well as Swiss-Ukrainian project DESPRO greatly supporting the decentralization of power in Ukraine. It will allow for considerable minimization of risks in economic and administrative activities in newly established rural communities and stimulate socio-economic rural development in Ukraine.

The analysis of studies results of leading scientific centres of Ukraine and the world shows that the economic success of most of developed countries of the world greatly depends on the development of the market of consulting services. In particular, K. Kowalska proves that the income distribution between different types of services boosts the growth of German business consulting market by 16.4 % in 2012 in comparison with 2010 and the total income of management consulting in Europe was over 90 billion Euros in 2012 [15]. Moreover, in 2015/2016 the consulting industry keeps developing rapidly with a clear trend to income increase [18].

In this regard, we will systematize the work experience of the most successful consulting companies (Deloitte, PricewaterhouseCoopers, Ernst&Young and others) and define the priorities of the innovative development of the market of consulting services in Ukraine for agricultural enterprises (**Table 1**).

Thus, based on such SWOT-analysis, we can outline two possible strategic innovative ways of innovation activities of agricultural consultative network on the basis of:

- 1) private consulting companies;
- 2) state research establishments of the system of the National Academy of Agrarian Sciences and Ministry of Education of Ukraine.

Besides, if the delivery of consulting services for large agricultural enterprises (corporations, agricultural holdings etc.) is fully regulated by market economy laws, it is necessary to develop a flexible system of tax incentives allowing for considerable reduction of the cost of relevant advisory services for the stimulation of the development of consulting industry in favor of small agricultural producers.

Furthermore, it is necessary to make the most of existing regional potential of the agricultural consultative network which is, however, distributed in Ukraine unevenly in relation to existing PFEs, FEs, agricultural service cooperatives (ASC) etc. (**Fig. 1**)

Table 1

SWOT-analysis of innovative areas of market development of consulting services for agricultural enterprises of Ukraine

	Small and medium enterprises	Large companies (agricultural holdings, TNC)
Strengths	<ol style="list-style-type: none"> 1. Development of the network of small and medium enterprises in newly established rural communities requiring the development of modern investment projects based on innovative agricultural technologies. 2. Need for development of innovation projects on economic development of territorial communities to be financed from the State Fund for Regional Development in terms of decentralization of power, as well as from other non-government sources. 3. Development of the market of domestic agricultural cooperation. 4. Increase in the customer base of consulting companies. 	<ol style="list-style-type: none"> 1. Globalization and computerization of the market of technologies of modern agricultural production. 2. Increase in demand for the development of global innovation strategies for the development of the territories, socio-economic clusters, transnational companies, agricultural holdings etc. 3. Need for economic and mathematical modelling and forecast of optimal size of agricultural land areas (by types of production) profitable for the enterprises' lease or purchase (after lifting the relevant moratorium and with due consideration of amendments to national regulatory acts). 4. Optimization of tax burden (especially in the area of transfer pricing). 5. High solvency of consumers of consulting services 6. Hyper-fast development of outsourcing services
Weaknesses	<ol style="list-style-type: none"> 1. Lack of most of entrepreneurs' experience and traditions to use consulting services for innovative development of agricultural enterprises. 2. Stereotype on high cost of consulting services. 3. Low solvency of consumers of consulting services. 4. Low computer literacy of rural population engaged in agricultural production. 	<ol style="list-style-type: none"> 1. Poor controllability of the market of consulting services at the legislative level. 2. Frequent change of the Ukrainian legislative framework. 3. Asymmetry of administrative goals and tasks as well as methods of their solving. 4. Absence of competent companies having sufficient level of experience in service delivery to big agricultural business.
Opportunities	<ol style="list-style-type: none"> 1. Diversification of the market, portfolio and dimension of consulting services. 2. Collaboration with financial and economic units of newly established territorial communities on delivery of advisory services. 	<ol style="list-style-type: none"> 1. Expansion of the scope of competence of consultants from consulting companies. 2. Development of the management consulting with due consideration of features of domestic agribusiness.
Threats	<ol style="list-style-type: none"> 1. High level of corruption of government authorities and other institutions. 2. Shadow domestic economy, particularly, in terms of government support to innovative development of the network of agricultural companies different by size as well as other types of rural economy (especially tourist and recreation area). 3. Unpredictable national financial and economic policy (hyperinflation, permanent change of Tax and Customs codes etc.). 	

Source: drafted by the author [4–10]

Therefore, it was found out that the average indicators of burden per advisory service in Ukraine were more than 265 units of FE and 28 thousand units of PFEs and all regions of the country could be conditionally divided into the following groups (**Table 2**).

Table 2

Grouping of Ukrainian regions by level of burden per advisory service of the FE and PFE

Group	FE		Group	PFE	
	Region	Unit		Region	Unit
I	Mykolayivska Region	3860	I	Dnipropetrovska Region	175,4
	Dnipropetrovska Region	3348		Volynska Region	154,2
	Chernihivska Region	88,85714		Chernihivska Region	22,81429
II	Chernivetska Region	83,75	II	Chernivetska Region	21,875
	AR of Crimea	–		Donetska Region	21,78

Source: drafted by the author based on **Fig. 1**

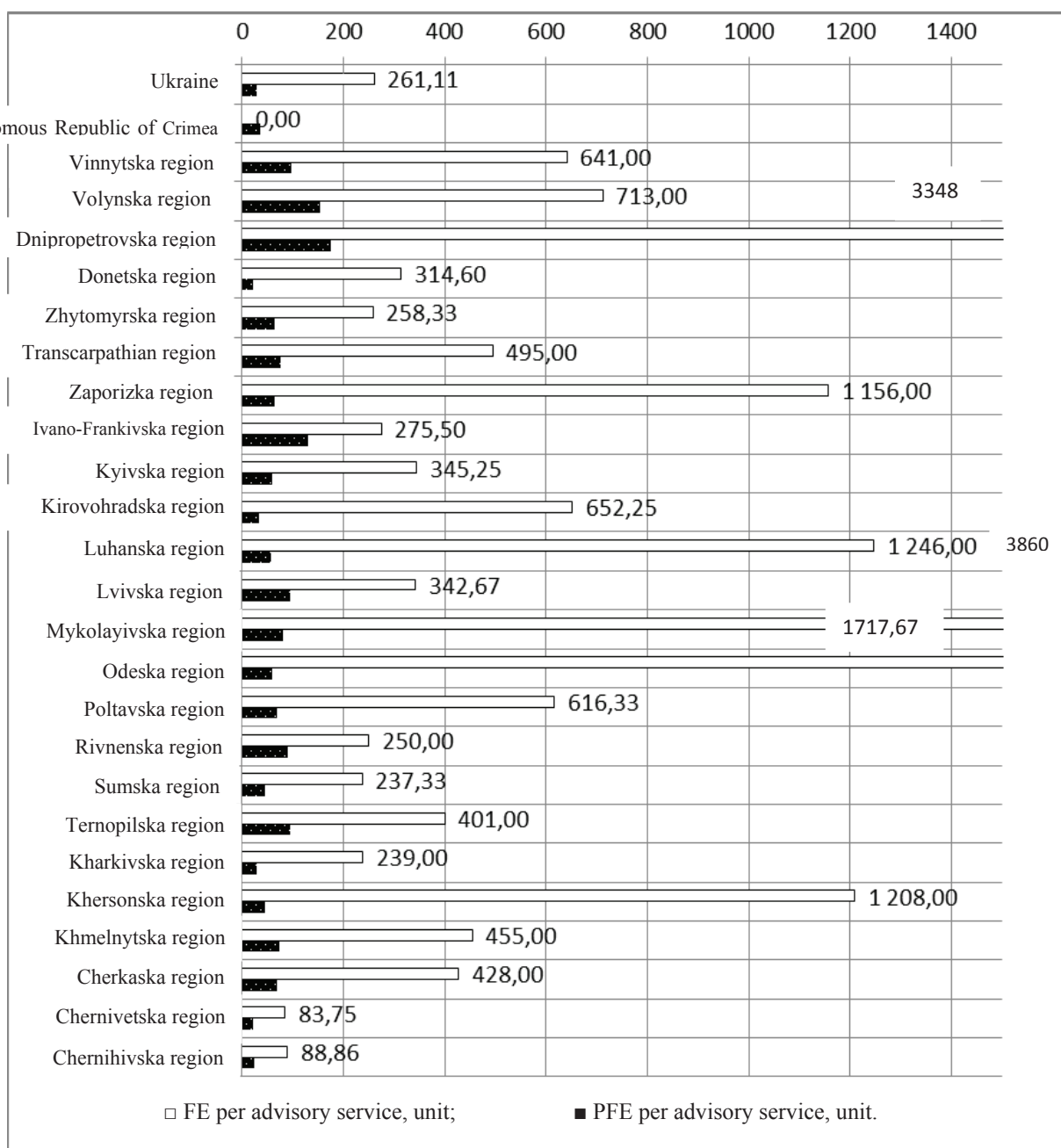


Fig. 1. Ratio of FEs and PFEs per advisory unit as of 2014/2015

Source: calculated by the author based on the official data of the Ministry of Agrarian Policy and Food of Ukraine [16]

The analysis of the data set out in **Table 2** points out the need for priority support to those regions of the country, which are in group I because the indicators are several orders better in group II. Moreover, Dnipropetrovska Region has the highest burden per advisory service both for FE and for PFE denoting the priority of extension of the consultative network in this region because the presence of five registered agricultural experts-advisors is far from being enough. The similar situation occurred in Ukraine regarding the service delivery to ASC (**Table 3**).

Give the regional disproportions of the agricultural consultative network defined above, we share the viewpoint expressed by All-Ukrainian non-government organization “National associ-

ation of agricultural consultative networks of Ukraine” regarding the expediency of establishing “the National Center of Agricultural Advisory Service”, whose existence is stipulated by special order of the Cabinet of Ministers of Ukraine (of May 23, 2012 No. 303-r.), which was not implemented due to complicated financial as well as military and political situation [17].

Table 3

Grouping of Ukrainian regions by levels of service delivered by one advisory service to ASC (as of 2014/2015)

Group	Region	Number of ASC being served by 1 advisory service
I	Luhanska Region	53
	Mykolayivska Region	41
	Zaporizka Region	40
II	Lvivska Region	5
	Zhytomyrska Region	5
	Chernivetska Region	3

Source: calculated by the author based on the official data of the Ministry of Agrarian Policy and Food of Ukraine [16]

In order to find alternative ways of development of the innovative activities of the agricultural consultative networks in strengthening the rural economy of Ukraine, it is proposed to take into account the financial possibilities stipulated by the Cabinet of Ministers of Ukraine to support the processes of decentralization for 2016, in particular, provide in the budget program of the State Fund for Regional Development (which received over 3 billion UAHs for its implementation) the expansion of the procedure for the preparation, evaluation and selection of investment programs and projects on regional development to be implemented at the expense of the State Fund for Regional Development (Resolution of the Cabinet of Ministers of Ukraine of March 18, 2015 No. 196 [18]). In particular: investment programs and project should be compliant not only with the priorities defined in the State Regional Development Strategy, strategies on development of regions and launch of investment programs, projects related to cooperation of territorial communities etc. but also contribute to the development of domestic agricultural advisory service (especially at the educational and scientific institutions of the National Academy of Agrarian Sciences and Ministry of Education and Science of Ukraine).

In this context, it is important to organize the cooperation of higher educational establishments of Ukraine specialized in agriculture (where 166.4 thousand students study as of January 01, 2016), particularly, regarding the teaching practice in the area of delivery of agricultural advisory services to FE, PFE and ASC. The simultaneous involvement of specialists of leading national research centres in the field of agriculture (particularly, over 4.4 thousand scientists work within the system of the National Academy of Agrarian Sciences, 340 of them are doctors of sciences and academicians) will allow to solve a number of issues related to business planning, determination of optimal types of high quality types of agricultural products and agricultural technologies with due consideration of specific natural and climatic conditions. It will provide for practical implementation of the developed theories of social models of complex rural and agricultural development.

6. The discussion of the results

Thus, the author was the first to compare rates of decentralization of power and quality of innovation advisory services in agriculture Ukraine.

The results are appropriate to be used in socio-economic activities of the newly established municipalities to form innovative development strategy, the availability of which provides relevant regulatory documents, including passport economic community.

This publication is launching a new scientific field studies, including for the purpose of writing a thesis in assessing the impact of innovation and consulting services to the level of agricultural development and national economy in general.

7. Conclusions

Given the fact that the theory of market economy a priori provides for cyclic existence of different phases of the development of farming enterprises, in particular, crises, whose management is, in our view, possible subject to delivery of professional advisory services combining the following innovative ways:

- 1) enhancement of the production efficiency at the expense of agricultural innovations;
- 2) activation of outsourcing services;
- 3) increase in the innovative level of staffing;
- 4) development of long-term market strategy of the innovative rural development based on the principles of sustainability.

The detected significant imbalance in the ratio of farming enterprises, private farming enterprises and agricultural service cooperatives per advisory service, residual principle of financing as well as absence of mechanisms of mutually effective cooperation of the agricultural consultative networks with local self-government bodies are the main reasons slowing down the pace of rural development. In this regard, one of the key strategic priorities is to choose the innovative way of solving the above-mentioned issues through more active integration of educational, scientific, marketing, financial and economic and other services at the institutions of the National Academy of Agrarian Sciences and Ministry of Education and Science of Ukraine with due consideration of main principles of commercialization of scientific research results aimed at strengthening the socio-economic security of rural areas of Ukraine.

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DEVELOPMENT OF NANO-ECONOMY AS A FACTOR OF FORMING THE EFFECTIVE NATIONAL INNOVATION SYSTEM OF SINGAPORE

Tetiana Ostapenko

Department of Management of Foreign Economic Activity of Enterprises

National Aviation University

1 Kosmonavta Komarova ave., Kyiv, Ukraine, 03058

ostapenco@ukr.net

Abstract

The article reveals the theoretical and methodological interpretation of the innovation system, when it determined the structure of the national innovation system. It is noted that the components of the national innovation system are elements, stages and subjects. The main elements are the scientific, technical, production and management. Scientific and technical organization responsible for basic research, applied research implementation and technology transfer from research institutions to production entities. The industrial element is characterized by the implementation of technology in the industry. Management invention provides an element of organizational know-how that would receive revenue from the introduction of the newest technological solutions. Such an approach to the definition of innovation system author used in the analysis of such a system in Singapore. Common indicators confirmed the level of scientific, manufacturing and managerial innovation system segments of Singapore. In statistics of the country, these data are: higher education sector (Science and Technology segment), private sector (commercial segment) and the government sector (management segment). The study concluded that the human factor in a country like Singapore, is the basis of scientific, technical, production and management changes in the development of the national innovation system.

Keywords: national economy, national innovation system, elements, stages and subjects of innovation system, nano-technology, nano-economy, a single individual.

DOI: 10.21303/2504-5571.2016.00201

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1. Introduction

Nano-economics is such a system of relations that affects the adjacent system formation. Nano-economy is the economy of human, and the human factor in the development of economic relations today is very important, because decisions on development depends on individuals working independently in enterprises, public authorities and the establishment of international economic organizations. Nano-economy affects the development of the national innovation system, when the research implementations and consumption technology solutions depend on the amplifier of innovation development of national economies. Experience of Singapore, a country without provision of natural resources could achieve intensive development and innovation system and the national economy as a whole, may be indicative not only for Ukraine but also for most countries that develop economic and innovative activity of economic entities.

2. Analysis of the literature data and the formulation of the problem

Note that the question of the efficiency and innovation attracted attention of such native and foreign scientists: Ukrainian author [1] who highlighted the essence of the national innovation system; Scientist [2], who focused on the features of formation of innovation system in Ukraine; specialist in the field of innovation [3] who highlighted the national innovation system as an object of state innovation policy; Professor [4], who defined mechanism for the development and commercialization of innovations; author [5], who stated directions of the national innovation system in Ukraine; foreign authors [6], who developed the theory of innovation and innovation systems; British expert [7], who described the development of innovative systems historically; American scientist [8], who made a comparative analysis of national innovation systems; expert in innovation [9], who gave terms of development and implementation of effective innovation. Theoretical and methodological approach to the determination of the national innovation system was borrowed from all these sources. The definition of innovation [10] was the basis of the author's approach. Ukrainian author [2] brought to mind a holistic approach to the formation of innovative systems

worldwide. Proceedings of the American and British scientists [6–9] became the basis for the use of a system approach to the interpretation of innovation systems at the national level. Ukrainian researcher [3] proposed the approach to identification of innovative component of government policy, and the administrative component of the national innovation system was based on this approach.

3. The purpose and tasks of the study

The purpose of the study, the results of which are presented in this article is to determine the factor of the nano-economics in the development of national innovation systems, and the characteristics of the national innovation system to define direction of national economic system as a whole. Can the national economy be effective without innovation activity of economic entities (scientific, technical, production and management)?

To achieve the purpose of the research presented in this article the following tasks will be performed:

- 1) outline of theoretical approaches to the formation of the national innovation system under the influence of nano-economy;
- 2) the definition of experience on the development of Singapore's scientific and technical sphere of the national innovation system and its impact on the evolution of the national economy;
- 3) description of the manufacturing segment of the innovation system of Singapore as a substantial component of the national economy;
- 4) analysis of administrative areas of Singapore innovation system as the basis of the creation and formation of economic policy;
- 5) the characteristic values of nano-factor for the development of the national innovation system on the example of Singapore.

4. Materials and methods

In the article were used materials and statistical data of the Statistical Office of Singapore. Methods used in the study are the following: a systematic approach, structural analysis, surveillance, desk research, comparison, induction and deduction.

5. The results of the research

The level of development of society is determined by how it creates and uses technology. Civilization is responsible for manufacturability and performance of production systems, depending on the level of nano-economy, where human depends on growing or active culture and economic activities in the middle of a given economic sector. Scientific and technical relations provide advanced features of competitiveness of national economies and their component – national innovation system.

Innovation system is very complex entity which forms the country's innovation system, which, in turn, is determined by a number of features.

The core of the innovation system is an innovative activity. Innovation activity – it is a state of the economic environment state institutional framework which is science and technology, production and management system. The innovative system exists in all countries; the condition of its operation is a clear number of scientific studies that link the integrity of certain artists, researchers and implementers.

Evaluation of innovative system provides an analysis of its components as elements, stages and subjects.

Innovative system covered the entire process - from the birth of scientific idea to its implementation in production. This process is gradually formed in various areas – science and technology, production and management. All these areas are consistent components of a single process, and therefore – the elements of the innovation system [11].

Science and technology, as the part of an innovative system has research function, which is represented by such activities as basic and applied research and development.

A special characteristic of scientific and technical sphere country's innovation system is the number of scientific and technological inventions. The level of patenting is an important indicator of innovative system and economy and science in the country as a whole.

Note that most of the operations of scientific and technological exchange is a transaction that determines the transfer of modern technologies of production of goods and services. Production technology is also being implemented within the innovation system – namely in production.

The feature of the production sector is that technology, as an expression of the body of knowledge, gains materialized form. This area formed a number of activities that are gradually following one another: development, testing, leasing, training pilot production, preparation production. According to the definition [10], such materialized scientific and technological products are innovations. Moreover, the result of the production sector of innovation system of the country is innovation. Innovations are divided into: innovations, products and innovation processes.

Management sector of innovation system represented the control element of scientific, technical and industrial fields. The effectiveness of the management of these areas is shown in the specificity and effectiveness of those elements of the innovation system of any country.

Content of the technological changes that occur in all areas of the innovation system, is characterized by a certain stage as innovation system [4].

The stages of the innovation system are the stages of the innovation cycle. The innovative cycle consists of two phases:

1) create technology that involves the invention of new technologies that can be applied in specific research and development of new products or processes. This phase involves two stages – scientific and technological;

2) introduction of innovations in production, providing financial implementation of knowledge production. Stages – industrial and consumer.

Implementation of technological and innovation challenges involves the passage of enterprises of different stages of the innovation cycle. Providing such movement takes place in various regions of the innovation system.

The subjects of the innovation system can be carriers of such functions as research, engineering, manufacturing and management. Depending on the performance of certain types of actors in the innovation system the different groups are united:

- scientific, technical, conducting technical research activities and the operation of the relevant areas of the innovation system;
- production, characterized by the fact that they are designed to introduce new products and production processes;
- management systems provide innovative subjects planned, organizational and control functions of the innovation system and make its administrative area.

The most common among the scientific and technical subjects is higher education, such as universities, which in addition to the educational function have significant research potential [1].

Industrial actors transform the technology innovation. The main actors are among the production companies that fall into two categories: innovation and non-innovation ones. Innovative enterprise – a company that is institutionally divided into external and internal.

One of the main functions of management innovation system are funding research and development (R&D), carried out by various scientific and technical institutions.

Funding of R&D [4] takes different forms, which are both forms of the science and technology activities as the part of the innovation system. Financing the production sector makes them implemented in production innovation - business structures (different activity from mineral exploration to finance marketing activities).

Using the innovative features of the system, let's describe the development of this system in Singapore.

Singapore, South-East Asia, active development of which began in the late 70s and mid-80s of the twentieth century. This country was called one of the Asian dragons (or tigers), along with Hong Kong, Taiwan and South Korea. This term was used because these countries rapidly turned from the developing countries to developed economies. And such a development relies on active

innovation when the developed countries were involved in the technology and introduced new business. These countries have created a line of innovative development, which began to be called «progressive assembly» when imported spare parts, businessmen of these countries dealt with ready, mostly machine-technical, production, and subsequently began to make their own, authentic, so created Hyundai and KIA, etc.

Singapore – is a small country that has built on this principle its innovative system, which consists of scientific and technological sector, production and management. Let's consider them gradually.

So, Singapore stats gives data on the organization of work on R&D by sector from 1990 to 2014.

Table 1 presents information on the number of performed work in sectors such as:

- private (involves the development of innovative enterprises);
- higher education;
- government;
- public research institutes.

Table 1

Organization of R&D by sectors (number of cases execution of works)

Sphere	1990	2000	2010	2011	2012	2013	2014
Total	292	582	859	864	758	873	950
– private sector	266	539	799	804	699	812	882
– higher educational establishments	5	6	11	11	12	13	12
– government sector	14	24	29	29	28	29	31
– public research institutes sector	7	13	20	20	19	19	25

Source: [12]

The dynamics is clear exactly when private enterprise sector is a major player in the innovation system in Singapore that is a positive development, because the company is the vanguard of technological development in the world. The industrial segment of the innovation system of Singapore takes the lion's share of research and development of the State.

Pay attention to the number of executed research universities for such a small state (12th in 2014.) And research institutions (25th in 2014) are the significant indicator, and thus confirms the development of scientific and technical segment of the innovation system of the country.

Management sector of innovation system is introduced by government programs, which implementation has increased from 14 operations in 1990 to 31 case in 2014 (growth twice in 24 years).

The statistics of Singapore shows that the country's innovation system exists, because of all work performed on all types of existing entities that perform innovation – scientific and technical subjects, production and management entities.

The research works and innovative development of innovation system of the country is determined by the quality and quantity of scientific and technical personnel involved in the innovation process. **Table 2** shows the labor force and its qualitative composition, which is involved in the innovative development of the country.

In 2014, as the **Table 2** demonstrates, the total number of scientific workers was 47,902 people, which is almost three times more than in 1997. For Singapore is a great performance. These scientists are engaged in various innovative institutions of the country – from research institutes to small innovative businesses.

Total male scientists are more than two total female scientists. Unlike the maintenance staff, where the number of women exceeds the number of male staff. Note that future innovation system of the country depends on the activity of young people in scientific field of the country, the number of postgraduate full-time in Singapore in 2014 is 5800 people, which is almost twice more than in 2000. Research area is also popular for staff: workers without a degree, technicians and supporting staff. So the number corresponds to the main indices in other countries, and is accordingly: 2095, 3083 and 4089 in 2014.

Table 2
Employees of R&D in Singapore

Categories of employees	1997	2000	2010	2011	2012	2013	2014
Total	17219	25220	43164	44855	45001	47275	47902
Total of men	–	–	28796	29942	29977	31608	31875
Total of women	–	–	14368	14913	15024	15667	16027
Scientific researchers and engineers	11302	14483	28296	29482	30109	31943	32835
Men	–	–	20531	21345	20647	22665	23319
Women	–	–	7765	8137	8462	9078	9516
Graduate students in full-time studying	–	3819	5760	5990	5924	6012	5800
Men	–	–	3618	3752	3710	3852	3703
Women	–	–	2142	2238	2214	2160	2097
Researchers without scientific degree	2039	2498	2505	2541	2399	2430	2095
Men	–	–	1700	1813	1709	1712	1456
Women	–	–	805	728	690	718	639
Technical personnel	2297	2262	3101	3089	3022	3115	3083
Men	–	–	1867	1872	1807	1900	1921
Women	–	–	1234	1217	1215	1215	1162
Supporting personnel	1581	2158	3502	3753	3547	3775	4089
Men	–	–	1080	1160	1104	1279	1476
Women	–	–	2422	2593	2443	2496	2613

Source: [12]

Thus, Singapore's innovation system is equipped with scientific and technical personnel of various scientific level (from the professors to the laboratory workers).

To explore innovative system, R&D expenditure of the country must be estimated. These data are given by the Statistical Office of Singapore. Consider gradually the indices of total costs, the costs for private sector (innovative enterprises), the costs for higher education, the cost for the public sector and public research institutes. So, the **Table 3** covers costs for research and development in various sectors.

Table 3
Total expenses on R&D in Singapore (mln. USD)

Spheres of national economy	2000	2005	2010	2011	2012	2013	2014
Total expenses	3009,5	4582,2	6489,0	7448,5	7244,7	7565,8	8526,5
Agriculture and food production	29,7	52,2	111,6	155,2	200,0	210,3	262,4
Engineering and Technology	1543,8	2597,4	3958,1	4675,1	4501,8	4614,4	5052,1
Biomedical Sciences	145,5	853,4	1360,7	1372,8	1404,1	1367,7	1578,1
Natural sciences	247,6	459,2	705,4	843,4	834,6	881,4	1103,2
The energy sector	–	–	–	81,0	101,8	108,1	122,4
Others	416,1	620,0	353,2	321,0	202,5	384,0	408,3

Source: [12]

Total R&D spending increased by fourteen years in 2,5 times. The basic amount of the cost falls on the field of engineering and manufacturing processes. Biomedical Science has the second

position after engineering, note that biomedicine increased the costs for the same fourteen years in 10 times. Today it is concentrated in biomedicine major nano-researches. A graduates number is the largest in this area. Intensively development of energy research began in 2011, and its financing increased almost double by 2014.

R&D expenses are determined by the object of investing. The statistics is determined by the capital costs, personnel costs and other operating costs. General information on R&D expenditure in Singapore on the type of value is presented in **Table 4**.

Table 4

Total R&D expenditures by type of cost (mln. USD)

Type of costs	2000	2005	2010	2011	2012	2013	2014
Total	3009,5	4582,2	6489,0	7448,5	7244,7	7565,8	8526,5
1) the cost of capital:	562,9	798,0	967,7	895,6	1141,3	1004,4	1256,7
– land, buildings, other structures	54,0	139,9	119,7	144,5	209,2	261,2	274,8
– cars, machinery, equipment	508,9	658,1	848,0	751,1	932,1	743,2	981,9
2) cost of Labor:	1256,2	1937,5	2860,4	3436,2	3308,1	3475,7	3805,3
– researchers:	1078,8	1647,0	2463,6	2888,9	2869,8	3057,3	3360,9
– researchers, scientists, engineers	957,7	1433,0	2200,4	2331,8	2579,6	2754,6	3073,1
– graduate students full-time of studying	18,7	62,5	136,4	144,4	146,3	154,0	154,8
– the researchers without a scientific degree	102,4	151,5	126,9	412,7	143,9	148,7	133,0
– techniques	69,3	109,1	170,2	198,2	160,4	165,2	152,4
– other	108,0	181,3	226,6	349,2	277,9	253,2	292,0
3) cost of other operating expenses	1190,4	1846,8	2661,0	3116,7	2795,4	3085,7	3464,4

Source: [12]

Table 4 shows that the biggest share of the cost of R&D accounts are used for payment of labor, as scientists around the world are employees with the highest salaries. But scientists without financial support are not able to carry out research at a high level. Therefore, the cost of equipment and machinery is also the main categories of total expenditure for R&D in Singapore. Other operating costs are also significant.

Obviously, the country's innovation system can not exist without significant investments and in Singapore they are increasing. So the total cost of R&D and innovation system of the country increased almost three times in fourteen years from 2000 to 2014 and as the result improved the situation of researchers and graduate students by scholarships and gradually increased salaries. The individual researcher as the main subject of nano-economy in a country like Singapore is in a comfortable position, and the state respects his needs and requirements.

Common indicators confirmed the level of scientific, manufacturing and managerial innovation system segments of Singapore. In statistics of the country, these data are: higher education sector (Science and Technology segment), private sector (commercial segment) and the government sector (management segment).

So, focus on the higher education sector. **Table 5** shows the cost in Singapore for innovation in the universities of the country.

Table 5 shows that the higher education of Singapore is actively pursuing innovative research. Overall R&D spending at universities in the country from 2000 to 2014 increased four times. The most active sector of university research is the engineering and production technology. Actively growing costs (6.5 times) for research in the biomedical sciences prove that the country is trying to be a leader in this field. General trend of higher education meets a national orientation. Note that the cost of biological research are increasing worldwide and the global markets biotechnology, including nano are emerging. Singapore in this area is one of the leading countries of the world.

Table 5
Spending on R&D in universities of Singapore (mln USD)

Fields of national economy	2000	2005	2010	2011	2012	2013	2014
Total innovation expenditures in universities	338,3	478,0	368,1	1086,4	1192,7	1311,3	1349,3
Agriculture and food production	1,1	1,0	1,3	2,1	8,0	7,4	13,0
Engineering and Technology	166,4	190,3	380,4	340,6	418,8	477,4	472,7
Biomedical Science	56,5	131,9	250,9	288,0	310,7	336,6	366,1
Natural sciences	61,2	94,3	197,9	292,4	286,8	316,5	307,9
The energy sector	–	–	–	72,4	86,8	88,2	103,1
Other	23,4	60,5	137,6	90,9	81,7	88,2	86,6

Source: [12]

Also, focus on the classification of costs according to the investment objectives of these expenses in the segment of higher education. These data are shown in **Table 6**.

Table 6
Expenses of universities on R&D by type of cost (mln. USD)*

Type of costs	2000	2005	2010	2011	2012	2013	2014
Costs in the universities of the country:	338,3	478,0	968,1	1086,9	1192,7	1311,3	1349,3
1) the cost of capital:	60,2	75,6	126,5	128,3	145,1	175,7	171,3
– land, buildings, other structures	0,0	16,5	5,2	7,0	18,2	12,9	1,7
– cars, machinery, equipment	60,2	59,1	121,3	121,2	126,9	162,7	169,6
2) cost of Labor:	233,1	284,2	562,5	629,3	691,4	764,9	799,6
– researchers:	212,2	262,1	513,0	571,3	625,2	690,0	722,7
– researchers, scientists, engineers	192,5	198,4	375,1	423,8	476,2	533,1	565,0
– graduate students full-time of studying	18,7	62,5	136,	144,4	146,3	154,0	154,8
– the researchers without a scientific degree	1,0	1,2	1,5	3,2	2,8	2,9	2,9
– techniques	10,8	12,5	14,9	15,3	16,4	19,0	16,9
– other	10,1	9,7	36,6	42,7	49,7	55,9	59,9
3) cost of other operating expenses	45,0	118,2	279,1	328,9	356,2	370,7	378,4

Source: [12]

The table shows that the Singapore overall cost system spends significant funds to support scientific and maintenance staff, for payment of labor and researches at the universities. And graduate students are also intensively supported as the future of innovation system. Certainly invested funds and equipment are the needed basis for research. Movable and immovable property as an indicator of the innovation system.

The industrial segment of the innovation system of the country is also developing quite rapidly, that is certified by the **Table 7**.

Table 7 shows that the costs of the private business sector of innovation system in Singapore almost tripled for fourteen years. Entrepreneurs invest in innovation on the environment, which involves setting up treatment plants at existing factories of the real sector of

economy. But the greatest amount of money are spent on accounting system of engineering and development processes at their enterprises. The practice of improving biotechnology is also developing.

The cost structure of the business sector in the country is shown in the **Table 8**.

Table 7

The cost of the private manufacturing sector in Singapore on R&D (mln USD)

The scope of the national economy	2000	2005	2010	2011	2012	2013	2014
Total costs of innovative enterprises	1866,0	3031,3	3947,6	4628,2	4415,2	4496,1	5215,7
Agriculture and food production	6,4	43,5	97,2	137,0	180,1	178,7	226,5
Engineering and Technology	983,2	1971,1	2904,7	3250,0	3319,1	3326,4	3629,1
Biomedical Science	42,0	298,5	642,3	517,2	502,6	431,1	523,6
Natural sciences	81,0	258,1	363,5	372,3	371,7	396,9	613,9
The energy sector	–	–	–	7,7	14,4	19,3	19,3
Other	302,3	460,1	40,0	73,9	27,4	143,8	203,2

Source: [12]

Table 8

The cost of the private business sector on R&D in Singapore by type of cost (mln. USD)

Types of expenses	2000	2005	2010	2011	2012	2013	2014
Costs in the private sector of the country:	1866,0	3031,3	3947,6	4628,2	4415,2	4496,11	5215,7
1) the cost of capital:	363,2	492,3	618,6	467,7	807,9	662,4	902,6
– land, buildings, other structures	47,7	63,9	68,0	92,0	156,6	196,7	231,8
– cars, equipment, machinery.	315,5	428,4	550,6	375,7	651,3	465,7	670,8
2) cost of Labor:	693,6	1252,3	1640,9	2088,1	1859,7	1884,7	2124,9
– researchers:	604,1	1064,7	1452,4	1774,6	1640,9	1709,6	1914,6
– researchers, scientists, engineers	516,4	919,5	1335,3	1387,1	1504,5	1372,7	1791,2
– graduate students full-time of studying	0	0	0	0	0	0	0
– the researchers without a scientific degree	87,7	145,2	117,1	387,5	131,4	136,9	123,4
– techniques	35,7	62,7	70,8	103,3	71,6	70,3	75,7
– other	53,8	124,9	117,8	210,3	147,2	104,8	134,5
3) cost of other operating expenses	809,2	1286,8	1688,1	2072,4	1747,6	19449,0	2188,2

Source: [12]

Traditionally the **Table 8** shows that the largest number of business spending is allotted to pay for labor, other operating expenditures and to pay the cost of capital, such as buildings and equipment for researches and their implementation into life. Obviously, not all graduate students are employed at enterprises of the country, but according to the Singapore media, they practice at these enterprises and are arranged to work for them after receiving the degree. Note also that the business sector of Singapore innovation system accumulates in 3.8 times more money than university technological component. Enterprises are the leading element of the innovation system.

Management sector of innovation system in Singapore is characterized by its supporting costs in different areas of research. This information is shown in the **Table 9**.

Table 9
Expenses of Singapore government sector on R&D (mln USD)

Fields of national economy	2000	2005	2010	2011	2012	2013	2014
Total innovation expenditures Government	423,8	442,8	672,3	758,3	725,0	857,6	972,1
Agriculture and food production	1,6	5,4	13,1	16,0	11,9	18,7	18,6
Engineering and Technology	229,5	246,9	329,6	360,2	341,7	400,5	482,0
Biomedical Science	32,5	116,7	152,7	179,7	182,1	198,3	254,1
Natural sciences	32,1	62,6	76,6	107,6	97,1	89,8	102,3
The energy sector	–	–	–	0,6	0,7	0,6	0,0
Other	41,3	10,6	100,2	94,0	91,5	149,6	115,2

Source: [12]

Table 9 shows that innovation costs of Government in Singapore for 14 years almost doubled. The basic amount of the cost falls on the engineering and biomedical sciences. As it was shown in previous research, Singapore innovation system depends on research in these sectors. The innovative features of Singapore depends on the nano-level national economy when Singapore scientists and engineers realize the certain innovative solutions.

6. Discussion of results

It should be noted that the advantage of this study is to use a systematic approach to the interpretation of the innovation system. The disadvantages of the article is that the value coexistence of national innovation system and its international level is not defined. The diffusion conditions of technology and innovation at the national and international environment are not covered. The conditions are not the commercialization of new innovative solutions. Note that the results of this study can be applied at assessing the effectiveness of the national innovation system of any countries, including Ukraine. We emphasize that this study is a continuation of the analysis of national innovation systems and nano-economy. Evaluation of nano-economics is the newest area of research of economic systems that can get progress in further studies of various scientists.

7. Conclusions

During the study there were made the following conclusions:

- 1) national innovation system is defined as a set of interconnected elements and stages that determined the development of nano-factor;
- 2) science and technology innovation system in Singapore is determined by the active development of research in engineering and the direction in biomedical analysis;
- 3) manufacturing sector is characterized by the considerable business activity in the development and introduction of new innovative solutions;
- 4) management area of research is characterized by the significant costs and support of scientific, technological and industrial sectors of the innovation system;
- 5) all aspects of the innovation system in Singapore are affected by human factor (factor of nano-economy), when some graduate students, engineers and doctors are supported by the state and influence the research, production and management functions of the national innovation system in Singapore.

It should be emphasized that the human factor plays a special role in forming the innovation system in Singapore, where scientists and entrepreneurs who develop and implement innovations are actively supported.

The funds accumulated in the state budget are spent actively for innovation policy and support industries of leading innovation system (to support graduate students as the future of the system of updating and innovative companies in the country that is very interested in the latest transformations).

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ELABORATION OF THE METHOD OF ASSESSMENT OF THE SEVERITY DEGREE OF COMPANIES CRISIS

Vladimir Nusinov

Department of Accounting, Taxation, Public Management and Administration

State Institution of Higher Education "Kryvyi Rih National University"

11 Vitalyy Matusevych str., Kryvyi Rih, Ukraine, 50027

vladimir.nusinov@gmail.com

Abstract

The analysis of scientific literature allowed us to establish the absence of unified approach to the assessment of severity of the company crisis. The definition of the term “crisis severity degree” was specified and its five-level gradation was offered, namely: absence of the crisis, its light, middle, hard and critical severity degree. From our point of view, this gradation is intuitively comprehensive for all groups of stakeholders, involved in the process of anti-crisis management and most fully characterizes the condition of the company in the aspect of possible anti-crisis arrangements. The three-level hierarchic structure of the types of crisis of the company was offered. The use of hierarchic structure favors the better understanding of the causes of crisis, its results and possible ways out of crisis. The aforesaid is attained by separation of the different types of crisis then the components of these types of crisis are separated and so on. At the same time at each step it is necessary to concentrate attention on understanding of the current element, temporarily abstracting from all other components. At such analysis the whole complexity and severity of the company crisis can be understood. The methodology of determination of the severity degree of the company crisis was elaborated for each level of hierarchy. The diagnostics of the severity degree of the company crisis of the higher level of hierarchy must be realized using the matrix of pair comparison and the severity degrees of crisis must be integrated for each its component based on the laws of economic logic. The matrix of comparison of the severity degrees of the company crisis is recommended to be formed by comparison of two parameters of assessment of the crisis of the low level of hierarchy that allows range the comparable objects in two-dimensional space. The severity degree of financial crisis of the company is offered to be determined taking into account the probability of its bankruptcy and of economic, social and ecological one – by the comparison of the current values of assessment parameters with their base values. The values of pre-crisis period are recommended to be used as the base ones. The approbation of offered methodology of assessment of the severity degree of the company crisis was realized.

Keywords: crisis, types of crisis, severity degree of crisis, assessment, diagnostics, probability of bankruptcy, scale of assessment of the severity degree of crisis, matrix of comparison of the severity degrees of crisis.

DOI: 10.21303/2504-5571.2016.00218

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1. Introduction

The functioning of the market system is attended with crisis phenomena. It is impossible to imagine the development of the modern economy without economic upturns and recessions as the result of which the economic stability is broken and economic subjects are in certain imbalance. The development of the crisis in Ukrainian companies is not an exception.

The starting point of construction of the model of anti-crisis management is a diagnostics of crisis condition, which essence in most generalized form can be reduced to the definition of series of its qualitative characteristics.

2. Analysis of the literary data and statement of the problem

For constructing the model of anti-crisis management of the company it is important to diagnose the presence or absence of crisis. For this aim it is important, first of all, to understand the essence of the notion “crisis”.

Having studied the most spread definition of the category “crisis”, used in scientific terminology, the presence of large number of formulations that define its essence was established that is an acknowledgment of complexity and variability in understanding of this category. It was determined, that the authors characterize crisis as an event [1–4]; unforeseen but not unexpected event [5]; wide-ranging, unpredictable event [6–8]; situation [9, 10]; emergency [11]; pile of factors [12]; phenomenon [13]; unexpected incident [14]; “crucial moment” or “turning point” [15].

It must be noted, that the problem of assessment of the severity degree of crisis and determination of the measures of its elimination in Ukrainian companies is extremely important and not sufficiently elaborated.

3. Aim and tasks of research

The aim of the work is elaboration of the methodology of assessment of the severity degree of company crisis.

For attaining this aim the following tasks were set:

1. To study the essence of the notion “crisis severity degree” and to specify its definition.
2. To elaborate the hierarchy of parameters of assessment of the severity degree of companies crisis.
3. To elaborate the methodology of aggregation of the parameters of assessment of the severity degree of companies crisis.
4. To evaluate the crisis severity degree of the results of activity on the example of Ukrainian companies.

4. Materials and methods of research

We agree with scientists, who find expedient to range crisis by its severity degree [16–20]. The essence of offered author methodologies can be reduced to the use of the different total scores that characterize the presence of crisis condition and interval breaking of the whole diapason of possible values according to the separated degrees of crisis.

At the same time it must be noted, that for today there is no definition of the essence of this notion. So, we offer to understand the crisis severity degree as the comparative value, established on the base of the totality of symptoms, causes and factors of crisis and characterizing the company condition for the evaluated period of time by the presence or absence of crisis, intensity of its passing and possible results.

5. Results of the studies

From our point of view, the types of company crisis are financial, economic, social, ecologic and corporative. All variety of other crises is their subtypes.

Financial crisis is characterized by the possible change of juridical status of the company, particularly, its bankruptcy.

Economic, social and ecological crises are characterized by inadmissible deviations of correspondent qualitative and quantitative results of the activity of company from their model values.

Corporative crisis is autonomous and does not directly depend on the other types of company crisis. It is characterized by the possible loss of the owner’s corporative rights and does not directly depend on the results of activity of the company.

The crisis types and correspondingly the parameters that assessment of their severity degree is based on, form the hierarchy of the structure of company crisis types (**Fig. 1**).

We offer to diagnose the crisis severity degree separately for each type and to form the conclusion about the severity degree of the company crisis as a whole by the combination of the results of assessment of each type of crisis for the separate parameters upwards for each level of hierarchy.

It is offered to range the severity degrees of company crisis as following:

- critical degree of crisis (CD);
- hard degree of crisis (HD);
- middle degree of crisis (MD);
- light degree of crisis (LD);
- absence of crisis (AC).

This classification of the crisis severity degrees, from our point of view, characterizes the possible company conditions in the aspect of possible anti-crisis arrangement more fully.

Let’s consider the process of integration of the results of assessment of the company crisis in detail.

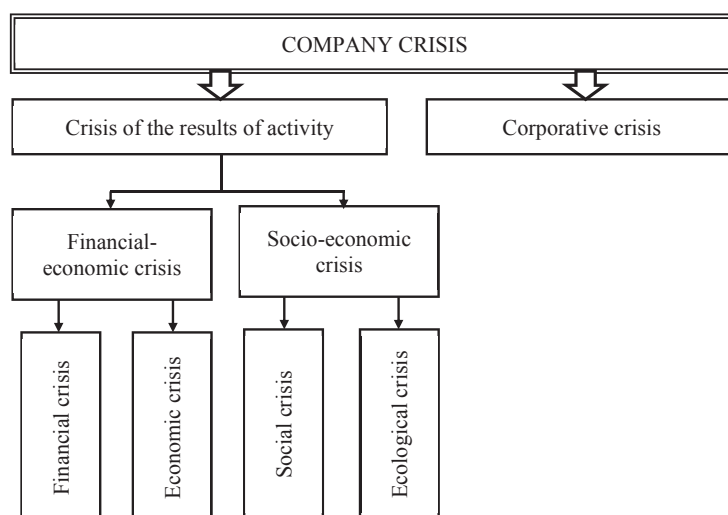


Fig. 1. Hierarchic structure of the company crisis types

We agree with T. Saati that at creation of the method of analysis of hierarchies the strict logic analysis is the single reliable method of the solution of complicated problems [21].

The worst crisis severity degree for the company is a critical one that is diagnosed at the bankruptcy of the company with further liquidation, loss of rights by majority owners, coercive stop of the business and loss of the company assets without its formal liquidation.

We think that at the diagnostics of the critical degree of company crisis at any hierarchy level for any type of crisis, the general conclusion about the critical degree of company crisis in whole must be done, because it does not matter what was its cause (bankruptcy, liquidation, annulations of permission for emission of polluting substances, raider occupation or other).

We think that at evaluation of the complex parameter of assessment of the severity degree of company crisis, the matrix of comparison of the crisis severity degrees is the most convenient form of presentation of calculations.

Let's consider the order of assessment of the crisis severity degree of the results of activity of the company.

Financial crisis is the most essential for company for today. Since this type of crisis is characterized with the probability of bankruptcy of the company, the severity degree of this type of crisis depends on did the company come in the bankruptcy procedure or no, or is measured by the probability of this event.

The following approaches are used for the diagnostics of the probability of bankruptcy of the company:

- 1) point system of assessment (M. Tamari, Argenti);
- 2) one-factor, discriminant analysis (V. Biver, P. Wiber);
- 3) multiple-factor discriminant analysis (E. Altman, A. Tereschenko, G. Springate, R. Raffer, R. Lis).

From our point of view, the multiple-factor discriminant models are most exact, because they synchronously take into account the influence of many factors. At the same time their reliability is proved by the statistical tests.

The most known model of diagnostics of the probability of company bankruptcy is the five-factor one, elaborated by the American economist E. Altman on the base of multiple-factor discriminant analysis H (1):

$$Z = 1,2 X_1 + 1,4 X_2 + 3,3 X_3 + 0,6 X_4 + X_5, \quad (1)$$

where X_1 – working assets/summary assets; X_2 – retained earnings/summary assets; X_3 – operating profit/summary assets; X_4 – summary assets/general duties; X_5 – sales proceeds/summary assets.

Key of interpretation for the E. Altman's model:

$Z < 1,8$ – very high probability of bankruptcy (critical condition);

$1,8 < Z < 2,7$ – high probability (hard crisis degree);

$2,7 < Z < 2,9$ – possible bankruptcy (light crisis degree);

$Z > 2,9$ – low probability (absence of crisis).

It must be also noted, that E. Altman's model can be applied for the assessment of severity degree of financial crisis.

We offer to determine the crisis severity degree for each given parameter by the finding of Kotz index that characterizes the ratio of the values of parameters in the current period to the base ones.

For assessment of the crisis severity degree for the parameters that characterize the presence or absence of economic, social, ecological and corporative crisis of the company by the expert method, the following scale is defined and accepted for the use (2):

$$\begin{aligned} & \text{Kotz} \leq 0 \text{ – critical degree of crisis;} \\ & \text{Kotz} \leq 0,5 \text{ – hard degree of crisis;} \\ & 0,5 < \text{Kotz} \leq 0,75 \text{ – middle degree of crisis;} \\ & 0,75 < \text{Kotz} \leq 1 \text{ – light degree of crisis;} \\ & \text{Kotz} > 1 \text{ – absence of crisis.} \end{aligned} \quad (2)$$

The critical severity degree of the crisis is diagnosed at the loss of the rights by majority owners, coercive stop of the business, bankruptcy.

We think that the severity degree of economic crisis of the company must be diagnosed on the base of change of the main parameters that characterize the interests of its majority owners. And they are interested in the parameters that characterize the value of company for potential buyers (cost of the company) and its internal value (own capital).

According to the cited conception, the actual values of parameters correlate with the base ones (parameters of pre-crisis period) and the correspondent coefficients of assessment of the crisis severity degree are calculated (Kotz).

At the first stage of diagnostics the coefficient of assessment of the crisis severity degree is determined for the parameter of own capital (Coc) (3):

$$\text{Coc} = \text{Oct} / \text{OC pre}, \quad (3)$$

where Oct, OC pre – values of the own capital in assessed moment of time t and correspondingly in the moment before crisis, hrn.

It must be taken into account, that the value of own capital of the companies in crisis condition is often negative. In such case the value of own capital is prognosticated for the next year. If even the prognosticated value of own capital is negative, the conclusion about the crisis condition of the company is made. In other case the hard degree of crisis is diagnosed.

The next one at the diagnostics is the coefficient of assessment of the crisis severity degree, calculated for the parameter of company cost (Cs) (4):

$$\text{Cs} = \frac{\text{St}}{\text{Spre}}, \quad (4)$$

where St, Spre – the company cost in assessed moment of time t and correspondingly in the moment before crisis, hrn.

The cost of the company is determined by the profitable method. If the cost of the company is negative, it is prognosticated for the next year. If even the prognosticated value of own capital is negative, the conclusion about the crisis condition of the company is made. In other case the hard degree of crisis is diagnosed.

The severity degree of economic crisis is diagnosed on the base of conclusion about the severity degree of the company crisis using the matrix method (**Table 1**). At the same time the critical degree of the crisis severity is not considered because, as it was noted above, its diagnostics at any stage of assessment excludes the variability of final results.

Table 1

Matrix of assessment of the severity degree of economic crisis on the base of comparison of the crisis severity degrees for the parameters of company cost and the own capital

Crisis severity degree for the parameter of company cost	Crisis severity degree for the parameter of own capital			
	HD	MD	LD	AC
HD	HD	HD	MD	LD
MD	HD	MD	MD	LD
LD	MD	MD	LD	LD
AC	LD	LD	LD	AC

For the formation of generalizing conclusion about the severity degree of financial-economic crisis, let's construct the matrix of pair comparison of the degrees of financial and economic crisis (**Table 2**).

Table 2

Matrix of the assessment of the severity degree of financial-economic crisis on the base of pair comparison of the severity degrees of financial and economic crisis

Severity degree of economic crisis	Severity degree of financial crisis			
	HD	MD	LD	AC
HD	HD	HD	MD	LD
MD	HD	MD	MD	LD
LD	MD	MD	LD	LD
AC	LD	LD	LD	AC

The severity degree of socio-economic crisis is not considered in the aspect of majority shareholders because their interests to the dynamics of these parameters are secondary.

Let's consider the order of assessment of the severity degree of ecological crisis.

In the process of activity the industrial companies throw out the harmful substances in atmosphere, spill the waste water in water reservoirs, place wastes in the land that leads to the growth of ecological expenditures: ecological tax, reparation of ecological damage.

The parameters, used at the assessment of ecological crisis in the companies:

- volume of the emissions of polluting substances in atmosphere (e);
- volume of the waste water (m³).

Coefficient of assessment of the severity degree of ecological crisis (Cec) is determined as following (5):

$$Cec = \frac{Ve_{ATb}}{Ve_{ATt}} \times k_{AT} + \frac{Vw_{wt}}{Vw_{Bt}} \times k_w, \quad (5)$$

where, Ve_{At_t} – volume of the emissions of polluting substances in atmosphere in the base and current period t , respectively, e ; V_{w_b} , $V_{w_{wt}}$ – volume of the spillage of waste water in the water reservoirs, m^3 ; k_{AT} , kw – coefficients of the weight of the emission of polluting substances in atmosphere and water reservoirs respectively.

Since the indices of the emission of polluting substances are heterogenic, the weight coefficients are used for their reduction to the generalizing parameter. Thus, for the companies of mining industry and metallurgy we accepted $k_{AT}=0,7$, $kw=0,3$.

At insufficient volumes of the emissions that don not lead to the outflow of money, it is not expedient to calculate the severity degree of ecological crisis.

The scale (2) is used for the assessment of the severity degree of ecological crisis. The critical degree at the assessment of ecological crisis is diagnosed at the stop of permissions for the emission of polluting substances that leads to the stop of company.

Then let's consider the social crisis. We think that the parameters of social crisis must be based on the interests of such groups of stake holders as the workers of company that are mainly interested in volume and timeliness of received salary, additional social package, stable work.

Let's determine the order of assessment of the severity degree of social crisis. The following parameters are used for that:

- mean month salary of one worker;
- socially oriented expenditures;
- number of dismissed workers.

The parameters, used for the severity degree of social crisis, are heterogenic, that is why the correspondent weight coefficients are used for their reduction to the generalizing parameter, analogously to the assessment of the severity degree of ecological crisis.

The degree of socio-ecological crisis is assessed on the base of the following matrix (**Table 3**):

Table 3

Matrix of the assessment of the severity degree of socio-ecological crisis on the base of pair comparison of the severity degrees of social and economic crisis

Severity degree of social crisis	Severity degree of ecological crisis			
	HD	MD	LD	AC
HD	HD	HD	MD	MD
MD	MD	MD	MD	LD
LD	MD	LD	LD	LD
AC	MD	LD	LD	AC

Having determined the severity degrees of the financial-economic and socio-ecological crisis, let's diagnose the severity degree of the crisis of the company activity results. The following matrix is constructed for it (**Table 4**).

The parameter of the severity degree of financial-economic crisis is a priority one.

Then let's consider the order of assessment of the severity degree of corporative crisis.

Above in the article was noted, that the corporative crisis is autonomous and does not directly depend on the other types of company crises. Since this crisis does not depend on the parameters of company activity, it is logically to realize its diagnostics on the base of revelation of the series of factors and events.

The light severity degree of corporative crisis is diagnosed in the company in two cases:

1. At the initial stage of the development of corporative conflict at the primary designation of its symptoms.

2. At the stage of its end at presence of the residual phenomena of corporative crisis.

The middle severity degree of corporative crisis is diagnosed at the evident manifestation of corporative conflict, its escalation. At that the subject and sides of the conflict can be distinctly defined. The fact of physical occupation of the company is absent. As to the legal proceedings, the files are not yet transmitted to the court or it is always won by the present owner.

The hard severity degree of the company corporative crisis is characterized by the aggravation of conflict situation, attempts of the physical occupation of the company, beginning of legal proceedings. At the same time the evident preference of the present owner is absent, the probability of winning is insufficient.

The critical severity degree of corporative crisis is diagnosed at the loss of the present owner in legal proceedings, physical occupation of the company.

The severity degree of the company crisis is determined by the pair comparison of the results of company activity and corporative crisis (**Table 5**).

Table 4

Matrix of the assessment of the severity degree of the crisis of company activity results by the pair comparison of the severity degrees of socio-ecological and financial-economic crisis

Severity degree of socio-ecological crisis	Severity degree of financial-economic crisis			
	HD	MD	LD	AC
HD	HD	MD	MD	LD
MD	HD	MD	LD	LD
LD	HD	MD	LD	AC
AC	HD	MD	LD	AC

Table 5

Matrix of the assessment of the severity degree of company crisis on the base of pair comparison of the severity degrees of crisis of the results of its activity and corporative crisis

Severity degree of the crisis of the results of company activity	Severity degree of corporative crisis			
	HD	MD	LD	AC
HD	HD	HD	HD	HD
MD	HD	MD	MD	MD
LD	HD	MD	LD	LD
AC	HD	MD	LD	AC

The severity degree of the company crisis is offered to be defined for the worst variant. We think that the high parameters of the company activity do not exclude the appearance of corporative conflict or raider occupation. From the other side, the corporative crisis can be absent in the company in the procedure of bankruptcy.

6. Discussion of the results

At this stage of development of Ukrainian ore processing plants we must note the absence of corporative crisis in them. That is why the crisis is characterized by the results of their activity.

The severity degree of the crisis of the activity results of the ore processing plants (OPP) of Kryvyi Rih city for 2014–2015 was assessed by the offered methodology. The results of assessment are presented in the **Table 6**.

Table 6

Assessment of the severity degree of the crisis of the activity results of the ore processing plants of Kryvyi Rih city for 2014–2015

Parameters of the severity degree	2014	2015	Qualitative changes
PSC “Inguletsky OPP”			
Financial-economic crisis	HD	HD	Without changes
Socio-ecological crisis	MD	HD	Worsening
Crisis of the activity results	HD	HD	Without changes
PSC “NOTHERN OPP”			
Financial-economic crisis	MD	MD	Without changes
Socio-ecological crisis	MD	HD	Worsening
Crisis of the activity results	MD	MD	Without changes
PSC “CENTRAL OPP”			
Financial-economic crisis	LD	LD	Without changes
Socio-ecological crisis	MD	HD	Worsening
Crisis of the activity results	LD	MD	Worsening
PSC “SOUTHERN OPP”			
Financial-economic crisis	AC	LD	Worsening
Socio-ecological crisis	MD	CD/HD	Worsening
Crisis of the activity results	LD	CD/MD	Worsening

Thus, the crisis of the activity results was diagnosed for studied plants in 2014–2015. The tendency of severity degree testifies to the intensification of crisis.

7. Conclusions

As the result of research:

1. The analysis of scientific literature allowed us to establish the absence of the unified approach to the assessment of the company crisis, because the different classification signs are used: stages, degrees, phases, scales, depth of the crisis and so on. We agree with the authors who assess the severity degree of the company crisis. At the same time these authors do not define the essence of this notion, so this definition was specified.

2. The absence of complexity in the study of assessment of the severity degree of the company crisis was established taking into account the features of their present economic activity. The hierarchy of the parameters of assessment of the severity degree of the company crisis was elaborated.

3. The approach to the assessment of the severity degree of the company crisis as to the complicated system of its subdominant types using the matrix of pair comparison of the severity degree of each type of crisis (financial, economic, social ecological and corporative) was offered.

4. The approbation of offered methodology of assessment of the crisis severity degree on the example of Ukrainian company was realized. The severity degrees of crisis of the activity results of ore processing plants of Kryvyi Rih city for 2014–2015 were defined.

Taking into account the elaborated methodology of assessment of the severity degree of the company crisis, the aim of further research is logically the study and improvement of anti-crisis management of the companies at the modern stage of their development.

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THE ANALYSIS OF CHARACTER CREATION MEANS IN THE NOVEL BY M. STEL'MAH “THE THOUGHT ABOUT YOU”

Alina Kykylyk

*Department Ukrainian Language and Literature
Khmelnytsky Humanities and Pedagogic Academy
139 Proskuriv pidpyllya str., Khmelnytsky, Ukraine, 29013
askpnu@mail.ru*

Abstract

In the world thought and practice the scientific paradigm is anthropocentrism. In the aspect of these philosophical ideas the epic canvases by M. Stel'mah gain the qualitatively new interpretation. For today it is obvious that the works of verbal art must be considered not only as a reflection of socio-political, economic or cultural-educational life of certain society but first of all we must make the acquaintance with personages of the work, to cognize their human essence, to elucidate personal characteristics of personages as creators of own and general story. Such an approach will favor the realization of esthetic, educative and hedonistic function of the literature. Recipients cognize the essence of philosophical categories through the means of character creation of human images: “sense of being”, “happiness”, “self-cognition and self-realization”, “ugly and beautiful”, “comic-tragic and heroic”, “personal development” and so on.

The system of images-personages of soviet epoch in their open description is considered in the article. The esthetics of social realism, its influence on the formation of the author's idiosyncrasy was discovered. The scientific novelty of the received results is in the detailed elucidation and analysis of the originality of the means of character creation of personages in socio-psychological novel by M. Stel'mah “The thought about you”. The materials and results of the study will be the valuable acquisition of literary criticism and the practice of teaching literature.

Keywords: Autobiographical novel, author style, poetics of the novels by M. Stel'mah, psychologism, originality of art reproduction of the life flow, the system of images of art work, social realism, Stel'mah studies, newest Ukrainian literature, character creation of personages.

DOI: 10.21303/2504-5571.2016.00203

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1. Introduction

For today human is in the center of socio-political, cultural-educative, scientific being. Obviously, the topicality of such accent is absolute. That is why theoretical-literary problems also must be studied through the prism of esthetic-humanistic approach. From our point of view, the novel by M. Stel'mah “The thought about you” and exactly the persons in it, is worthy of special scientific study. The author succeeded in transfer of the personages' essence in interconnection of space and time of art reality. The writer demonstrates the chronotope of his epoch through the average figures. That is why the consideration of character creation of the images-personages in the novel by M. Stel'mah “The thought about you” is topical and important not only for science (literary criticism, Stel'mah studies) but also for education (the study of Stel'mah's creative work).

2. The analysis of researches and publications that began to solve this problem

The art word of M. Stel'mah attracts attention of many critics, specialists in literature, scientists and ordinary readers. In XX century the prose of social realist was studied by: L. Bondar (the techniques of images creation in novels) [1], I. Duz' (poetics of dramatic works) [2], Y. Lukin (esthetic value of creative work) [3], I. Semenchuk (elements of the form of novels) [4], G. Shton' (originality of M. Stel'mah's novels) [5] and other and in XXI century – A. Adamovych (interpretation of the novel “Human blood is not a water”) [6], V. Zagorodniuk (psychologism of novels) [7], Y. Marynenko (style features of M. Stel'mah's prose) [8], A. Pikalova (concept-image of the person) [9] and other.

Despite the significant studies of M. Stel'mah's epic works, certain aspects are not elucidated. That is why there is a necessity of deepened theoretical study of the means of creation of dominating art images of M. Stel'mah's epic canvas. The topicality of topic, its insufficient theoretical elucidation determined the problem field of our research.

3. Aim and tasks of research

Aim of research – to open the originality of creation of the characters of images-personages in socio-psychological novel by M. Stel'mah "The thought about you".

The following tasks were formed for attaining the set aim:

1. To consider the originality of art reproduction of life flow in the work M. Stel'mah "The thought about you".
2. To elucidate the poetics of novel.
3. To study the system of images-personages of epic canvas.
4. To analyze in details the means of creation of characters of dominating personages.

4. Results of research

Obviously, the novel by M. Stel'mah "The thought about you" elucidates the social problems of its epoch, but the main base of the work is the images of ordinary people, whose characters are considered in connection with historical circumstances and events of private life. The author assiduously painted the personages. It is worth to be noted, that such accuracy and attentiveness is manifested not only in the main personages but also in secondary and episodic ones.

The prototype of the main hero of the work Bogdan Romanishin is the writer himself. We traced a certain correspondence between the facts from author's life and from the main hero's one. Bogdan Romanishin lived in Podyllyia in the same time frames that M. Stel'mah. "The love, diligence, humanism..." [10] and "...not only science, not only mind, but also the heartfulness, because we'll be very poor without it" [10] – the life credo of M. Stel'mah and Romanishin. "The aspiration for activity, for good, for poetry sounded under Bogdan's heart all time, again and again" [10]. The same words concern to the author of the novel. The love to books, desire to cognize the new as the common features of writer and main hero are brightly manifested to us in the following lines of the novel: "I love you, faithful truth of the books, your suns or lamps, your sorrow and your joy. I am bending to you for not to bend to wrong and self-perfected or bawling ignorance" [10]. The following lines of the novel inform about the enthusiasm to Ukrainian folklore: "Probably none country has such folk treasures like our, and we must think more not about the treasures that lay in earth but also about the ones that are kept in national memory. As you will collect the folk creation further, pay attention to the signers, who know a lot..." [10]. The value of aforesaid lines from the work is that they open the internal essence of literary type and its prototype.

The fiction writer successfully used the means of creation of Bogdan Vasilovych Romanishin's image. The literary-art anthroponym of the main hero is oriented on the concrete spatial commonly accepted use of the names and is deprived of attendant semantic or stylistic shades. The author does not deal with its emotional-expressive coloration that is why in the novel this literary-art anthroponym has only nominative-differential function and is related to the nominative ones, according to L. Bebel's classification.

The author does not give the portrait characteristics of this image-personage in the novel. But in the second part we read "... Grey shady eyes, a bit swelled and roughened as if poured with salt, mouth, ordinary face with grain grower' idea, that being anxious takes sorrow from the wind and drought and from cloud, looked at him from the glass. Completely ordinary peasant's face..." [10], "...face nicely baked like a bread..." [10]. The author masterly uses the means of context-synonymic expressiveness of the language for the description of man's face, opening it in new unordinary aspect. The hero himself assesses his appearance as following: "had not only sorrow but also pride and faith that the beauty must unite only with beauty. But where he, the ordinary boy, could take it?!" [10].

In the novel the author-storyteller gives the internal monologues and large descriptions of all that takes place in the soul of personage: "... the fear caught Bogdan again and ringed him worse than snowstorm..." [10], "...boy's voice sounds with sorrow and hope..." [10], "...pain and sorrow stroke him. What if Artemon convinced her?" [10], "Bogdan listened to her voice already without a drop of laugh and scolded himself by the last words. What an ignoramus and idler he was! He finished the institute but this woman understands beauty hundred times more. You lazed even to go to museums. You looked at something in first rooms as mammoth tusks

and broken crocks but had not enough time or patience for the other. He did not visit any master, did not touch the loam that not only crocks but only sides were modeled of. And what did you know about towels? Only that they are embroidered by cross, satin stitch and string...” [10], “...breaking himself, squeezing pain he went blindly from fire, from love, from fern flower that flourished not for him because he could not bedim for somebody this quiet evening or life like wild geese bedimmed the water in quiet Danube”... [10].

The characteristic by other heroes is laconic: “– Children, look at him! It is a philosopher! – undoubtedly said the old Shalamay...” [10], “...in his twenties he did not approach to a girl yet, did not take anyone to the bushes. Buried himself into the library like a mole into earth and forgot that there are black eyebrows in the world... – laughed Ivan” [10], “Clever, very clever is our respected Bogdan Vasilovych...” [10].

M. Stel'mah depicted so called generally human character, typical for his nation and time. It must be noted, that the author puts the positive content just in Bogdan Vasilovych Romanishin.

In the novel “The thought about you” the writer presents one more character – the women image of Yarina Bescorovaynaya. The description of the personage's appearance is given by the author in exposition in one fragment of the novel: “...in fifteen years she became the most beautiful girl in the village. No one could look without surprise at these cornflower eyes that unusually lightened the swarthy face, at these eyelashes that timidly kept the evening mystery, at these eyebrows that surprisingly roughly fled away to the temples, at these dimples that breathed in such a way that invoked somebody's kind laugh or sigh...” [10], “...eyes kept the morning and unequal dewdrops of fresh sun under the evening eyelashes...” [10]. M. Stel'mah intently depicted the features of face that strengthens the role of art detail. The characteristic of hero by other personages is given in the novel for more full and deep description of the portrait: “...girl like evening star...” [10], “...unattainable Yarina's beauty thrashed Bogdan's soul by flails” [10], “...and she was like vesnyanka...” [10], “...Oh my God, what a pleasant young woman...” [10]. “...what eyes she has? Ask for coming in heart. And she gave the same ones to her son...” [10]. It becomes obvious that the author and other personages sympathize with the main heroine and in the reader's imagination is formed a pleasant, positive image. The originality of portrait characteristics of the main heroine is that there are no portrait characteristics as such in the novel at all but there is an impression made by the hero's appearance on the other and the comparison of human beauty with the world of nature.

Obviously, the author gives to Yarina Bescorovayna the positive features, the beauty of soul and body but unenviable destiny. The psychic state of heroine is given in emotions that specifically color her feelings and activity: “...bridesmaids and bridesmen singed, the bride cried...” [10], “...she sings near the norm and cries near Vasyuta...” [10], “...fear like a predacious bird seats on Yarina's shoulders, immerses claws deeper and deeper in her soul...” [10].

The one more mean of character creation is the actions and deeds of Yarina. The girl was the first who rushed to help a boy, who injured his leg at break: “...rapidly held his hanky from the shop, the one in whole school, torn it in two parts and started to wrap his finger...” [10]. The motives of her deed are noble.

It is understood, that the author gives to Bogdan and Yarina a chance for happy life for their kind hearts and strong spirit: “...sprinkled with seeds of old bee-master, they went their way – in the groan of forests, in roar of eternal wind, in fury of snowstorm, because each person must overcome and come through the own snowstorms...” [10].

From our point of view, it is expedient to qualify the secondary personage by their essence. That is why they can be divided in positive and negative ones. To the first ones are related: Turovets Maxim Pavlovych, Sokolyanenko Ivan Olexandrovyeh, Snigurska Sophya Petrivna, Litvinchuk Tetyana Salivonivna, Finenko Severin, Solomia Gromishina, Nina Pavlivna. The negative personages are: Hvorostenko Kostyantyn Procopovych, Vasyuta Artemon Davidovych, David Vasyuta, Omelyan Bescorovayniy, Shinkaruk Mercuriy Yuhimovych, Pasikevych Anton Antonovych.

The base of prototype interpretation was an algorithm, offered by V. Paharenko in his learning-methodical issue “The base of the theory of literature” [11]. And taking into account the aim of

our study, we'll consider in details the means of creation of character of the secondary personages, through which the author opens his idea-esthetic intention.

Turovets Maxim Pavlovych is a hero of civic war, the head of collective farm in Ozerne on Podyllya: "...when he was not a leader, he could listen more to the bird and steppe, to the water and forest. And now there is so much worry, useful and useless, that there is already a thought not about the beauty of nature but about its economic usefulness: about the rain or the nice weather for haying ..." [10]. The man's portrait "...under his dark grey eyes appeared the fans of premature wrinkles... a little swelled and cracked mouth, behind which corner two tiny dimples breath..." [10], "...the autumn disturbance covered his kind face, baked as a bread..." [10], "...the summer coating stopped on his long face, hair fell on forehead like treated mature rye ..." [10]. Turovets is characterized by the following words of other heroes: "The good person we have!" [10], "...he is very kind and clever person..." [10], "When the gebietscommissar gives two hectares or house or cow for a head of average partisan, it could be a farmstead for Turovets. But he is sly and very strong" [10].

In the image of Maxim Turovets M. Stel'mah shows a person, who diligently performs its duties on occupied post and thinks about wellbeing of fellow villagers and also the author gives his personal impressions: "...what nice and signing children will grow in rye for them..." [10] and "...she [Solomya Gromishina] felt herself a mother for the first time before the war. Spring gave them a great gift..." [10]. It is a proof that the work is socio-psychological novel, written in the spirit of social realism.

The image of Salomya Gromishina is discovered by the following means: description of appearance, author characteristic and characteristics by the other personages. M. Stel'mah gives a short portrait, accenting attention on the eyes and eyebrows again: "...has the spacious brows and marvelously seducing glance: between her eyelids quietly lays the shaggy dream or half-dream that at once remind of early spring or the spreading pasqueflower ..." [10], "...actually there is something from the witch in her primitive eyes, in spacious eyebrows that jumped on the temples for men's doom..." [10], "...female sorrow and timidity stopped in eyes..." [10]. The author demonstrates the internal world of personage in following lines: "... But honesty of this woman was such that it would not allow her hide from husband even in thought something that is hidden by the other, who have more happiness than she and do not understand it, disperse it for fugacious stuff, for feelings-ephemeras. With all her sanctity she considered herself as a sinner and can't forget her sorrow about that hungry year when she had boiled even tubers of dahlias. Can anybody understand it? But everyone can laugh at..." [10]. The short but expressive is a hero's characteristic by other personages: "Oh, how many pepper is in you!" [10], "At husband she proudly carried the beautiful head with hard tress to the village with people and to the church with gods. But the timber killed the brown-eyed Gromishin in the forest and bent Solomya's head and shoulders. Several years passed from this moment, her shoulders have been straightened a little and the aspiration for motherhood ripened in her breast..." [10]. M. Stel'mah created one more image of beautiful woman with severe destiny but with positive character. That is why Solomya Gromishina overcomes trials that the author gives her and finds her happiness with Turovets that she'll "...love as a soul..." [10].

The positive image in the novel is the teacher Sophya Petrivna Snigurska, reminded by the main heroes as: "... the world of remote fairy tale and the blossom of fern on Ivana Kupala and magic of hearty word blown from her..." [10], "...she always came to them, schoolchildren, as if she did not part with the sun itself... always with smile as if she didn't know the sorrow..." [10]. And the author's characteristic adds the image: "...Sophya was so excited, when they said that she is a partisan that began to cry out her joy. Thus have been going towards all trials, this woman was glad to have confidence in hardest days for her land..." [10].

Sokolyanenko Ivan Olexandrovyeh – kind and faithful friend of Bogdan Romanishin that Bogdan said about: "...what happiness, when such a stork is near you. You can go to the marriage or to the combat with him..." [10]. The means of creation of Ivan's image: external look "...gipsy head with faggot of curls... in boy's black eyes slyness and fun were slightly shimmied like on the scales..." [10], "...the nose of Sirano de Berzerak ..." [10]; characteristics of the hero by other personages: "...this mocker, joker and boaster wonderfully weaved so much humanity in him..."

[10]; self-characteristics – “I obviously not belong to the ones, who can love disparately. If I did not find a girl in mill, I would search behind it. But I think, my happiness was found in mill!.. You understand, I love how she [Nina Pavlivna – miller’s daughter] goes about the earth, I love how her legs carefully examine the anxiety on corduroy, I love how her tresses are interspersed by the wind, how the smile comes from the corners of her mouth, love how she puts head on my breast and will love more when our offspring is placed near her breast. And it will be placed after all! All this is the love for me; I even do not want another one...” [10].

Litvinchuk Tetyana Salivonivna – the fellow village of Bogdan, M. Stel’mah makes the portrait-comparison in his novel: “...she is a bud now but her eyes sprinkle like stars and eyelashes around them like mills – blow the evil away, attracts the good... plays by eyes and tresses, rake swings on shoulders, and in hand – the white small knot with crocks-twins. What a hostess!...” [10]; “...she borrowed tresses from the sun and took the eyes from dusk...” [10]; “...slender, beautiful, slight in going...” [10]; “...where such beauty is taken from? Where was gathered that fog in the eyes, that anyone can not escape forever? And who outlined these half-opened lips that included half-child confidence and presentiment of love? Even several sprinkled freckles did not shade but touchingly accented the girl’s beauty. Somebody even dying will think about you, the quiet star of Podyllya steppes...” [10].

The negative personage is Artemon Vasyuta, who hurt not only Solomya and Yarina but all fellow villagers, including his own father. Creating the image of Artemon Davidovych Vasyuta, the writer uses portrait, characteristics by other people and description of conditions where this personage lives. According to the tradition, M. Stel’mah describes the negative personage unpleasantly: “...with large jaws...” [10], “...salient jaws and uneven knots of muscles under them... such smile streamed on his jaws that everyone wanted to puddle it by fists...” [10]. The author accurately paints the Artemon’s mediocrity by the art detail: “...deep, narrow eyes...” [10]. Fellow-villagers and relatives talk about Vasyuta in the following words: “...to the devil’s Vasyuta...” [10], “...it was something ugly, humiliating that lessened human...” [10], “...cemetery soul...” [10], “...he needs not woman but hireling...” [10], “...Artemon, who could not neither create nor give joy to anyone...” [10], “dishonest... merciless” [10], “...devil’s monster...” [10], “...presented her the precious ear-rings before marriage and now is trying to take them away. And sure he will. He does not lose even a single straw...” [10], “...this purulent creature will do all that Hvorostenko talks him. He will build socialism for himself and his brood in stockrooms and will transfer people on grams...” [10], “...I painted him overbearing with rigid heart...” [10], “...own son, own child, own hope, who became not son, not child, not hope, but a torturer...” [10].

The fiction writer uses the description of conditions and place, where Vasyutas live to transfer the features of their internal world: “Vasyutas lived under the very cemetery. Maybe because the shade of crosses fell in the morning and in the evening on their old house, because the spacious apples took juices from the graves, because the cemetery dwellers always managed the grave garden or because many crosses and coffins flowed through their eyes, the cemetery heaviness shaded on the expressive faces of old and young Vasyuta. The large-jawed, deep-eyed Vasyutas even liked it: villagers were afraid of them and they had profit from the human fear – caught the land near cemetery for a kitchen garden and even penetrated to the very cemetery; razed to the ground the ancient graves and potato began to blossom instead of blue periwinkle. Masters had a lot of fuel: wooden crosses generously heated the ribbed dwelling, cut of oak” [10].

Although it was late, David Vasyuta understood that “...the main thing in life is to have a pot on shoulders and not a wealth that makes poorer ...” [10]; that “...in one black cast-iron pot, like in the coffin, was buried whole his youth, all his mature years and the edge of inconsolable old age. He did not sale his soul to the devil for money, but became a devil himself near them and did not noticed, how he gave his son to the devil’s paws...” [10]; “...who only now, having become grey, understood that he is a fool, who passed through the fingers his whole life for nothing, for the scabby cast-iron pot” [10]. He lost also his beloved green-eyed Tetyana, whose “...mouth had a smell of African marigold and naked legs – of hieracium, honey fungi and dew...” [10]; she “...breathed with smells of autumn, honey fungi and good hop...” [10]. “Oh God, why he, the lout, had listened to his creaky farther and did not married her?” [10].

Omelyan Bescorovayniy – Yarina's elder brother that author talks about: "...on murderous horse he scattered, lost his youth, in murderous dens mislaid laugh and smile, run for his destiny till the other's boundaries and when understood that it is not there, came back to his woods, lived like a wolf for several time, then came to the district and gave himself up, then became a church regent at the village, because had a voice of saint at sinner's body..." [10]. In creation of portrait characteristic the fiction writer stops on the face zones again: "He meets Omelyan in house, with dry gipsy face... In his mollusk-like eyelids expressively lay the dark eyes, heated by suspicion and closed mouth under seven locks keeps smile..." [10], "...crooked hand..." [10], "...his running eyes reminded of tadpoles..." [10]. M. Stel'mah demonstrates his attitude to the own sister through the actions and deeds: "...he thrown her [Yarina] from the school desk by his claw merciless hands, disturbed the world of hope and fairy tale because it was time for girl to manage near the furnace, near hoe, near the cow, time to know how much is the pond of butter and sixty eggs. But she new from this science only how much is a pound of sorrow..." [10]. If it would be his will, he "tortures even the sun" [10], "seller of sister" [10], "hidden killer" [10].

Kostyantyn Prokopovych Hovorostenko – the head of district consumer community. The author demonstrates through his image the typical features of officials of Soviet times. Obviously, it is an image-type but at the same type the individual with its specific features. The portrait of this image: "its round face, like a sieve was a cemetery of freckles: they died in winter leaving after them the pale destruction of indistinct hieroglyphs... [10]. Author demonstrates his internal essence with sarcasm: "Having used to deal with the trade knavery and jugglery, Hovorostenko saw the hidden criminal in almost each person and did not trust even his wife neither in costs, nor in love. His practicality did not trust spirit because certain writers earn easy money and only disturb soul by their art stuff. If he could transfer them on the norm! On the norm! It would be immediately less of different criticism, love and different humanism-liberalism, but the socially useful efficiency would come instead of them" [10]; "...he had two animals in breast" suspicion and self-confidence. He saw all to the core except the own primitivism... bring in house his shiny boots, green suspicious slyness in eyes and self-respect on the face that was like a large and inflated "o" [10].

The characteristic of Hovorostenko by other personage is rather volume and expressive: "he is stone image... And what is alive in him? Only shout and stomach. Just the same image was on the grave in steppe, the same round face and belly. But it just kept silence; did not hinder people. Is it possible to put him on the grave? Just as a guard? It would be more seed and more idea... Idea it is a rightness, heartfulness to the people and to the seed and even to the cattle or bird but not a knock by the fist and bang by the door" Even a poppy can knock and bang. But there is not a harvest of bread after knock and bang" [10]; "...but it is a demon, I am afraid of him, – sincerely told Ivan Vasiliyovych. – Energetic fool on the post is a disaster. But he has hand also in the region ..." [10]; "...the plan can be constructed but the state cannot be built on the base of hvostenkoship" [10], "...it is a fear for the mind of the country that primitivists such as Hovorostenko can catch and mutilate..." [10]; "...Hovorostenko strikes us by fear, writes in the paper each disagreeable person. And the paper in his hands became terrible like the Lucifer's signet..." [10]. From our point of view, the author's aim is to satirize and to prevent.

The author creates the image of Anton Antonovych Pasikevych with mockery and dislike: "the director of four-year school in the neighbor village. Picturesque figure. He could go far, but at revolution married a noblewoman ... Evil tongues told – for benefit. He thought, that the whites would win, and the peasant's son would be a noble man, owner of thousand of dessiatines..." [10]. It is worth underlying, that M. Stel'mah gives a static portrait of this personage: "Anton Antonovych Pasikevych was lower than middle height, had shortened neck and completely round head with rare coat felt itself rather free on it. His tanned face boasted of bestial cunning eyes, pear-like nose, convex lips and magnificent moustaches that classically repeated the form of oven fork; probably having seen them each hostess thought about how comfortably must this oven fork keep the small pots..." [10]. Pasikevych is negatively characterized by the other personages: "He is not only cynic, he also intrigued [10], "...Formerly you were the church superintendant and damaged the peasant's canvas by horse hoofs. And now you are damaging the peasant's son by the roofs of suspicion..." [10], "...he is small as a goose but harmful as a polecat" [10].

We find in the text the portrait of director of educational department Mercuriy Yuhimovych Shinkaruk: "...man of near forty years old, with rather flat face and excessively compliant expression on it... eyes were like multitude ice chits that did not know how they must be: cold-grey or cold-blue. But ingratiating sparkles a bit decreased their cold..." [10]. M. Stel'mah described the appearance with few traits but recipient received the information about this personage.

5. Conclusions

The system analysis of art work gave a ground to state that the characters of M. Stel'mah's personages are given in the development, in the fight of contradictory tendencies, using the diverse means of character creation. In the result of internal fight, the final personage's position and our positive or negative attitude to them is crystallized.

It is worth noting, that the eyes are the art detail, through which the master gives the human essence, the features of world understanding and world perception and thus gives reader a possibility to penetrate in the internal world of personages. The materials and results of our study will enrich and widen the scientific-theoretical Stel'mah studies. In further studies we'll elucidate the esthetics of works for children by M. Stel'mah.

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THE STUDY OF THE LEVEL OF ARTISTIC EXPERIENCE DEVELOPMENT OF YOUNG TEENAGERS ON THE BASE OF POLYART APPROACH

Oksana Ovsyannikova

Department of Arts

Tyumen State University

6 Volodarskogo str., Tyumen, Russian Federation, 625003

sergeiovsyannikov@yandex.ru

Abstract

The aim of this research is the elaboration of diagnostic instruments for revelation of the level of artistic experience development of young teenagers on the base of polyart approach and also analysis of diagnostic arrangements with fifth-year pupils. The criteria, parameters and level of artistic experience development of teenagers were described in the article; the author's diagnostic tasks were elaborated according to the polyart approach. The diagnostic methods (testing, essay, questionnaire, creative tasks) were determined for each parameter. The diagnostic arrangements at institutions of general education allowed make a conclusion about the necessity to raise the level of artistic experience development of pupils and to prognosticate the methods that favor it.

Keywords: artistic experience, polyart approach, diagnostic methods (testing, essay, creative tasks), young teenagers.

DOI: 10.21303/2504-5571.2016.00199

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1. Introduction

The study of the level of artistic experience development of young teenagers is caused by the necessity of harmonization of the sphere of scientific and artistic thinking of the person. The world cognition can be realized by both logic way and using imaginative-emotional sphere. Both these ways mutually add each other. Unfortunately, in last decade technocratic approach that does not take into account artistic, emotional development of each person is maintained more and more in education and society [1, 2]. The art, on the contrary, is directed in the whole its diversity of types and genres on the widening of cognitive sphere of pupils by the means of artistic image. Even B. M. Nemensky wrote that “there is a kind of human activity that also creates the integral picture of the world... in the unity of thought and feeling, in the system of emotional images instead of logic laws, – it is art. And such a way of integral consciousness of the life is accessible even for a child...” [3, 16]. The author states that the science and art cannot be considered as the higher and lower stages of spiritual phenomenology, because it can lead to the great losses in the moral education of growing generation [3].

The effective development of artistic experience of school children provides the diagnostic study that is the aim of this work. Several scientists considered the problem of the personal artistic experience development. N. N. Digtyar has elaborated the criteria and levels of formation of pupils' artistic experience by the means of folk picture [4]. V. G. Averochkin presented the levels of teens' artistic experience development: passive, reproductive, active, active-creative [5]. M. A. Gorbunova has defined the main parameters of the personal artistic experience at the music lesson: the totality of human artistic interests; imaginative-sensual personal sphere; general artistic knowledge, abilities and skills; the system of internal artistic values [6]. From our point of view, the diagnostics and development of the pupils' artistic experience must be realized on the base of polyart approach in pedagogy of art, because the very notion “artistic experience” provides the consideration of the different kinds of art, their interconnection. The importance of polyart approach in personal development, especially in its artistic experience development is stated by many scientists (E. P. Kabkova, L. G. Savenkova, N. G. Tagilceva, N. P. Shishlyannikova, B. P. Yusov) [7–11].

The study is devoted to the successive revelation and consideration of the level of artistic experience development of the young teenagers. The criteria, parameters and levels of the pupils' artistic experience development were determined on the base of theoretical analysis of the literature about this problem. The author's diagnostic tasks for teenagers were elaborated for each parameter on the base of polyart approach. The carrying out of diagnostic arrangements on the base

of general education institutions of the city Tyumen allowed make a conclusion about the necessity of development of artistic experience of the young teenagers, about elaboration of forming tasks on the base of polyart approach.

2. Materials and methods

The methodology of research is based on the system approach application that allows study the artistic experience as multicomponent personal education in the unity of cognitive, imaginative-sensual and creative components. The study of the essence of the notion “artistic experience” led to the use of polyart approach that favored the more objective elaboration of diagnostic instruments, corresponded to the essence of the studied quality of teenagers. Polyart approach is based on the united nature of all kinds of arts [12, 13]. The applied diagnostic methods (testing, essay, questionnaire, creative tasks) were remarkable for their accessibility for the young teen children and also favored the revelation of studied quality.

The theoretical analysis of studied notion in interpretations of the different authors was carried out to define the criteria, parameters and levels of school children’s artistic experience development that has led to the formulation of own definition of the notion “artistic experience”.

M. A. Gorbunova considers the artistic experience as dynamically developing unity of imaginative-sensual personal heritage (esthetic perception, esthetic, attitude, feelings and emotions), personal general artistic knowledge, abilities and skills, positive attitude to the art as a result of the direct interaction with the world of artistic creativity [6]. Digtyar N. N. presents the artistic experience as the personal education, specific type of esthetic experience, the result of artistic-esthetic personal activity that forms the spiritual-practical human essence [4]. The author also defines the components of artistic experience: the presence of personal artistic interests; development of emotional-sensual sphere; value attitude to the works of art; artistic knowledge, abilities, skills; experience of creative activity [4].

“According to the analysis of different definitions of the term “art experience” with its constituents, the author can clarify the term “art experience of teens” which can be treated as a developing personal formation, which is based on the unity of art knowledge about different kinds of art, emotional tenderness by their perception, wish to communicate with works of arts and positively relate to their value. According to refined definition and constituents of art experience, the author identified its components: informative, figurative and sensual, evaluative and creative” [14].

3. Experimental studies

The experience-searching work on the development of artistic experience was carried out on the base of school № 68 of the city Tyumen and included several stages: stating (initial diagnostics), developing (carrying out of activities) and control (final diagnostics).

This work describes the first stage, within which the initial diagnostics of the level of artistic experience development of the children of the young teen age was realized. According to the results of diagnostics, the activities for development of artistic experience in children were elaborated. At the second stage the developing activities with fifth-year pupils were realized [14]. At the third stage the final diagnostics was realized, the results of the study were analyzed.

Diagnostic study included 60 children of the young teen age, fifth-year pupils of the school № 68 of the city Tyumen.

The definition of the notion “artistic experience” that has been formulated by the author allowed define its components: cognitive, imaginative-sensual, value, creative. The components were the criteria of the artistic experience development of pupils.

At the revelation of each component and also for elaboration of diagnostic tasks the age features of young teenagers were taken into account. Such age features of young teenagers as inquisitiveness, striving for self-expression, including the need for the verbal expression of own feelings and emotions, openness to the new, striving for independence, initiative influence the development of their artistic experience [15, 16]. The important role in the development of teenagers’ artistic experience is played by the leading type of activity – communication. In this case it is not only

communication with peers but also the artistic communication that provides dialog, co-authorship with author, hero of the different works of art [17].

The revealed criteria are concretized by the parameters.

Cognitive criterion corresponds to the parameter “*presence of general artistic knowledge*”.

The following *diagnostic task* was elaborated for realization of this parameter:

Test on the history and theory of art (its different types), corresponded to the age of fifth-year schoolchildren. Let's offer several questions of the test. Schoolchildren had to choose the correct variant of the answer.

1. What is folklore?
 - folk creativity;
 - creativity of composers;
 - author's song.
2. Expressive means of dance are....?
 - word;
 - music;
 - movement.
3. Who is responsible for the staging of performance, film, show?
 - script writer;
 - dramatist;
 - director.
4. Expressive means of painting are...?
 - picture;
 - figure;
 - paints.
5. Name the author of the work “Sistine Madonna”:
 - Michelangelo;
 - Raphael;
 - Leonardo da Vinci;
 - Sandro Botticelli.
6. The genre of painting that is a component of historical and mythological genre:
 - animalistic;
 - battle;
 - home;
 - still life.
7. Artistic style that appeared in Middle age, which architectural constructions look like the “open stone books”:
 - baroque;
 - modern;
 - gothic;
 - eclecticism.
8. The direction in painting and music of the second half of XIX-beginning of XX century, born in France that transfers the impression of the seen:
 - expressionism;
 - classicism;
 - postimpressionism;
 - impressionism.

The imaginative-sensual criterion corresponds to the parameter “*ability to emotional respond to the works of art and expression of own emotions in imaginative form*”.

Diagnostic task: schoolchildren received for perception the different works of art: A. I. Khachaturian “Adagio of Spartak and Frigia”, reproduction of the picture by C. Monet “Pond with water lilies”, image of architectural composition, fragment of ballet “Swan” by

Maya Plisetskaya, fragment of the film-opera “You are my delight, you are my torment” on the opera “Tosca” by G. Puccini.

Schoolchildren are acquainted with them. Then they choose the most pleasant one for them and write essay (own impressions) about this work of art.

The value criterion corresponds to the parameter “wish to communicate with art and positive attitude to the artistic values”

The artistic values (according to the legislation of RF) are the values and categories of objects that constitute the artistic heritage. There are masterpieces of the masters of arts of the present and past.

Diagnostic task: questionnaire.

The questionnaire includes the following questions:

1. Have you the wish to communicate with the works of art? if yes, it is:
 - often;
 - sometimes;
 - from time to time (seldom).
2. Have you the favorite kind of art?
3. Have you the favorite work of art? Why?
4. Why this work of art is valuable for you?
5. Look at the picture by P. A. Fedotov “Match-making of the major”, what sense, from your point of view, was inserted in this work of art by the author?
6. What sense has this picture for you?
 - positive;
 - negative;
 - neutral.
7. How do you think, what this picture teaches spectators?

The creative criterion corresponds to the parameter “readiness and ability to create the artistic-creative product”.

Diagnostic (creative) task:

1. To create independently the computer collage (or slide show) of the masterpieces of the different kinds of art (found in internet). Teenagers must independently choose 10 works of art that they consider as masterpieces, then to ground their choice.

2. To write the short novel about the famous picture (B. M. Vasnetsov “The deathless Koschei”).

The criteria, parameters and diagnostic methods are presented in the **Table 1**.

Table 1

The criteria, parameters and diagnostic methods

Cognitive	Imaginative-sensual	Value	Creative
Parameters			
Presence of general artistic knowledge	Ability to emotional response to the work of art and to expression of the own feelings in imaginative form	Wish to communicate with the work of art and positive attitude to the artistic values	readiness and ability to create the artistic-creative product
Diagnostic methods and tasks			
Test	Essay	Questionnaire	Creative task

Each parameter was assessed according the point system. Teenagers could receive from 0 to 2 points for each task, in total by the sum of all tasks they could receive from 0 to 10 points (because 2 tasks were offered in the creative criterion).

The following levels of development of artistic experience of schoolchildren were defined:

High (8–10 points) – significant volume of general artistic knowledge; is able to the emotional response to the works of art and to the expression of own feelings in bright imaginative form, using epithets, comparisons and so on; the wish to communicate with the works of art is expressed rather often, he/she understands the value and sense of perceived work of art, it has a positive mean-

ing for he/her; is able (has a wish) to create the artistic-creative product, the ready product has a deep sense and artistic value (is constructed compositionally, nicely formed, has the elements of novelty and originality in content and form).

Middle (4–7 points) – the general knowledge is surface and selective, is able to the response to the works of art but expresses the own feelings by the “dry”, non-emotional language, does not use epithets, imaginative comparisons, metaphors; the wish to communicate with the work of art is manifested sometimes, he/she understands that the perceived work of art has value but does not insert the concrete sense in it, the work of art has a neutral value for schoolchild; is ready (has a wish) to create artistic-creative product but this product has the sense and artistic defects; it has not enough originality, is standard by form and content).

Low (0–3 points) – the absence of general cultural knowledge, lack of development of the ability to emotional response to the work of art and expression of the own feelings in imaginative form; the wish to communicate with the work of art is expressed from time to time, he/she does not understand the value and sense of perceived work of art, it has the negative value for him/her; does not express the readiness (does not wish) and ability to create the artistic-creative product.

4. Results of the research

After the carrying out of diagnostic arrangements the results were analyzed. The results of initial diagnostics are presented below.

The levels of artistic experience development of the young teenagers at the initial stage of diagnostics are presented in the **Table 2**.

Table 2

The levels of artistic experience development of the young teenagers at the initial stage of diagnostics

Levels	Number of school children	Percent ratio
High	0	0 %
Middle	22	36,7 %
Low	38	63,3 %

The data of initial diagnostics demonstrated that the pupils were characterized with predominantly low and middle level of artistic experience development, the higher level was not revealed. In the process of carrying out of diagnostic tasks the pupils faced with such problems as the low level of general artistic knowledge, inability to emotional response to the works of art, to expression of the own feelings in imaginative form. Many teenagers could not make a collage, because they did not know, what works of art can be related to the masterpieces, several schoolchildren could not write the short story about the perceived picture and also to conscious the sense, inserted by the author in the work of art. The qualitative and quantitative analysis of diagnostic of the teenagers' artistic experience revealed the necessity of its development.

5. Discussion

The results of diagnostic study demonstrated, firstly, the insufficient level of the artistic experience development of young teenagers; secondly, allowed plan and prognosticate the methods that favor the development of aforesaid quality of schoolchildren on the base of polyart approach (the method of “musical graphics” [18], heuristic work with plot [19], method of comparison of the creative images of different kinds of art, collage method and so on); thirdly, the diagnostic results have proved one more time the problem of disharmony between the spheres of scientific and artistic thinking of pupils.

6. Conclusions

According to the specified definition and components of artistic experience, its constituents were separated: cognitive, imaginative-sensual, value and creative.

The parameters of each criterion, determined on the base of separated components of artistic experience of teenagers, were defined. The author's diagnostic tasks were elaborated for each parameter.

The age features of the young teenagers that influence the development of their artistic experience were considered: the striving for self-expression, including the need of verbal expression of the own feelings and emotions, self-consciousness, openness to the new and so on.

The communication with the different kinds of art within the polyart approach can have a positive influence on the development of teenager's artistic experience [20], that is on the development of his/her value sphere due to the revelation of the main sense and common human needs, laid in the different works of art; on the development of his/her creative sphere due to the self-expression at the creation of artistic-creative products; on the development on his/her imaginative-sensual sphere by the perception, comparison and analysis of the different kinds of art; and also on the development of teenager's cognitive sphere by acquiring knowledge about the different kinds of art, their specificity, history of creation and so on.

Acknowledgments

We express gratitude to the administration and teachers of the secondary school № 68 of the city "Tyumen" for the assistance in carrying out of diagnostic arrangements with pupils.

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THE PROBLEMS OF COORDINATION AND COOPERATION OF THE BRANCHES OF TRANSPORT COMPLEX IN UKRAINIAN SSR (1970–1980)

Anatoliy Gorban

*hetman Petro Konashevicha-Sahaydachnyi Kyiv State Maritime Academy
9 Kyrilovska str., Kyiv, Ukraine, 04211
feclo15@gmail.com*

Abstract

In the presented article the level of activity and coordination of Ukrainian SSR transport branches in 1970–1980-s is considered on the basis of archives and scientific literature. The author comes to a conclusion that under condition of general growth of transportation the lack of proper coordination of different kinds of transport and department non-coordination had their negative influence on the transportation organization in that period. First of all it was relative to the problems of general motor transport usage, transport expedition service, irrational transportation by the railway transport, economic stimulation of co-operating transport enterprise workers for their common work results. The effectiveness of measures on their coordination stayed low.

Keywords: transport, coordination, transportation, switching load.

DOI: 10.21303/2504-5571.2016.00204

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1. Introduction

In 1970–1980 the transport complex of Ukrainian SSR supported the steady work of industry, building, agricultural economy, trade and service sphere, transport-economic connections between the economic regions of republic and USSR, export-import connections were realized.

But since the second half of 1970 the tempos of increase of transportations volumes were significantly decelerated, the defects and miscounts in coordination and interaction of the different types of transport, general organization of transport work and extensive way of development of the transport system of republic became more and more essential. The results of it were manifested first of all in the decrease of productivity of transport and increase of transport price cost, so conditioned the search for the new ways for raising the effectiveness of the work of all transport system links. The complications of that time were considerably consonant with the modern ones that actualized a necessity of comprehensive study of historical experience of the solution of problems of improvement of coordination and coherence of the whole transport complex.

2. Aim and tasks of research

For sufficient explanation of the main aims the following tasks were set:

1. Determination of the features of coordination and interaction of the different transport types of Ukrainian SSR.
2. To define the main problems of coordination that attended the Ukrainian transport complex in 1970–1980.
3. To assess the effectiveness of realization of arrangements on coordination and rationalization of transportation in 1970–1980.
4. To give recommendations about how the experience of past years can be used today.

3. Analysis of researches and publications

The problems of coordination and interaction of the different transport types in Ukrainian SSR in aforesaid chronological frames were not studied integrally but were limited to the only fragmental mentions in the works of separate authors. Especially the authors of the works [1, 2] considered this topic, elucidating the general state of transportation. The problems of improvement of coordination of the work of railway and motor transport in the points of their interaction were studied by the author [3], river transport – by the author [4], and in the work [5].

We analyzed the scientific studies of these authors, they are named in references.

4. Results of research

Considering the problems of coordination of the work of different transport types, inherent to the transport complex, we can conventionally separate the following levels:

- distribution of loads by the transport types and rationalization of the load transportations;
- organization of the system of complex transport-expeditionary service of consigners and consignees of the loads not depending on transport type and departmental appliance.

The feature of functioning of the transport complex of Ukrainian SSR was the fact that it was not a unitary organizational system as opposite to the other branches. Transport was subordinated to the different ministries and union, union-republic, republic and local departments. That is why it was extremely difficult to realize the switching of loads and to organize the mixed transportations. The serious problems appeared also because the technical equipment of stations and meeting-points lagged behind the growth of load circulation that complicated the work and worsened the interaction of different types of arterial transport with industrial railway and departmental motor transport.

The most complicated was the problem of interaction first of all of the motor transport with different transport types, caused by the low specific weight of motor transport of general use and departmental scattering of the motor fund. Specific weight of the motor transport of general use in the work of motor transport of national economy in 1970 was by tones 21,7 % and by load circulation – 24,4 %, against respectively 32,3 % and 34,2 % in 1965. The motors were allotted with interruptions, motor transport came to the work for 11–12 hours, it was not allotted at all for several days. This practice was especially typical for Ivano-Frankovsk regional motor transport, where the work of regional motor supply failed almost every day because of failure to give motor transport [6].

The trucks fund was shortened by 16,4 % and was 96,1 thousand whereas the departmental trucks fund (without collective farms) increased by 89,9 thousand units or by 39,1 %. The most absolute shortening of fund of the trucks of general use in 1971 in comparison with 1966 took place in Odessa region – by 1,1 thousand, Vinnitsa – 0,8 thousand, Dnipropetrovsk – 0,8 thousand, Cherkassy – 0,7 thousand, Khmelnytsky – 0,6 thousand and Zaporizhzhya – 0,6 thousand motors [7].

Amortization of trucks left behind their supply – in 1975 48,6 thousand were amortized and only 38,9 thousand units were received. For the 1 of January, 1976 almost half – 49,2 % of trucks was in operation for a long time – more than 7 years [8].

The general volume of irrational transportations remained high. The analysis of transportations by the motor transport demonstrated that the main mass of products was transported to the distance from 50 to 400 and more than 500 km. The railways transported goods and constructions of practically whole nomenclature for industrial, housing-civil and agricultural building, transport, energetic and engineer constructions. In fact the mean radius of transportations was 350–370 km, including less than 50 km – 2,1 % and more than 500 km – 22,1 % [1].

The one Odessa department transported near 900 thousand tons of loads to the distance less than 50 km annually. These irrational transportations needed 18 thousand vans including more than half of covered ones. But the leaders of Odessa regional motor administration neglected the state interest and took from railway transport mainly “profitable” transportations to the distance 200 km and more. In this motor administration in 1980 the transportations that were not typical for it increased and the internal regional ones – decreased by 17 % [9].

The one more problem was the increase of irrational excessively far motor transportations in inter-regional and inter-republic communications [10]. Thus, the far transportations (more than 500 km) by Ukrainian agro-building of Ukrainian SSR, Ministry of road building of Ukrainian SSR, Ministry of water economy of Ukrainian SSR were 30–50 % of the general volume of railway transportations of these ministries and departments. The one of causes of such situation was the departmental disintegration and absence of coordination in the work of enterprises-producers. Thus, for example, the production of 344 enterprises of industry of nonmetallic building materials, subordinated to 33 ministries and departments was received by more than 5 thousand consumers. The irrational transportation appeared at realization of transport-economic connections and in the result of it the additional ineffective transport work was carried out and it was assessed in the volume of 9 billion ton/km with expenses over 4 billion crb per year [1].

The imperfection of transport-expeditionary service was a significant problem. For that time in Ukraine was certain experience of functioning of transport-expeditionary enterprises – main executive structures of the management of interdepartmental connections and cooperation in transport complex. They provided the complex transport-expeditionary service in the big transport junctions, rational distribution of flows by the transport types, organization of intercity motor transportations [10].

For the strengthening of coordination of transportations were used the organizational arrangements, directed on improvement of the system of management of transport branches. In 1963 in republic were created 15 junction offices of transport-expeditionary agency (OTEА) and 6 offices of transport-expeditionary operations (OTEO). OTEА of the I group were created in the cities Kyiv, Donetsk, Dnipropetrovsk, Lviv, Kharkiv, Odessa; II group – in Vinnitsa, Zhitomir, Zaporizhzhya, Luhansk, Mikolaiv, Poltava, Chernigov regions; III group – in Kherson region. OTEO of the I group started to work in Cherkassy region, II group – in Kirovograd, Rivne, Ternopil, Khmelnytsky region. III group in Chernyvtsey, Zacarpathya, Ivano-Frankivks and Volynska regions [11].

They were completely responsible for the transport-expeditionary service of at centralized transportations of loads by the motor transport from railway stations, river and airports and also for the provision of population with all types of transport services. For the first year of work the plan of loads transportations on railway stations, river and airports was realized in full by administration for 94,8 %, not transported – 1323 thousand tons, actually transported – 23033 thousand tons. Plan was failed by: Khmelnytska OTEА – for 62 thousand tons because of untimely transfer of railway stations to OTEO service from railways. Because of untimely schedule of supply of motors by motor funds, insufficient number of loading-unloading mechanisms and loaders took place the overtime stoppage of motor transport on railways and ports for 264,4 hours and stoppages of consignors and consignees – 365,8 hours. Totally in 1963 were sent 2492,24 thousand tons of load of intercity communication. The number of sendings was 427587 [11].

TEE solved the problems of the rational distribution of transportations between the different transport types that gave more effective use of existent transport resources of Ukrainian SSR and railway stations were released of the work with numerous clients. TEE serviced the enterprises and organizations with transportation volume 58 mln tons per year including 47,6 mln tons by railway stations. In 1978 the central transportations were carried out at 209 railway stations, 17 river, 9 sea and 18 airports. TEE received near 13 mln crb of profit per year, most part of it came to the local budgets [12].

In 1979 the total volume of intercity transportations by the motor transport of general use reached 32,5 mln tons including the ones realized by transport-expeditionary enterprises – 6,5 mln tons. According to the regular schedules – 3,6 mln tons – 56 %. Starting from 1980 the intercity transportations of loads were realized according to the regular schedules, except off-clearance loads and loads of special purpose. For example in the first quarter of 1980 the volume of intercity transportations, realized by TEE, was 1,5 mln tons, among them 997 thousand tons or 66,5 % – according to the regular schedules. But the part of intercity transportations was realized by the departmental motor transport. In 1979 the number of runs, realized by departmental motor transport according to the route letters of old form was 98,7 thousand or 19,9 % of all intercity runs of the Ministry of motor transport [13].

For improvement of interaction between the different transport types, the raise of quality of transport-expeditionary service of republic economy, the objective complex scientific-technical program “Transport” that must provide the development and improvement of transport system, organization of rational transportation of the loads was elaborated and accepted by the directive of Ministry Council of Ukrainian SSR of 11 of July, 1986. Its realization allowed increase centralized transportations by 13,2 %, and the volumes of container transportations – by 12,2 % [14].

The switching of irrational transportations of the loads was urgent for unloading of transport net, especially railways. It was favored by the fact that the different transport types had practical experience of common work, and the mixed transportations of loads became spread. Thus, the especially close cooperation must be established between the motor transport enterprises and Ukrainian railways, first of all Southern-Western one. Most motor roads in Ukraine were placed in parallel with the main railway districts and were in direct closeness with them that was comfort-

able in the aspect of coordination of railway and motor transport workers [2]. Altogether the motor transport of general use of republic realized the centralized transportations of loads that came through 70 railway stations.

In 1970 at railway stations were received and sent 1,56 billion tons of different loads. Among them near 10 % were processed at places of general use that is received and sent from the railway transport to the motor one [3]. Thus, in the result of transfer of small consignments in containers (between Bila Tserkva and Kyiv) from the railway to motor transport, the cost of transportation of 1 ton of load decreased from 9–10,5 to 3,5–6,5 crb and the delivery terms were shortened from 3–4 days to 5–6 hours [15].

Taking into account the overload of railway transport and also the fact that the main river artery – Dnipro had the reserve of carrying capacity, there appeared a question about the switching of many types of loads from the railway transport to the river one, widening of transportation geography, increase of load on the river fleet in less strained directions [4]. It was profitable because the price cost of transportation by the river transport was on average by 11 % lower than by the railway one [15]. In this connection it was expedient to build the river wharf for many enterprises, placed along Dnipro that was proved by the technical-economic studies [5].

In 1981–1982 from railway transport to the motor and river ones were switched 5 mln tons of important loads for which transportation by railway would be necessary 90 thousand vans [16].

The general problem that complicated the coordination of work of different transport types in republic was the different level of their subordination – Ministry of railways of USSR and Ministry of motor transport of Ukrainian SSR. At the same time almost all industrial enterprises and organization of different union, union-republic and local ministries and departments had the motor transport. As a result each type of transport had the own systems of transportation planning, statutes and legal regulations. At the beginning of 1970 years the State plan of Ukrainian SSR planned the development of motor transport of such ministries and departments, which material-technique supply was realized through the Ministry Council of republic. Most transportations of motor transport were planned by the union and union-republic ministries [3]. It complicated the coordination of work of the railway and motor transport and also regulation of their economic and legal relations.

In its turn the railways of republic often carried out organizational-technical arrangements without taking into account the possibilities of motor transport and without proper coordination of these arrangements, having proceeded from departmental interests. Thus, at the beginning of 1970 on railways were realized certain arrangements, directed on concentration of loading work at supporting stations that provided organization of these stations, concentration of loading operations at them and closure of series of stations with small volume of loading work. But they were not supported by the proper development of the load economy and the net of local motor roads. Because of these causes only 43 % of supporting stations were included in transport-expeditionary service with centralized removal of loads by the motor transport of the Ministry of motor transport of Ukrainian SSR. From the other stations the load was removed by the departmental motor transport.

The volumes of switchings and mixed transportations by the river transport were small comparing with motor one that was conditioned by insufficient number of ports that generated complications in organization of their common work with surface transport types [10]. And even the work of Central river fleet of Ukrainian SSR on involvement of loads to the transportation in mixed railway-water communication was not sufficiently active and had not the proper contact with railway administration [16].

Already at the beginning of 1970 years railways annually failed to give to the river transport over than 27 thousand vans to the reloading points. Generally non-productive expenditures for fleet were 5,1 mln ton-days including because of failure of giving vans – 1,6 mln ton-days. In the result of non-fulfilment of plan of giving vans for 1 of January, 1970 the remains of entrepot loads in river ports were 96 thousand tons including in Cherkassy – 39 thousand tons, Zaporizhzhya – 24 thousand tons [2].

But often such switchings were organized without the proper grounding, essentially undermining the further confidence to the mixed transportations. For example, in accordance with the decision of union government in winter period 1978–1979 there was realized an experiment

on transportation of iron-ore pellets from the Dnipro ore-mining and processing enterprise to the Dnipropetrovsk metallurgical plant named after Dzerzhinsky. Under severe conditions at minus temperature three motor ships with carrying capacity 1800 tons transported 102 thousand tons of pellets although according to technical-navigational characteristics, navigation was not allowed in nature-climatic conditions of Dnipro basin in winter period [3].

To the objective causes of insufficient switching of loads and introduction of more rational mixed transportations can be referred the absence of economic stimulation of the workers of adjacent transport organizations for the common results of the labor, – and as the result, the absence of unity in plan rates.

The order of organization of container transportations in the regions of republic was built without taking into account the complex operation of the different transport types that led to the irrational use of container fund and low level of container transportations, ineffective use of the different transport types [1].

The speed of loads delivery remained the weak link of transport system of republic, especially at mixed railway-motor or railway-water transportations. The delivery terms during 1965–1975 (at increase of technical speed) were not reduced but increased nearly by 8–10 %. The transportation terms in mixed railway-water communication were especially long [14]. In most cases it was conditioned by untimely removal of loads from railway stations, water, sea and airports – junction (cross) points [3].

The existing system of planning and accounting of the work of junction points complicated the further introduction of system organization of management of progressive transportation technology and complex transport-expeditionary service in transport junctions. Nevertheless the different system of planned work rates of adjacent transport enterprises in the points of their junction (railway stations – unloading in vans, mechanized distances of loading-unloading works – ton-operations, transport-expeditionary enterprises – tons, motor transport enterprises – tons and ton-km) – often generated the mutual interdepartmental complaints, incoherence and contradictions in organization of common work, impeded the introduction of progressive transport technology and complex transport-expeditionary service [10].

Especially serious defect was the disintegration of administrative subordination of junction transport-expeditionary offices and enterprises of the motor transport of Ministry of motor transport of Ukrainian SSR. It was not financially responsible for the derangement of loads removal from railway stations, transferred the responsibility on the junction transport-expeditionary offices. Thus, in 1970 the enterprises of Ministry of motor transport of Ukrainian SSR failed to give for centralized transportations of loads in first shift more than 250 thousand trucks or 15,3 %, in second shift – near 43 thousand trucks. In the same year were not given more than 90 thousand trucks worked with pay by the hour that was near 35 % of approved norm of giving trucks. The big non-productive consumption of both order time at the expense of their delayed coming on the line and early finish of the work took place. In 1970 it was over 510 thousand machine-hours that was equal to the transportation of 1,2 mln tons of load [8].

In general the technical development of junction points of interaction of motor and railway transport provided their complex and relatively coherent operation on centralized base at the level up to 30 % [1]. It was revealed, that it was based on the departmental separation of economic organizations that participated in the process of transferring load from the one transport type to the other [3]. The planning of development of junction points at the level of interconnected volumes of transportations of the different transport types was concentrated in separate departments and usually was not mutually coordinated that led to disproportion in their development with all negative consequences [10].

In 1960 years took place certain changes of organizational structure of motor transport – enterprises were consolidated and transferred on the state account. It favored the introduction of centralized transportations, which part in coast-accounting motor economies in 1964 reached 62 % of the volume of transportations by motor transport of the general use. The central dispatching services were created in several cities [15].

But in general the development of centralized transportations remained insufficient. That is why the series of government decisions was directed on the improvement of the work on orga-

nization of centralized transportations. Especially for facilitation of supply of collective farms and other state agricultural enterprises, the Ministries Council of USSR 14 of November, 1969 accepted regulation “On the development of centralized transportations in agriculture. This document entrusted the realization of centralized transportation of loads of state agricultural enterprises and organization to the “Union agricultural technique”, including their transport-expeditionary service at the railway stations and river wharfs.

In transport enterprises were created motor columns with a number no less than 100 trucks in each one. The union government had a right to throw these motor columns if necessary from the one union republic to the other for harvesting and procurement of agricultural products and inter-republic transportation of them [2].

In July of 1974 the Ministry Council of Ukrainian SSR accepted the directive of “On the arrangements on further widening of centralized transportations of loads by the motor transport”, according to which the Ministry of motor transport of Ukrainian SSR received the “method of projecting of unitary technological process” and sent it for carrying out to the regional administrations and associations of motor transport for introducing the new technology of the work at centralized railway stations, river ports, transport-expeditionary and motor transport enterprises. The temporal regulations on the annual, quarterly and month planning of centralized transportations of loads at railway stations and river ports with realization of transport-expeditionary operations by the motor transport of Ukrainian SSR were elaborated, coordinated with State plan and approved [3]. At the same time the Ministry of motor transport together with the Ministry of building materials and State supply elaborated the arrangements that completely centralized the transportations of coal, road-building loads, sugar beet, seed and other mass loads [15].

The centralized transportation of loads in 1975 increased comparing with 1970 by 62 %, their specific weight in the general volume of transportation by the motor transport of general use was by tons 79 %, and by ton/km – 75,1 % [4]. The volume of centralized transportations by the motor transport of general use in 1979 reached 897,3 mln tons. But the tasks were not fulfilled. For example, the specific weight of centralized removal of loads from the metal base № 3 of administration Kharkiv metal supply and sale” of Poltava region was 42,6 % at planned 80 %.

The essential defects took place at centralized removal of small consignments in which result the volumes of self-removal of loads from bases and shops of State supply of Ukrainian SSR did not decrease during 1970 years. At the bases took place the long overtime stoppages of rolling stock as the result of unsatisfactory organization of loading-unloading works. In 1979 the penalty for overtime motor stoppages at the bases of State supply was 159 thousand crb only in 14 regions of republic.

In 1979 the plans for enterprises of the Ministry of nonferrous metals of USSR was fulfilled for 96 %, State supply of USSR – for 92,9 %. The level of execution of centralized transportations of such types of loads as bricks in 1979 was 97,4 %, cement – 97,3 %, petroleum and petroleum products – 98,5 % [13].

In 1980 the CC of CPU fixed the essential defects in trucks usage. The transportations of loads that were economically expedient to realize by the trucks of organization of general use, were carried in significant volumes by the departmental transport that led to the parallelism in the work of motor transport, worsening its technical-economic rates. Coordination of the work on the trucks usage at intercity and central transportations and also on their technical maintenance and repair was absent [5].

5. Discussion of the results

The disadvantages of this work are the problems of effective use of historical experience of the development of transport complex of Ukrainian SSR but despite this fact in the work were noted that just coordination of transport, effective and rational use of all capacities are the main components of effective transport development of any country taking into account the modern globalization tendencies. This research is important for both scientists and managers of state power bodies and local self-government. The offered research needs the further elaboration.

6. Conclusions

So, the analysis of the work of transport complex of Ukrainian SSR testifies that in this period the transport branches of republic developed rather dynamically and satisfied the needs of economy and population. But the transport work was negatively influenced by the absence of proper coordination and interaction of the different transport types and departmental incoherence in organization of transportation work. The specific weight of the motor transport of general use remained low, the transport-expeditionary service was imperfect, the volumes of irrational transportations by railway transport decreased slowly. The imperfection of the mechanism of switching of loads transportations from the railway transport to the motor and river one and introduction of more rational mixed transportations was a problem. The proper attention was not paid to the system of economic stimulation of the workers of adjacent transport organization for the common results of labor.

For the strengthening of coordination of transportations, the organizational arrangements, directed on the improvement of the system of management of transport complex, were carried out – in the regions were created transport-expeditionary offices, responsible for the complete service of clients, the motor columns in the system of agricultural enterprises “Agricultural technique” were created for transportation of agricultural loads. But these arrangements did not give the expected results and the problem of coordination and cooperation of the different transport types remained urgent.

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ARCHITECTURALLY ARTISTIC METAL OF CITY IVANO-FRANKIVSK (STANISLAVIV), END OF 19TH-BEGINNING OF 20TH CENTURY

Natalia Kachkovska

*Department of Design and Theory of Art
National University named after V. Stefanik
Scientific Secretary
National preserve "Davniy Halych"
1 Franko str., Galich, Ukraine, 77101*

Abstract

In this article we consider a theme concerning the evolution of metal decoration in architecture of the town Ivano-Frankivsk (Stanislaviv), dated XIX – early XX century, this question was analyzed in line with European architectural and artistic trends of that time. Style trends and compositional features were detected through the example of certain types of metal-plastic in the architecture of the town. Special attention was paid to finding ways to preserve valuable historical examples of architectural-artistic metal, which are exposed to destruction.

Ancient metal-plastic, which impresses us by the mastery of far-back blacksmiths, adorns most historic buildings in Ivano-Frankivsk (Stanislaviv). It was formed, at each stage of its development, in line with European architectural-artistic trends and reproduces the content of these processes by typological, compositional, stylistic, iconographic, formal features, together with production technique and manufacturing technology. The metal-plastic being a valuable architectural-artistic heritage of XIX – early XX century, which defines the direction of urban modern forging art development, nowadays is exposed to destruction. Undervaluation and low level of research work, concerning Ivano-Frankivsk historic metal-plastic as a cultural heritage object, become one of the reasons that community and some experts do not consider it as an object that influenced the formation of the architectural urban space image and still continues to influence its evolution.

Keywords: Ivano-Frankivsk, artistic blacksmithing, ornament, style, blacksmiths' workshops.

DOI: 10.21303/2504-5571.2016.00200

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1. Introduction

Architectural metal plastic of Ivano-Frankivsk from the end of the 19th-beginning of the 20th century is a valuable cultural heritage that influenced the creation of the integrated architectural image of the urban space. Craftsmen of artistic processing of metal were able to naturally connect metal decor with architectural decision by using a certain style. The article's goal is to detect and explore an architectural iron work, as well as recognition of firms and workshops that create artistic metal work of art in order to attract the attention of society to the issue of preserving artistic metal work which is on the brink of extinction.

2. The purpose of the research

The purpose of this article is to identify stylistic and compositional features of architectural-artistic metal in town, dated late XIX – early XX century.

3. Result of the research

Late XIX – early XX century become a period, which attracts attention by the bright artistic heritage, the variety of architecture and art performances, demonstration of techniques and technologies, in particular architectural-artistic metal as a component of architecture and decorative-ornamental art. Metal decoration played an important role in the architectural image of ancient towns. It reproduced certain style with high expression, for this reason architects have paid much attention to such type of decoration. In the town Stanislaviv the end of XIX – early XX century become a time of highest prosperity of architectural-metal decoration. «Building-fever» of that period stimulated its active use. At that time the town was built especially intensive. Construction of new types of buildings, such as embassy, business unit, affiliates of European institutions, saving banks, bank branches, private residences, apartment houses, hotels, shops, industrial buildings

and structures give architects and artists the task to find new representative methods of aesthetic expression. Metal plays the role of decoration and compositional accent or dominant of facade, artistic metal works become a kind of calling card of a building. They played special stylistic and shape-generating role in the interiors of lobbies, staircases, halls.

In the late XIX – early XX century there were few large Galician companies that dealt with artistic metal, whose activities enlarged upon the whole territory of the region. Other locations, smaller one, like workshops, were limited to poor number of work just in local territory. The leading centers, where major companies existed, were Krakow, Lviv, Stanislaviv, Ternopil. Most of them manufactured products in the field of artistic and building locksmith and metalworking [1]. Among them: a leading organization in Eastern Galicia, which expanded its activity to Stanislaviv; architectural design and construction firm, owned by Levynsky I. in Lviv [1]; architectural and construction firm «Serafini», the largest one in Stanislaviv [2–4]; Stanislaviv architectural and construction firm «Inż. Krausz i ska» [2, 4, 5]. Among smaller Stanislaviv companies, that perform work in the field of artistic metal (building and construction companies, locksmith companies, locksmith-artistic-construction firms, manufactories of metal products), we can find: locksmith firm «Beter Leon i ska» [5]; casting shop, turnery shop, yellow metal casting shop owned by Karpshwimmer N [6]; building company «Pezet» [7, 8]; locksmith-artistic-construction workshop, owned by Ian Fedorovsky [9], Peter Yaroshevsky [9, 10] (this company in 1910's, during the reconstruction of saving bank, situated at 14, Mazepy Street, made all metal decoration, such as: entrance door, which still has the stamp of the company, staircase fencing, street lamps); locksmith-artistic-construction workshop «Vladislav Clemens and Son» [8]; artistic-locksmith workshop, owned by Julian Sherer [7, 8]; locksmith-building workshop, owned by Peter Ruschel, which produced balconies, staircase fencing, portals, doors, windows, fences, bridge fencing, etc.; locksmith workshop by Isaac Kuzhel [11]; Stanislaviv locksmith and metal manufactory «Horodyski Felicyan» with administrative center in Stryi [2]; metal products factory «Silvinia» [7, 8]; mechanical and blacksmith workshop by Adolf Flasher; mechanical workshop by Izak Weitzen [11]; Jaworski R. and Sons Union called «Krai» [6, 8], which produced casting and locksmith products [11]; Antony Shifner workshop [11]. Metal architectural decoration with use of nonferrous metals was produced by casting and machines factory «Viz» [12–14]. All Stanislaviv craft workshops, specializing on the producing of architectural-artistic metal, were merged into two work departments [15].

The impulse, leading to wide use of artistic forging and iron casting, from the late XIX century, was caused by the cheapening of metal and increasing of metal production. The most common, at that time in Stanislaviv, was forging technique, despite the fact that other one were used, such as casting, which was more typical for the middle and second half of the XIX century. In the late historicism, eclecticism and secession epoch, works made in the technique of artistic forging lose difficult detalization, present in previous eras. This is due to the adaptation of welding to the manufacturing process, that simplified connection of metal constructions and forged elements [16].

Artistic forging in European countries at that period massively used various industrial metal profiles and rolled steel. As a result of field surveys concerning artistic forging works, dated late XIX – early XX century and situated in Stanislaviv, we found, that forged architectural details are made mostly of: different sizes square metal profile; metal strips and rods; plate steel, which was used for producing garland elements, flowers, leaves, masks, heraldry elements. We identified several techniques that, in certain combinations, were used for manufacturing of various metal pieces. We are talking about: forging, stamping, embossing, curving, punching. Also we found out methods of steel timbering: welding, riveting (12, Hrushevskoho Street, dated third part of the XIX century), and, in some cases, casting. For the modernist metal architectural details, such as balcony and staircase fencing, small and large diameter tubular structures were used. Most of the metal decoration, dated interwar period (1920–1939), obviously, can be classified as a special type of mass artistic-industrial production and design. For Stanislav, in the context of European development, this period can be identified as industrial design development age, and the biggest part of that time decoration is classified as a typical metal architectural decoration.

Let's try to analyze stylistic spectrum of the elements of metal decoration and formal compositional structure of the brightest examples of the metal structural and decorative plastic on the

houses. Such survey was done in accordance to each chronological stage and within research period. Also let's try to consider preserved examples dated mid-nineteenth century. Such research will help us to outline creative tradition as well as the appearance of entirely new compositional-stylistic and technological methods in architectural-artistic metal decoration.

1. The earliest, not numerous examples of architectural metal on the historic buildings in town Ivano-Frankivsk, which have survived to this day, are dated 1830's–1870's. We are talking about the brightest examples of classicistic decoration and mature historicism decoration, made by casting, curving, embossing technique, for example balcony fencing in the buildings situated at: the corner of 1, Mazepa Street and Vichevyi Square (dated 1827–30) [17]; 18, Sichovyh Striltsiv Str. (1827, building was demolished in February 2016); 2, Nyzova Str. (1840) [17]; 4, Bachynsky Str. (1870s); 5, Nezalezhnosti Str. (1870s) [18].

The bright examples of classicistic decoration in residential architecture of Stanislaviv are represented by house balconies at: 1, Mazepa Street – Vichevyi Square (dated 1827–1830) with the monogram «SG»; 18, Sichovyh Striltsiv Str. (1827) with the monogram dedicated to the first owner Rehenshtraif S. – «SR» [18]. Balcony fencing on the building situated at 1, Mazepa street are made from rods and strips that form metric design of the fencing, which is decorated with embossed elements in the form of flowers. Balcony fencing on the house at 18, Sichovyh Striltsiv Str. is formed by metric repetition of ovals, which are framed with wide frieze belts with crossed rhombs, made by using of punching technique. On the symmetry axis of the two balconies is placed compositional dominant – monogram, fits in the leafy coronal, made in curving and embossing technique. On the house number 18 at Sichovyh Striltsiv Str. this compositional group is accompanied with winged lions (tetramorph), rested on the coronal. Production technique and decoration character indicate that structural metal-plastic of both buildings was made in one period, probably, by one master.



Fig. 1. Balcony fencing on the buildings situated at: 1, Mazepa Str. – Vichevyi Square (1827–1830); 18, Sichovyh Striltsiv Str. (1827)



Fig. 2. Balcony fencing and balcony bracket on the building number 2 at Starozamkova Street (1732)

Traditional classicistic compositional scheme with using of stripe ornament, which includes meander motif, we can observe through the balcony fencing and brackets on the former Trinitarian monastery at 2, Starozamkova Street. (1732). Also this example demonstrates using of the elements of centric symmetry, which is achieved by inscribing identical smaller forms into a large circle or oval shape (borrowed from Baroque).

In the middle and second half of the nineteenth century the influence of stylistic Gothic forms becomes more noticeable. In the iron balcony fencing in Stanislaviv appear new elements: lancet arches and quatrefoils, formed by twisted acanthus halms, at that time halm plastic becomes more refined.

Typical examples of valuable historical metal-plastic of that period, made in the casting technique, is iron cast fencing and balcony brackets on the buildings situated at: 1, Mazepa Str. – Vichevyi Square (1827–1830), 29 Halytska Str. (1835); 2, Bachynsky Str. (1874–1880); 4, Shevchenko Str. (1880–1890); 17, Mazepa Str. (1880).



Fig. 3. Cast balcony fencing and brackets on the building situated at 1, Mazepa Str. – Vichevyi Square (dated 1827–1830)

Using of the metal balcony plate was also typical for the nineteenth century (building situated at 18, Sichovyh Striltsiv Str., dated 1827). Sometimes it was decorated, like on the house situated at 5, Nezalezhnosti Str. (1870s), by metal strip, whose main role is constructive, that prevents sinking-down of the balcony plate.

Laconic analysis of the architectural-artistic forging of Stanislaviv while classicistic period gives rise, primarily, to state appearance of such element as balcony on the façade (which become the classicistic innovation) and also to state expansion of ornamental casting technique together with forging.



Fig. 4. Cast balcony fencing on the buildings situated at: 29, Halytska Str. (dated 1835); 2, Bachynsky Str. (dated 1874–1880); 4, Shevchenko Str. (dated 1880th)

Forged metal balcony fencing first of all is characterized by smooth rods, geometric forms of the ornament elements, combined with floral motifs and bay leaves. Motive is repeated mostly in a manner of translational symmetry along the line.

In the classicistic casting there were used a limited number of geometrical and plant ornament motives. Line, circle, meander, rhombus are the most popular motives together with acanthus and naturalistic floral ornament [19]. Lots of balcony fencing are decorated with halms, waved in volutes (often paired). Middle part of volute was decorated with floral festoon.

Typical features representing composition of classicistic balcony grating are: vertical mirror symmetry, simple geometric repetition, statics, three-part horizontal division with the same height of upper and lower friso, sometimes one of them goes beyond other one [20].

2. Chronologically, the next period, dated 1880s–1899, is characterized by widespread practice of retro style imitation, styles mixing, as well as appearing of stylistically new proto-secession decoration style. However, typical decoration elements are still using. Numerous examples of forged decoration, dated that period, indicate that forging in Stanislaviv was still developed and was not supplanted by the casting technique.

In the age of stylistic variety, in the late XIX century, and imbricate housebuilding together with dominating of facade frontal composition (facade becomes a concentration place of all kinds of plastic and architectural decoration), art objects of forging and casting become the unchallengeable key elements of decoration. Art objects of forging and casting become signs indicating the historic style of the house, and become decorative accents of the buildings [20].

On the building № 6 at Mazepa Str. (1885) [17] we can find partly saved elements of the complex architectural environment, created by artists and architects, the leading role of which performs architectural-artistic metal. On the exterior it is demonstrated by balcony fencing and brackets on the main façade and door grating on the backside façade. In the interior: compound-section staircase footing made in casting technique, decorated with floral ornament and topped with capitals; staircase fencing of outhouse. By the example of this building, we can see that the tradition of artistic casting technique, demonstrated on façade by the balcony fencing and in the interior – by staircase footing, was kept while 1880s. Other decorative-structural elements were made by forging and stamping.



Fig. 5. Balcony fencing and brackets; staircase fencing; fragment of the decoration of staircase footing in the house №6 at Mazepa Str. (dated 1885)

In Stanislaviv the forged architectural decoration with the stylistic features of past eras could be found on numerous residential and public buildings of those days, for example, on the house № 26 at Sichovyh Striltsiv Str. (1894), on the building № 104 at Shevchenko Str. (1896), on the house № 12 at Market Square (1880).



Fig. 6. Balcony fencing on the house № 26 at Sichovyh Striltsiv Str. (dated 1894); on the building № 12 at Market Square (1880); metal-plastic of door panel on the house № 104 at Shevchenko Str. (1896)

Often, metal decoration, for various reasons, was placed on the façade quite later than house was built. We can see such metal-plastic examples on the balcony of the building situated at 5, Nezalezhnosti Str. (building of the house ended in 1870s) made in late historicism style while 1880s. This is confirmed by owner's initials shown on the monogram. Another example we can find on the balcony of the house № 2 at Nyzova Str. (building of the house ended in 1840), this fencing was made in 1895, confirmed by the owner's monogram «BZ» situated on compositional axis of the balcony (Bank Zaliczkowy, who bought the house in 1895) [18].

The influence of new art, in particular, its first aesthetic reproduction in metal-plastic pieces, represented on Stanislaviv buildings, is classified as protosecession decoration. Works, belonging to this group, clearly reflect the fight between a new aesthetic and eclecticism in architecture, also reflects contrast of decorative and rational, old and new, accenting on the individual character and compositional diversity. The originality of authors' creative activity, first of all, involved reference to a variety of sources: natural forms; mythology; traditional and folk decorative arts of different countries, particularly the Far-East; aesthetic of contemporary engineering constructions; rethinking and transformation of methods used in different historical styles. Free handling with the forms of different historical periods was enabled, by using secession stylization, to create a new palette of forms, also in regards to metal-plastic, for example exotic and grotesque elements. The widespread reference to medieval and gothic art and architecture, inherited from historicism, was fundamentally different. It involved borrowing of not only romantic features, but also the principle of organic unity of the functions, such as constructive, decorative, utilitarian and aesthetic. For example, a balcony fencing form is subordinated to a balcony plate plastic in a house situated at 10, Mazepa Str. (1896); elegant lace of the decorative elements of staircase grating in the house № 11 at Mazepa Str. (1890). These examples reflect professionally interpreted motifs of previous eras associated with jewelry.

So, in the late XIX century we can observe partial preservation of traditions of the second half of the century, followed by spreading of european (Vienna, Cracow, Lviv) effects of the new secession style. Stylistic trends of architectural-artistic metal, prevailed at that time and developed the tradition of historicism, play focusing role on the facades of buildings, belonging to the different typological groups. Often we can see that architectural-artistic metal contrasts with stylistic type of the building and becomes dominant. In the compositional structure dominated linear rhythm, three-part division, different types of symmetry. Ornamental decor includes geometric and floral motifs, such as: rings; spirals; flowers; leaves, branches and grapes. Technically artistic forging begins to dominate.



Fig. 7. Balcony fencing situated on the house № 10 at Mazepa Str. (1896), staircase fencing in the building № 102 at Shevchenko Str. (1896–1897) and in the building № 11 at Mazepa Str. (1890)

3. The third step, dated 1900–1914, chronologically complied with early and high stages of Stanislaviv secession development, and also with its rationalization in the later period. New style – secession includes all kinds of art, among them architectural metal, that acquired new meaning. Artistic metal in architecture of Stanislaviv dated early XX century, from one side, becomes the logical continuation of creative research from the late XIX century. On the other side, new principle of metal-plastic secession lies in consideration of the physical properties of metal – melting and hardness, to use them as a method of artistic expression. Boundaries between the decorative and structural were blended. Constructive architectural detail acquires a new function – decorative, combined with decorative plastic and therefore becomes an element of decoration.

Architects and blacksmiths, captured by possibilities of new constructions, demonstrated virtuosic working knowledge. They diversify decorative and functional forms, for example by making forged fencing in the form of interweaving halms. Researchers combined different directions of secession metal into two groups: linear decorative composition and linear decorative composition with shape elements, made of thin forged or extruded metal sheets. Delicate graphics of metal products in secession architecture become its dominant principle [21].

Most part of preserved architectural details are represented by balcony and staircase fencing, brackets, gates, basement windows grating, for example in buildings situated at: 13 and 38, Hrushevsky Str. (early XX century); 16, Tarnavsky Str. (1905–1906); 9, Chopin Str. (1909–1910) [18] and others. Technically difficult «belgian line», that becomes new style mark, was widely used in metal decorations of Stanislaviv, for example, door grating and staircases fencing in houses № 1 (1910), № 3 (1912), № 8 (1908) at Hrushevsky Str. Secession symbolism is represented by such example as «omega» letter, meaning the beginning and the end (is situated on the balcony fencing of the building № 9 at Hrushevsky Str., dated 1902), also solar signs, situated on a house № 8 at Kurbas Str. (1906).

In the early XX century artistic metal gives houses an individual uniqueness thanks to which such buildings become art objects, different from replicated ones. Geometric, plant and technical forms are used in ornamentation. The most stable of them is the spiral motif that resembles letters C, S, X, and combinations of them. Often they are added by curls and contrasting straight lines. Among the plant forms dominated exotic and wild flowers, buds, grapes, sunflowers, fruits, roses, lilies, wedges transformed into palmetto, halms and leaves of acanthus [20].

Among zoomorphic motifs, most popular for artistic metal in architecture of Stanislaviv, are: butterflies, dragonflies, scorpions. Beyond bio- and zoo-morphism, widely were used symbolic forms, like waves, rays, flame [22].

In general, the composition of artistic metal works, dated early XX century, is characterized by dynamic, asymmetry, rhythmic order, complicated metric sets, form graphic.



Fig. 8. Staircase fencing in the building № 26 at Chornovil Str. (1906); house № 5 at Vasylianky Str. (1911); house № 3 at Garkusha Str. (1912); building № 1 at Hrushevsky Str. (1910)



Fig. 9. Door grating, decorated window overpanel, staircase fencing in the house situated at 31, Hrushevsky Str. (1912)

4. Conclusion

Holding the perfect artistic feel, Stanislaviv masters of forging and casting art were able to combine highly artistic metal-plastic products with architecture and created a unique image of the historic city. Historical balconies, made in casting and forging technique, decorative window and door grating, gates, delicate attics should become samples for nowadays craftsmen and blacksmiths. Each year, through physical degrading and due to non-professional repairs, in common with indifferent attitude of the inhabitants of the historic buildings of Ivano-Frankivsk, the number of authentic architectural-artistic metal samples on the facades and interiors is radically going to fall off. To prevent this process, at first, we should make research work to identify, attribute, determinate technical condition, develop art-history study of all architectural-artistic complex of art metal represented in historic part of the town. The only way, leading to preservation of artistic metal as an object of cultural heritage, consists of the development and implementation of conservation, restoration, reproduction of lost fragments of metal-plastic parts or a whole object. All this could be realized by using scientifically-based methods used in modern European and world practices, also by implementation of actions concerning protection and harmonious coexistence of modern architectural metal decor on the historic buildings of the town.

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