

Modern Science

Moderní věda

№ 4 - 2019

scientific journal
vědecký časopis

Prague Praha

MODERN SCIENCE - MODERNÍ VĚDA

№ 4 - 2019

Incorporated in

Czech Republic

MK ČR E 21453

published bimonthly

signed on the 29th of August 2019

Evidenční číslo

Česká republika

MK ČR E 21453

Vychází šestkrát do roka

podepsáno k tisku 29. srpna 2019

Founder

Nemoros

Main office: Rubna 716/24

110 00, Prague 1, Czech Republic

Zakladatel

Nemoros

Hlavní kancelář: Rybná 716/24

110 00, Praha 1, Česká republika

Publisher

Nemoros

Main office: Rubna 716/24

110 00, Prague 1, Czech Republic

Vydavatel

Nemoros

Hlavní kancelář: Rybná 716/24

110 00, Praha 1, Česká republika

*The East European Center
of Fundamental Researchers*

Rubna 716/24

110 00, Prague 1, Czech Republic

*Východoevropské centrum
základního výzkumu*

Rybná 716/24

110 00, Praha 1, Česká republika

Address of release

Modern Science

Rubna 716/24 , 110 00, Praha 1

Czech Republic

Adresa redakce

Moderní věda

Rybná 716/24, 110 00, Praha 1

Česká republika

Editorial Board / Redakční rada

Dr. Iryna Ignatieva, Ph.D. Diana Kucherenko, Roman Rossi

Editorial Council / Redakce

Dr. Oleksii Hudzynskyi, Dr. Halina Aliakhnovich, Ph.D. Angelina Gudkova,

Dr. Iryna Ignatieva, Ph.D. Diana Kucherenko, Dr. Natalia Yakovenko,

Dr. Oleksandr Makarenko, Dr. Natalia Mamontova, Ph.D. Nataliya Chahrak,

Dr. Iryna Markina, Ph.D. Nataliia Ivanova, Dr. Yuriy Chernomorets

Chief-editor / Vedoucí redaktor

Dr. Iryna Ignatieva

CONTENTS

Economics

Ievgeniia Kutsenko, Ievgen Smyrnov. Evaluation of efficiency of enterprise management by value criteria5

Diana Kucherenko, Olena Martynyuk. Current issues of the higher education's development.....14

Zoya Sokolovska, Larysa Frolova, Irene Kapustyan. Simulation technologies in the strategic management of advertising processes of pharmaceutical enterprises22

Anastasiia Sofienko. Ways to improve management of Ukraine's external public debt.....37

Brigitta Szoke, Ildiko Sidlovicsne Toth, Judit Barcsi. Financial institution cost analysis.....45

Nikolett Mihaly. Globalization and challenges of higher education institutions the current situation in Hungary55

Pedagogy and psychology

Olena Hrechanovska. Role of the method of projects in the independent work on the humanitarian disciplines of students of technical institutions of higher education in the process of formation of conflictological culture63

Larysa Chumak. The complex of educational technologies for developing professional mastery of foreign literature teachers in the system of in-service training71

Philosophy and theology

Olga Avyerina. Agile methodology for a modern higher education institution: possibilities of application83

Olha Hordiichuk. Religious self-identification in Ukrainian mentality.....89

Andrey Kobetyak. Autocephaly approach as the basic factor of the structure of the universal orthodoxy99

Maksym Melnychuk. Suggestive component of the symbolism of sacred architecture in christian cult.....	108
--	-----

Medicine and physiology

Oleksander Kutoviy, Dmytro Balyk, Ksenia Denisova. Analysis of changes in the level of serum bilirubin in patients with pancreatic head tumor.....	115
---	-----

Yana Kachan. Institutional providing of professional development of public service in Ukraine	120
--	-----

Oleksii Kryvchuk. Effect of acrylic removable dentures on edentulous patients' local immunity and oxidative homeostasis state.....	128
---	-----

Tetyana Ivakhniuk, Yurii Ivakhniuk, Olha Molozhava, Oleksandr Makarenko, Roman Dovgan. In vitro test-research of the indigenous intestinal microflora of the patients with alzheimer's disease	136
---	-----

Alexander Udod, Alexander Pompey, Nikolai Shidlovsky. Laboratory investigation of the reinforced photo composition material bending strength	143
---	-----

Philology and linguistics

Liudmyla Petrenko. On the issue of methodology of poetic text conceptual analysis.....	150
---	-----

ECONOMICS

EVALUATION OF EFFICIENCY OF ENTERPRISE MANAGEMENT BY VALUE CRITERIA

Ievgeniia Kutsenko,

Ph.D. student, the Enterprise Economics Department,

Ievgen Smyrnov,

Ph.D. student, the Enterprise Economics Department,

SHEI “Kyiv National Economic University named after Vadym Hetman”

Annotation. *In this scientific article the author's logic of determination and evaluation of the economic value of the enterprise is formalized. It is established that the value of an enterprise should be considered as its essential characteristic, which reflects the potential ability of the enterprise as a subject and object of economic relations to form aggregate value and ensure its growth.*

Key words: *the value nature of an enterprise, economic value, value-based management (VBM), VBM-analytics, fundamental value of the enterprise, model of economic profit.*

The issue of evaluation of the effectiveness of enterprise management by value criteria is a very popular field of research developing in the aspect of value-based management (VBM), and the authors of the most significant scientific papers, on which the modern VBM-analysis is based are R. Brailli, Y. Brighham, J. C. Van Horn, D. Volkov, A. Damodaran, H. Desmon, K. Griffith, I. Vashkovska, T. Coller, T. Copeland, R. Kaplan, S. Myers, A. Mendrul, J. Murrin, D. Norton, S. Pratt, C. Wilson, L. Frolova, V. Sharp, N. Shevchuk, J. Fishman, and others. Traditionally, researchers associate VBM-analytics with the justification for choosing a model for value estimation, forming a system of performance indicators, and, accordingly, developing a system of factors (drivers) for value creating. The results of generalizations of the scientific traditions of value estimation of the enterprise and the practical experience of using VBM-analytics allow us to talk about the need to improve both methodological and applied tools, which is connected, first of all, with the theoretical innovations in the field of study of the economic value of the enterprise.

Research results. Critical analysis of scientific sources for determining the value nature of the enterprise as an object of management allowed to reveal it in two aspects - entrepreneurial and economic (Fig. 1). According to author's logic, the value of an enterprise should be considered as its essential characteristic, which reflects the potential ability of the enterprise as a subject and object of economic relations to form the aggregate value and ensure its growth. At the same time, the aggregate value is determined by the integrity of the interaction of its types, such as production, consumer, cultural, corporate and reputation value, and manifests itself in the form of the fundamental and market value of the enterprise.

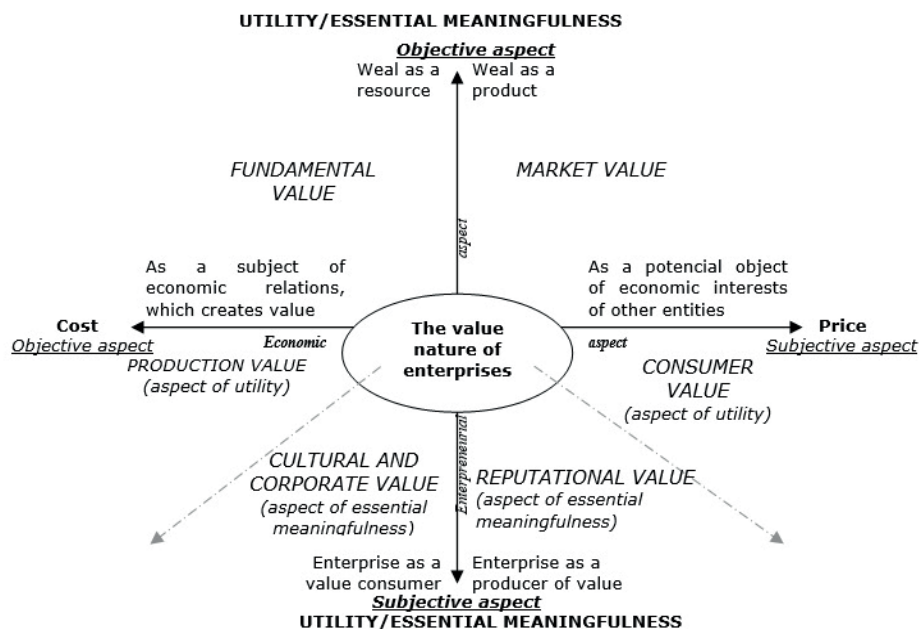


Fig. 1. The value nature of enterprises
Source: was developed by E. Kutsenko

Thus, in accordance with the proposed logic of determining the value nature of the enterprise, in the business aspect, value is defined as the integrity of the interaction of such types as production (V_{prod}), consumer (V_{cons}), cultural and corporate (V_{cul}) and reputational value (V_{rep}), and aggregate value as the target result of the enterprise activity $f(V)$, can be presented as a function of its types (formula 1):

$$f(V_{prod}, V_{cons}, V_{cul}, V_{rep}) \rightarrow \max$$

The economic aspect of the estimation of the value, traditionally in scientific papers, is associated with the market value of the enterprise, as a criterion for the estimation of the effectiveness of the enterprise management. A thorough analysis of scientific papers revealing the meaning of the market value of the enterprise in the context of VBM suggests that the contextual use of this term is not always correct. In our opinion, it is due to the fact that the interpretation of market value depends on the purpose of this indicator, that is, when it comes to sales, mergers, acquisitions - this is one aspect of market value, which can be characterized by its following definition: "it is the estimated monetary value, on the basis of which, on the date of evaluation, the results of adequate marketing allow to alienate the object of valuation as a result of the conclusion of the transaction of sale. It is assumed that both the seller and the buyer act with knowledge of the case, wisely and without coercion "[1]. In this interpretation, the estimation of

market value is based on cost, revenue and market approaches.

When it comes to market value as a criterion for management efficiency, its definition is more logical either as a market price formed on the stock market and serving as an indicator of investors' perception of the enterprise, or a market price (V_{mark}) consists of the internal (fundamental) value (V_{fund}), which is regulated by management, and the part of value which is defined by the external factors being not regulated by the managers of enterprises (V_{gap}) (formula 2) [2, c. 73].

$$V_{mark} = V_{fund} + V_{gap}$$

The fundamental value itself is defined as the sum of the book value of net assets, actually the book value of equity (E_{bal}), and the value added value (V_{add}) (formula 3) [3]:

$$V_{fund} = E_{bal} + V_{add}$$

In such a content statement, the generalizing criterion of the effectiveness of managerial influences is logically determined as the fundamental value of an enterprise, since this type of value can be influenced by the management.

As for the estimation of the added value of business, scientists distinguish two methodological approaches to estimation of the flows of value creation [4, p. 19;]: based on Discounted Cash Flows Models (DCF) and based on Economic Profit Model. Since the specificity of managerial influences on the value of an enterprise is the identification and activation of drivers for the formation and growth of value, in VBM practice, the approach, which is based on the concept of A. Marshall is more widespread, due to the presence of a higher analytical potential factor interpretation of the model of economic profit (EP-model). The factor interpretation of an EP-model can be presented on the basis of operational and capital approaches (Figure 2), and their choice depends on the subjects of estimation and the opportunities of interpretation of the calculations in accordance with the needs of business analysis.

Thus, the factor interpretation of an EP-model based on an operational approach is more informative in terms of using by the management as the entity of enterprise administration. The main advantage of this approach is the opportunity of taking into account such a factor as the capital structure that has a direct impact on the formation of the weighted average cost of capital (WACC). A capital approach is more attractive from the point of view of business analysis for owners, since it allows to focus on such factors as return on equity (Pr_E), cost of equity (C_E), and productivity of equity (W_E).

Factor interpretation of the EP-model allows us to investigate the target orientation of managerial influences on the enterprise as an object of value perception in the following areas: the formation of added value; growth of added value.

Formation of value. On the basis of the EP-model, the formation or destruction of

value is determined on the basis of spread of return on capital ($Spred_{cap}$) / equity capital ($Spred_E$) and product / service sales ($Spred_{sale}$). The causal factor for creating added value is $Spred_{sale}$, which is measured by comparing the actual level of profitability of product / service sales (Pr_{sale}) and the corresponding critical value (Pr_{sale}^{crit}).

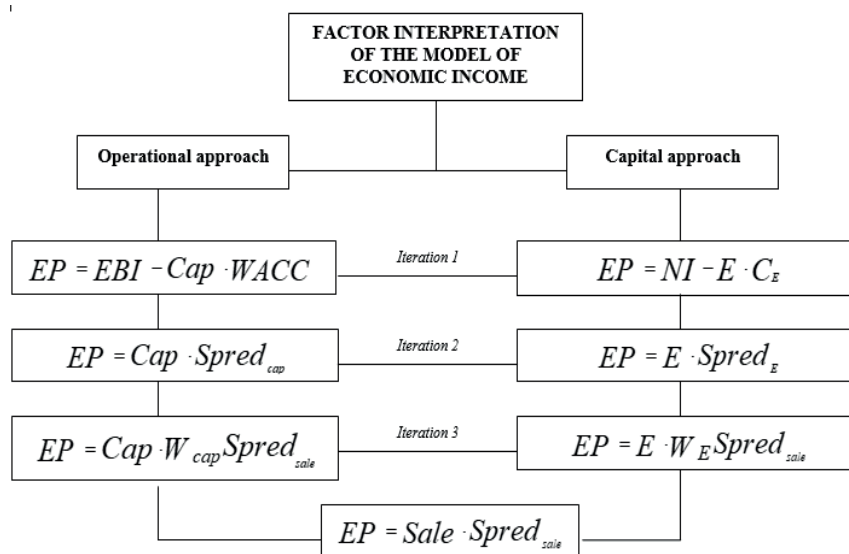


Fig. 2. Approaches to the factor interpretation of the EP-model

Source: formalized by the authors according to the data [3 – 6]

It is logical that both the value of Pr_{sale} and its ability to exceed Pr_{sale}^{crit} is determined by the level of competitiveness of the enterprise. From the point of view of value issues, the competitiveness can be characterized as a process and result of the formation and offering of value for the stakeholders of the enterprise, and the "value-based blocks of competitiveness", is determined by the scientists as the logistics, production, marketing, sales, a social sphere, where value relationships are formed with all stakeholders influencing on the economic performance of the enterprise. In accordance with the proposed logic of value-based enterprise management, we can say that competitiveness can be represented by the integrity of the relationship of all types of values revealing the value nature of the enterprise in the entrepreneurial aspect, that is, described by the formula 1, as well as the aggregate value. The reasoned confirmation of this thesis is the mathematical iteration of the factor interpretation of value based on the EP-model, which is described by formula 4:

$$EP = Sale \times Spred_{sale}$$

That is, the formation or destruction of value (the positive / negative value of

$Spred_{sale}$) depends on the competitiveness of the enterprise, the defining aspects of which are:

- production value - characterized by the level of quality and efficiency of the formation and use of enterprise resources;
- consumer value - the level of quality and competitiveness of the company's products / services;
- cultural and corporate value - the level of development of corporate culture of the enterprise;
- reputational value - the level of stakeholders' trust to the company as a business partner.

This logic suggests that the measurement of aggregate value in an entrepreneurial aspect (V_{agg}^{ent}) can be carried out in the coordinate system "Essential meaningfulness - Utility" (Figure 3), and the monitoring of the influence of Spreadsale dependence on the dynamics of change V_{agg}^{ent} , can become an effective practical analytical tool of value-based enterprise management.

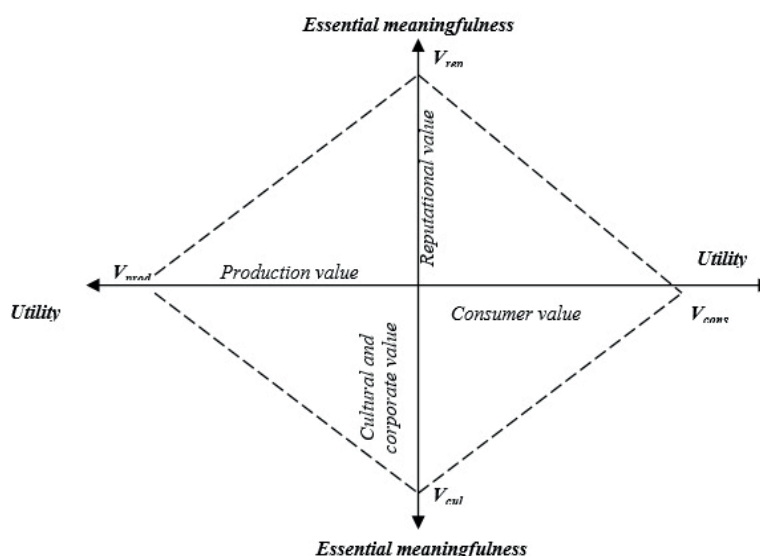


Fig. 3. Measurement of aggregate value: entrepreneurial aspect
Source: was developed by E. Kutsenko

As for the direct measurement of each type of values, we consider it appropriate to apply the method of generalization of indicators. Regardless of which system of analytical indicators will be used to measure each of the types of values, the unification of measurements will allow the correlation of these types of values with the proposed coordinate system. The maximum value of each of the types of values will be 1, so

the value of the index of aggregate value ($I_{agg.val}^{ent}$) can be measured as the area of the square $V_{prod}V_{cons}V_{cul}V_{rep}$, equal to 1. The actual value $I_{agg.val}^{ent}$ will be smaller, and its measurements are logically based on the sum of squares of rectangular triangles, each of which is measured as half of the product of the coils (a_1, a_2) (formula 5). Modification of this formula for measurement $I_{agg.val}^{ent}$ allows us to write a formula for calculating the area of $V_{prod}V_{cons}V_{cul}V_{rep}$ in the form of formula 6, where the value of the coils is determined by the values of indices of the production (I_{val}^{prod}), consumer (I_{val}^{cons}), cultural and corporate (I_{val}^{cul}) and reputational (I_{val}^{rep}) values.

$$S = \frac{1}{2} \times a_1 \times a_2$$

$$I_{agg.val}^{ent} = \frac{1}{2} \times (I_{val}^{prod} \times I_{val}^{rep} + I_{val}^{rep} \times I_{val}^{cons} + I_{val}^{cons} \times I_{val}^{cul} + I_{val}^{cul} \times I_{val}^{prod})$$

As for the systems of analytical indicators, on the basis of which the measurements of the aggregate value are carried out according to certain aspects, they are formed taking into account the branch specificity of the activity of the investigated enterprise, the availability of an objective output data base, etc.

Growth of value. The growth of the fundamental value is ensured by two factors: the balance sheet value of net assets (value of equity) and the added value. The carrying amount of net assets is the result of capital formation, since it directly depends on the value of reinvested profits and the policy of assets formation. Regardless of the way assets are formed - extensive or intense - an increase of the book value of net assets will always lead to an increase of the fundamental value of the enterprise (except in the case when the equity value is negative). At the same time, in the process of analysis, it is worth paying attention to the reasons for the growth of E_{bal} , as the results of the VBM-analysis are the basis for making managerial decisions, and the "value trap" can lead to erroneous conclusions about the potential of enterprise development.

With regard to the growth of fundamental value at the expense of added value, according to the logic of the factor interpretation of the *EP* model, the main drivers determining this process are:

- iteration 2: spread of capital / equity returns; book value of assets / equity;
- iteration 3: spread of profitability of sales of products / services; performance of assets / equity; book value of assets / equity.

The spread of return on capital is formed by the return on capital and capital costs. Accordingly, the key areas of managerial focus are the capital structure and capital

formation processes that are directly related to the efficiency of capital use. In such a content statement, the problem of value growth is presented in the scientific works of I. Ivashkovskaya [7, 8], who substantiated the calculation of the Sustainable Growth Index (SGI), the basis of which are formed by such factors as the spread of profitability of capital and the growth rate of sales volumes / services (formula 7).

$$SGI = g_s \times \frac{l}{k} \times \sum_{i=1}^k \max[0; (ROCE_i - WACC_i)]$$

where g_s - average growth rate of sales;

l - the number of years during which the spread of return on capital is a positive value;

k - number of years of observation;

$ROCE_i$ - return on invested capital in year i ;

$WACC_i$ - weighted average cost of capital in the year i .

If we analyze the logic of the formation of this formula, then there is a question regarding the correctness of such a formula. So, according to the factor interpretation of economic profit (iteration 2), its value is defined as the product of the book value of capital and the spread of return on capital. That is, the proportionality of the relation represented in formula 7 is questionable. It is more logical to write this formula in accordance with the content of 4 iteration of factor interpretation of the EP-model, which will look like represented in the formula 8:

$$SGI_{modif} = g_s \times \frac{l}{k} \times \sum_{i=1}^k \max[0; Spread_{sale}]$$

In studies N. Shevchuk [5, 9], the estimation of the value growth of the enterprise is proposed to measure on the basis of the Value Growth Index (VGI). The model of residual operating profit (Residual Operating Income, ReOI) is selected as the basis of the formation of this index, and the logic of determination is based on the fact that the growth factors are the performance of the operation of assets and the value of capital (Formula 9) [9, p. 204]:

$$VGI_{ReOI} = i_{cap}^{gr} \times i_W^{gr} \times spread_{sale}^{EBI}$$

where i_{cap}^{gr} – the rate of increase/decrease of the capital value;

i_W^{gr} – the rate of increase/decrease of asset productivity;

$spread_{sale}^{EBI}$ – spread of return on sales of products / services at net profit, taking into account interest for using borrowed funds.

The main comment to such a logic of value growth index (VGI_{ReOI}) is that the dynamics of changes $spread_{sale}^{EBI}$ also acts as a factor in the growth or destruction of the added value of the enterprise, which is ignored by the author of the VGI measurement model. Therefore, in our opinion, a more substantiated formula is presented in such form (formula 10):

$$VGI_{ReOI}^{modif} = i_{cap}^{gr} \times i_W^{gr} \times i_{spread,sale}^{gr}$$

де $i_{spread,sale}^{gr}$ – the rate of increase/decrease in the spread of return on sales of products/services.

It is worth paying attention to the fact that estimating the value of the enterprise according to the logic of measurements based on formulas 7, 8 allows to characterize this process averaged over the period of analysis. Regarding estimations based on formulas 9 -10, in this interpretation the growth characteristic is carried out in comparison of two given moments of time. Therefore, in terms of informativeness, the SGI and VGI indicators allow us to characterize the cost-effectiveness issues of the enterprise in a variety of ways.

Conclusions. The presented logic of the factor interpretation of the fundamental value of the enterprise can be characterized as the main stage of VBM-analysis, which summarizes the results of its formation. At the same time, the analysis of the reasons that led to the main value-formative results of the fundamental-value estimation, need further analytical detailing, which, in our opinion, is to be presented from the point of view of the estimations of the efficiency of processes and the results of capital formation.

Thus, the financial and economic problems of the formation of spread-outputs can be considered in the following aspects: the formation of current costs for products / services, which in turn directly affects the amount of profit and profitability of capital formation; the formation of capital costs, this aspect is directly related to the assessment of the financial risk, which is the basic factor affecting the structure of capital; liquidity of capital as one of the main factors that directly determines the quality of capital and the results of capital formation; the analysis of capital factors in terms of their potential ability to ensure the growth of aggregate fundamentally-valuable results, etc. Such an analysis can be constructed according to different logics, both in strictly mathematical form and in terms of logical causal relationships of processes of capital formation.

Concerning the choice of a specific value-added value measurement model from the general system of VBM-models, the most suitable in terms of generating and maintaining the growth of the company's aggregate value are the following models: Residual Income models (RI-models); model of economic value added (Economic Value

Added, EVA-model); model of cash value added (Cash Value Added, CVA-model). This choice is preferable due to the fact that these models are characterized by a high level of factor interpretation, which allows management to monitor and control changes in the main value-creating factors. As for justification of choice of the analytical model for measuring economic profit among the above mentioned, it is logical to base the choice, first of all, on the criterion of having sufficient and adequate output information base; take into account the operational specificity of the investigated object, the opportunity of interpretation and comparison of the obtained estimation results.

References:

1. Davydov O. I. Upravlinnia vartistiu pidpriemstv v umovakh bahatovariantnosti yii otsinky. / O. I. Davydov // Ekonomichnyi prostir. – 2015. – № 104. – P. 172 – 185
2. Shevchuk N. The strategy-oriented aspects of enterprise capitalization / N. Shevchuk, A. Bortnik // Modern Science — Moderní věda. – 2019. – № 2. – P. 70 – 78.
3. Volkov D.L. Teoriya tsennostno-orientirovannogo menedzhmenta: sistema, modeli i pokazateli izmereniya tsennosti: avtoref. dis. na soiskanie nauchn. stepeni dokt. ekon. nauk: spets. 08.00.05 «Ekonomika i upravlenie narodnym khozyaystvom (teoriya upravleniya ekonomicheskimi sistemami)» / D.L. Volkov. – Sankt-Peterburg, 2007. – 50 p.
4. Volkov D.L. Teoriya tsennostno-orientirovannogo menedzhmenta: finansovyy i bukhgalterskiy aspekty: [monografiya] / D.L. Volkov – SPb.: Vysshaya shkola menedzhmenta SPbGU, 2008. – 320 p.
5. Shevchuk N.V. Analitychne modeliuvannia vartisnoho zrostannia kompanii / N.V. Shevchuk // Stratehiia ekonomichnoho rozvytku Ukrainy. – 2016. - № 38. – p. 200 – 208
6. Ivashkovskaya I.V. Strategicheskyy finansovyy analiz: kontseptsii: [monografiya] / I.V. Ivashkovskaya – Moskva: Biznes Elayment, 2012. – 142 p.
7. Ivashkovskaya I. V. Otsenka ustoychivosti rosta kompanii: steypkhholderskiy podkhod / I. V. Ivashkovskaya // Korporativnye finansy. – 2010. – № 43 (427). – P. 14 – 18.
8. Ivashkovskaya I.V. Ustoychivyy rost kompanii: finansovyy podkhod // Rossiyskoe predprinimatelstvo. – 2008. – Tom 9. – № 3. – P. 100-104.
9. Shevchuk N.V. Ekonomichne zrostannia natsionalnykh promyslovykh pidpriemstv: vartisno-oriiientovanyi aspekt / N.V. Shevchuk // Sotsialno-ekonomichnyi ta tekhnichnyi rozvytok pidpriemstv: problemy, rishennia, otsinka efektyvnosti : Monohrafiia [za red. L.M. Savchuk] – Dnipropetrovsk: Natsionalna metalurhiina akademiia, Porohy, 2016. – 554 p. – P. 193 – 204.

CURRENT ISSUES OF THE HIGHER EDUCATION'S DEVELOPMENT

Diana Kucherenko,

*Ph.D. in Economics, Associate Professor,
Science and Research Institute of Social and Economic Development,*

Olena Martynyuk,

*Ph.D. in Economics, Associate Professor,
Kyiv National Economic University named after Vadym Hetman*

Annotation. *The article describes the challenges of the modern labor market to higher education and identifies the perspective directions of its transformation in the context of the partnership of universities and business and the impact on the innovative development of the country. Prospects for the development of innovations in higher education are outlined.*

Key words: *higher education, labor market, business and university cooperation, innovation development, innovation in higher education, life-long education.*

Analysis of recent research and publications. The problem of interaction between education, science and business has always attracted the attention of the scientists. Among the well-known scholars should be G. Becker, J. C. Mill, A. Marshall, J. Minzer, D. North, M. Olson, E. Toffler, F. Fukuyama, who studied in their works the influence of education on economic results. Modern views on the cooperation of universities and employers, the analysis of Ukrainian education in terms of managing its quality are set out in the writings of V. Bazylevych, Y. Bolyubash, V. Briukhovetsky, O. Grishnova, O. Zhilinska, K. Levkovsky, and others. An analysis of the European employment policy, the problems of functioning and regulation of the labor market is contained in the works of I. Bessonovoy, N. Vishnevsky, T. Tkachenko, L. Lisogor, E. Libanova, V. Serdyukova and others. Issues of the development of adult education in foreign countries are devoted to research I. Beyul, O. Grishnova, P. Dysyatova, S. Kovalenko, O. Ogienko, I. Fokina.

The speed of change that is taking place today in the economy, finance, technology, and in society in general, leads to the fact that in a competitive business that requires rapid response and state-of-the-art technology, knowledge and skills are updated rapidly. This is one of those contradictions that is inherent not only in Ukraine but also in developed countries. Increasing the level of knowledge and developing an adaptive workforce that can adequately meet the challenges of the knowledge society is the main key to productivity and employment growth in today's economy, which is adequate to meet today's challenges of higher education. The current generation of students has completely different challenges than their peers a quarter of a century ago. It is believed that half of the professions that young people will acquire in twenty years do not even exist. The challenges of modern education cannot be overcome without going beyond the old educational models, without the development and implementation of innovative forms of education. The increasing diversity of personal demands on the one

hand, and the dynamics of labor market demands, driven by the acceleration of socio-economic change, on the other, make it impossible to meet the aforementioned needs within the existing forms of traditional education. The problem of inconsistency of the formed education system with the new needs of society and people is aggravated. In these circumstances, a new perspective on the role and importance of higher education is needed, which will meet contemporary educational needs through the widespread adoption of educational innovations.

Main part of researches. In today's environment, the demands of globalization on the quality of human resources are increasingly in conflict with the local needs of the labor markets. Students are usually motivated to gain knowledge and skills for further employment, career growth, high income, and more. Competing universities reduce the cost of tuition, and rarely the quality requirements for specialist training. Having a diploma of higher education or study at a university magistrate already gives benefits for employment, especially when the quality of education for the employer is not in the first place.

The competitiveness of students and graduates of universities is influenced by the following processes that affect the content and nature of work:

- changing the functions of labor, increasing the value of universalisation of labor and its combination;
- the uniqueness of work, the emergence of professions that require employees of high qualification and provide opportunities for continuous professional self-improvement;
- changes in the structure of the qualification complex, the prevalence of knowledge over skills and skills, depending on the level of vocational training.

The formation of the knowledge economy and the processes of globalization affect the structure of the labor market, increasing the dependence of successful employment and effective professional activity on the accumulated human capital, which plays an important role in the formation of which the level and quality of education plays. The continuous process of innovation, which is now inherent in all spheres of activity, dynamizes the labor market and requires the person to adapt in the shortest possible time to changes in the socio-economic environment and to be ready to develop his knowledge and skills throughout life.

International researchers, analyzing the role of universities in the economic development of the country, evaluate the economic impact of universities on the following aspects: university revenues and expenditures; the role of universities in securing employment; the impact of universities on the development and implementation of innovative research; the impact of universities on the development of the country.

In world markets, the leadership of economies is linked solely to the use of innovations that provide increased demand for products (jobs, services), increased sales and reduced cost of production, increased productivity, profitability of production and human well-being. Therefore, the creation of a stable competitive economy is possible only on the basis of increasing its innovation, one of the determining factors for the formation of a competitive economy is the level of development and the quality of

interaction between higher education and business.

Innovative economy requires, on the one hand, active processes of creation and introduction into production of scientific developments, simplification of the scheme of their transformation into innovative competitive products, and on the other hand, highly developed human capital, capable of providing them, possessing the modern demanded labor market and innovations competences that cannot be formed solely by the efforts of universities through the use of traditional learning technologies. Becoming a country as a high-tech competitive state is impossible without the introduction of the latest technologies. Higher education is regarded as one of the most important incentives for innovation, without which the gradual development of the economy is impossible.

Today, employers are also competing with each other to get professionally trained young people for business. As practice shows, employers are increasingly dissatisfied with the level of training and competence of job seekers and the availability of a diploma from even a prestigious educational institution does not provide any guarantees. For example, according to a World Bank study, 4 out of 10 companies operating in key areas report a significant gap between their employees' skills and their business goals [10]. In our view, this issue needs to be addressed in at least two dimensions - the quality of education and the institutionalization of the link between education and the labor market.

In Ukraine, the involvement of employers in the development of vocational education is rather limited and fragmented, and business funding for the training of competent specialists is almost absent [4]. This is partly due to reasons beyond the educational sphere itself: the weak development of civil society and, consequently, the lack of practice of creating mechanisms for independent building of effective cooperation between public institutions; lack of awareness in society, and in particular in most employers, of understanding the need and cost-effectiveness of investment in human capital development; low level of innovation component in the country's economy.

International business has always supported talented young people, providing international grants for education, scientific and technical development of universities, the commercialization of scientific development. New forms of learning are emerging, such as distance learning, parallel learning, which gives businesses the opportunity to dynamically translate their creative ideas into practice while overcoming spatial obstacles. As a result, this interaction of business, universities and science increases the share of the workforce with higher education, which gives impetus to the development of the national economy through innovation and enhances the country's competitiveness in the world higher education market. The tendency to turn leading universities into an innovation incubator is leading them to play a leading role in a fast-changing world [11].

Succeeding in an innovative economy requires that a person has new competencies that need to be constantly updated, even in comparison with the recent past. The development of technology is leading to the displacement of manual work, and skilled work requires an increasing focus on solving unstructured problems and efficient analysis of information. Over the last 50 years, there has been a steady decline in jobs in developed economies that required routine manual and cognitive skills. Instead, there is

a growing demand for skilled, non-trivial analytical staff and specialists with advanced communication competencies [14].

This creates new challenges for consumers of education services and the education system as a whole, requiring the creation and implementation of innovative forms of education that will meet the following challenges:

1. the need for continuous mastery of new competencies;
2. the ability to function in new models of economic activity;
3. technology development and accelerated growth of knowledge.

In today's world, shifts in the business environment are emerging, with emerging and expanding models of economic activity, among which the particularly rapid growth is demonstrated by sharing economy property) and gig economy (gigonomics is the model in which people work as freelancers) [15]. A large number of professionals with a wide range of skills in various fields of work and the rapid evolution of technologies that enable them to hire temporary workers without a limiting geographical factor (remote work) are the driving force behind gigonomics. At the same time HR-specialists point out that the freelancer's work efficiency is often higher than that of a full-time employee because of the interest to quickly and efficiently complete the work and get paid.

This form of employment is already typical for 20-30% of people in the US and Europe [10]. According to experts, this form of cooperation will only expand in the future: Intuit's research predicts that by 2020, 40% of Americans will work as independent contractors [15].

The rapid growth of gigonomics has attracted the attention of official institutes. UNITED STATES Regional Secretary, Oliver Roeting, said that the EU should start safeguarding equal rights for decent pay and decent working conditions for employees online and offline with full-time employees, working to achieve a high level of social protection, applying these principles regardless of employment status or the type of contract, regardless of the economic sectors in which they are employed [14].

Globally, all countries in the world can be divided into two categories: net-exporters and net-importers of human capital, talent.

The first category includes most of the post-Soviet countries. This is explained by the orientation of higher education institutions to the customer of educational services such as the state and households (contract payer). That is, the employer (business) is not interested because of the payment for training to receive a competent specialist, placing these duties on the state. It should be noted that in post-Soviet countries the number of students is decreasing, also due to the worsening demographic situation. The Strategy for the reform of higher education of Ukraine until 2020 stated that the aim is to create an attractive and competitive national higher education system integrated into the European educational and research space [12].

Countries such as Canada, the United States, China and Saudi Arabia, Western Europe - fall into the second (receiving) category, and South Africa - falls into both categories. South Africa accepts the most talented young people from Africa, but loses their own talents, who travel to more developed countries. This speaks to the increasing

competition of higher education institutions for talented youth.

Higher education is a sufficiently large, sustainable sector of the economy that has all the prospects for growth. For 2017, the size of the global education market was estimated by OECD experts at \$ 4.4 trillion [17]. In the UK alone, the economic benefit of international students is £ 23 billion a year, with budget allocations of around £ 2 billion a year [7].

At the end of 20th - beginning of 21st century universities are one of the accelerators of history through enhancing the research component, incubating innovation and technology transfer, as well as being a higher human capital bank. But it is not necessary to ignore the global crisis in higher education and the weaknesses of the system, and to place unjustified expectations on universities such as educating the ideal citizen, guaranteeing higher incomes, overcoming inequalities in access to knowledge, etc.

Leading universities in their strategies reflect this shift towards lifelong learning. For example, the basic principle of the Stanford-2025 strategic program is the Open Loop University model. It stipulates that it is possible to remain a student of the university for a long time, work without "finishing" it and periodically apply to Alma mater for intellectual nourishment.

Futurologists such as K.Nordstrom suggest that replacing the usual higher education diploma system will come with a modular system of the formula: 3-5 months intensive work with the active use of the acquired knowledge, then again study and so on [5]. Flexible adaptive systems respond to global climate change with transformations and take part in creating a new reality - this is happening with the world's leading universities.

Unfortunately, according to scientists, a deliberate state policy on adult education has not yet been developed in our country. Difficulties and problems arise because of the absence of:

- regulatory framework;
- organizational structure;
- theoretical foundations of adult education and their practical application;
- systems for training specialists in the field of adult education;
- information support for adult education [8, 11].

In such an unfavorable situation, as the analysis shows, the population practically ceases to increase its educational training to 35 years, unlike in European countries, where vocational training and advanced training for each worker is continuous. Therefore, the main directions of public policy regarding the development of adult education in Ukraine should be aimed at solving existing problems in the light of the European experience [7].

The expenditures of the Ukrainian society on education in the structure of GDP are almost the same as those of Ukrainians with a very high level of human development and are significantly higher than in the group of countries with a high level of development. The share of general education funding is 18-22%, and higher education is 4.7% to 6.8% of GDP. From the budget, 6-8% of GDP goes to education, and 1.3% to 2.3% of GDP goes to higher education. The state is the main resource investor of education as a type of economic activity [12].

In Ukraine, as in most European countries, the share of public funds in education resources exceeds that of private ones, but the share of business is dramatically different. If in Ukraine the financial participation of business in providing the educational and scientific process of higher education is 1.5-2%, in foreign countries - 10-30%. As a result, Ukraine ranks 73rd (among 137 countries) in terms of the international index "university and industry cooperation in research and development", with the impact of knowledge on the economy at 77 (among 127 countries), indicating that there is no close link between the higher sector. education with the real sector of the economy under the scheme "education-science-production-innovation" [14, 15].

The current global trends are relevant to Ukraine for the challenges and risks associated with higher education. The first is the growth of the role of human capital. Human capital is 64% in the national wealth of world co-authorship, natural capital is 20%, and physical capital is only 16%. The share of human capital in developed countries (Finland, Switzerland, Germany, Japan, USA) accounts for up to 80% of their national wealth [6]. This gives a decisive advantage in technological development as well as the advancing growth in the quality of life of the population. Therefore, the main increase in national wealth is determined today, above all, by the conditions created to unlock human potential. One of the most important conditions for such disclosure is undoubtedly education.

Secondly, there is acceleration in the pace of updating professional knowledge. Over the last decades, the system of knowledge generation and transfer has changed dramatically, and their volume has increased many times over. Today, one cannot at one time, even for 5 or 6 years, prepare a person for professional activity for life. Currently, about 5% of theoretical and 20% of professional knowledge is updated annually [13]. The unit of measurement of specialist knowledge, adopted in the United States - a half-life period of competence, that is, a 50% decline in new information, shows that in many professions this period comes less than 5 years, ie, with respect to the domestic higher education system, often before than the end of training. The solution to the problem lies in the transition to lifelong learning, where basic education should periodically be supplemented by supplementary education programs and organized not as a final, completed, but only as a basis, a foundation for further learning.

Thirdly, it is a statement in the educational policy of developed countries of the concept of "education for life". Lifelong learning involves increased investment in people and knowledge; gaining basic skills, including digital literacy; the spread of innovative, more flexible forms of learning. The goal is to provide people of all ages with equal and open access to quality education. The Council of Europe has endorsed lifelong learning as one of the main components of the European social model. Such training is not limited to the field of education - it is also a critical factor in the fields of employment and social security, economic growth and competitiveness [6, 7].

Fourth, the challenge is the transition of education systems in developed countries to the widespread use of information technology. This leads to increased competition in the international education market. The rapid pace of development of distance learning

projects in the next few years can drive a large part of the traditional educational institutions of many countries out of the education market. Ukraine is also planning to develop similar projects involving thousands of students. The principle of maximum availability of educational resources has in fact become the standard of activity of the world's leading universities. Analysts believe that in the near future, world-renowned universities will be able to teach tens of millions from all over the world instead of hundreds of thousands of students [13].

Information technologies are at the forefront in all spheres of being both individuals and society as a whole. The widespread use in distance education of information technologies will allow, in addition to mastering a certain array of knowledge and competences stipulated by the curricula, to achieve a certain level of knowledge and skills in the use of information technologies, which for a modern person is a necessary condition for success and one of the indicators of quality of life.

And the last is the demographic factor. Declining birth rates and aging population necessitates the creation of conditions for the education of older and older people, who have overwhelmingly life circumstances (family, work, place of residence, etc.) that do not allow them to study on a permanent basis and condition the relevance of the development of various forms of education education, including distance education.

Conclusions. Therefore, the existing innovative capacity of the higher education system of Ukraine is not fully realized today, mainly due to the insufficient level of partnerships between universities and the business sector, which is recognized as one of the key problems in the formation and implementation of state innovation policy in the country. Active and purposeful work on creating productive models of interaction between business and higher education, on the one hand, will improve the efficiency of education and research, and on the other hand, will help to increase the innovativeness of domestic business, ensure its sustainable development, and thus increase the innovation potential national economy and its competitiveness.

References:

1. Law of Ukraine from 01.07.2014 No 1556 - VII "About higher education" [Electronic resource] // <http://zakon4.rada.gov.ua/laws/show/1556-18>
2. Alashov S.Yu. Review of world practices of organization of cooperation of labour-market and system of trade education // [Electronic resource]: <http://newsoboz.org/ekonomika/ukrainskie-rabotodateli-razdumali-pereplachivat-za-diplom-10112014135531>
3. Dertev A. In 50 instead of 218 countries there will be 600 cities // [Electronic resource]: <https://hvylya.net/analytics/society/kell-nordstrem-cherez-50-let-vmesto-218-stran-budet-600-gorodov.html>
4. Ddyakiv O. European experience of adjusting of cooperation of education and labour-market // [Electronic resource]: <http://www.academy.gov.ua/ej/ej11/txts/10dovorp.pdf>

5. Kucherenko D., Martynyuk O. Transformation of the higher education by diversification of sources and forms of its financing // Modern Science — Moderní věda. — Praha. — Česká republika, Nemoros s.r.o. — 2018. — № 5. — P. 44-52.
6. Kucherenko D. modern ways of transformation of the higher education in Ukraine// [Kucherenko D.] // Economics & Working Capital. – London (GB). – 2018. 3-4. issues. – P. 14-18.
7. Education and science are in innovative development of modern Європи // [Electronic resource]: http://www.Osvita_ost.indd-07994.pdf
8. Pokidina V. Universities and business: international experience of collaboration and prospect for Ukraine // [Electronic resource]: http://cost.ua/files/Universities%20and%20business_report.pdf.
9. Scherbata T. Theoretical aspects of adjusting of partner relations of enterprises from HEI // [Electronic resource]: http://nbuv.gov.ua/UJRN/VNULPP_2016_847_31.
10. How to put right partnership: recommendations for business / [Electronic resource]: http://www.csr-ukraine.org/userfiles/fileЯк_налагодити.pdf.
11. Yankovska O. Role of universities in economic development of cities, regions, country: report of III of national forum "Business and universities" // [Electronic resource]: http://csr-ukraine.org/wp-content/uploads/2015/12/forum_publ_all_bezpolos_print.pdf
12. Constructing Knowledge Societies: New Challenges for Tertiary Education // Washington: The International Bank for Reconstruction and Development / The World Bank. – 2002. – P. 76.
13. Education Indicators // UNESCO Institute for Statistics. – 2016 // [Electronic resource]: <http://data.uis.unesco.org/index.aspx?queryid=189>.
14. Gig economy // TechTarget network // [Electronic resource]: <http://whatistechtarget.com/definition/gig-economy>
15. Independent work: Choice, necessity, and the gig economy // The McKinsey Global Institute forum // [Electronic resource]: <http://www.mckinsey.com/global-themes/employment-andgrowth/independent-work-choice-necessity-and-the-gig-economy>

SIMULATION TECHNOLOGIES IN THE STRATEGIC MANAGEMENT OF ADVERTISING PROCESSES OF PHARMACEUTICAL ENTERPRISES

Zoya Sokolovska,

Doctor of Economics, Professor,

Head of the Department of Economical Cybernetics and Informatics Technologies,

Larysa Frolova,

Doctor of Economics, Professor,

Head of Entrepreneurship and Trade Department,

Irene Kapustyan,

Post-graduate student of the Department of

Economical Cybernetics and Informatics Technologies,

Odessa National Polytechnic University

Annotation. *The development of modern information and communication technologies contributes to the improvement of advertising strategies, as effective tools of pharmaceutical marketing. The feasibility of attracting methods of simulation as tools of making strategic advertising decisions is substantiated. The simulation model-simulator is proposed, developed using the combination of agent and system-dynamic approaches on the AnyLogic software platform. The decision-making process is illustrated by the results of various types of simulation experiments.*

Key words: *advertising strategy, pharmaceutical enterprise, simulation modeling, model-simulator, simulation experiments.*

Introduction. The pharmaceutical industry is one of the domestic economy sectors, which demonstrates a positive dynamics of development, despite existing problems: imperfect state legislation; lack of funding; low solvency of the population; significant import dependence, increased competition in the pharmaceutical market.

Pharmaceutical companies belong to one of the most high-tech industrial sectors, which characterized by a fast-updating product line. Accordingly, there is an increase in their interest in such business development strategies as research and development (in particular, the development of innovative products), which is accompanied by deepening the localization of production with the active search for strategies for optimizing costs and marketing strategies for market research and product promotion.

An important component and effective tool for pharmaceutical marketing is advertising that moves to a qualitatively new level with the advent of modern information and communication technologies, aimed at users with complicated behavior, prone to interactive communication and change of benefits. Considerable segmentation of the pharmaceutical market, caused by diversification of the nomenclature series, sets forth special requirements for formation the advertising strategies and establishes their close relationship with the commodity strategies of pharmaceutical enterprises.

Decision-making in the field of strategic advertising involves careful study the target audiences (potential users) of products, timely prediction the dynamics of their changes. The parallel process is tracking the life cycle of each product from the range of enterprise from the stages of research and development to release on the market and duration of stay on it. Advertising can prolong or reduce the age of the product's presence on the market. In turn, market trends determine the expediency of increasing or decreasing the advertising budget and the technology of its use (or termination of use). The above processes occur under the influence of many stochastic factors of internal and external environment of operation the pharmaceutical companies. Therefore, it is necessary to forecast dynamics the relevant sectors of the pharmaceutical market (target audiences, commodity flows) in conditions of risk and uncertainty in order to make informed decisions in the course of defining and implementing both the marketing and accompanying advertising strategy. The instrumental base of forecasting requires the use variety flexible research methods that take into account the qualitative and quantitative character of the problem. Based on this, one of the modern paradigms of quantitative modeling is proposed - multiapproach simulation on the platform of AnyLogic system.

In this study, it is put forward the hypothesis of expediency the formation advertising strategy of the company based on predicting duration the life cycle stages of product and the dynamics of target audiences (commodity flows) by means of simulation in connection with the impossibility of obtaining an unambiguous analytical solution.

The possibilities of making the strategic advertising solutions using a model-simulator, taking into account the nonlinear character of the investigated processes and numerous feedbacks, are proving.

Analysis of recent research and publications. From the point of view the given problem, an overview of the existing research results was made in the following areas:

- Analysis of commodity (assortment) policy of pharmaceutical enterprises.
- Research of target audiences (sectors of the market) for which advertising of pharmaceutical products is directed.
- Investigation the effectiveness of advertising: its impact on the current demand for products, reputation, the final results of the companies works.
- Modeling advertising strategies for pharmaceutical companies. In particular, existing applied imitations in this area.

A significant range of domestic and foreign studies are devoted to various aspects of formation the commodity policy of pharmaceutical enterprises.

The questions of classification the pharmaceutical products and management of its assortment are raised in the works [1, 2]. In [1] within the framework of research the models of marketing-oriented management of pharmaceutical enterprises, it is offered model of classification a dynamic assortment of pharmaceutical products and considered the certain aspects of commodity portfolio management. In [2] the classification of products by commodity-market characteristics got the improvement; investigated the features of pharmaceutical products as an object of commodity innovation policy. A separate emphasis in the work is made on the differences in product advertising

specifically in the pharmaceutical market.

The process of making managerial decisions during the formation of product portfolio is explored in the work [3]. Attention is paid to the processes of passing through the stages of the life cycle, especially the stages of research and development. The author stresses, that the ideal structure of the product line is determined by the cost of developing medicines, the likelihood of their survival during the testing and approval processes, the duration of the market and expected profitability. The use of optimization methods in determining the composition and structure of a pharmaceutical company's product portfolio is proposed. The minimizing the level of risk and maximizing the return on the portfolio are quite widespread and offered as target functions. However, in addition to formally analytical ones, it is emphasized the need to further involve fuzzy methods based on the use of available information from previous precedents. Although there are references to only some aspects of pharmaceutical advertising in the work, the dynamic, interactive approach to formation the product portfolio due to the prism of assessing the life cycle stages of individual products is interest.

The research, conducted on the basis of the University of Georgia (USA), are devoted to objectives of the formation and management the commodity portfolios of pharmaceutical companies [4]. The work is focuses on the peculiarities and complexity of formation the portfolios in context of merger; the integrations of portfolio management processes. The results of extensive empirical studies lead to the conclusion that it is necessary to attract a special mathematical base for predicting the sales outcomes of commodity portfolios in conditions of a dynamic pharmaceutical market.

A modern approach to managing a pharmaceutical portfolio in conditions of limited resource is proposed in [5]. Developments are based on the implementation of a hybrid approach that combines several simulation methods and creates a complex environment for reflecting the dynamic behavior of the market. According to the authors, it is expedient to use both purely analytical and simulation methods with different degrees of processes aggregation. The main hypothesis put forward in the work - the desire to optimize the pharmaceutical portfolio (in particular, from the point of view of the distribution and use limited resources of companies) - is realized only subject to the creation of a single object-oriented modeling complex, which can be adapted to the specifics of concrete enterprises in the industry.

One of the most time-consuming and regular studies in strategic advertising is the study of target groups. For the pharmaceutical market, this process is complicated by the high level of segmentation and dynamism. Pharmaceutical products have a huge assortment and significant differences in organizing processes of production, control, legal support, promotion, etc. In addition, progress in pharmacology field promotes the emergence of new innovative medicines; the market is replenished also with many related goods.

Pharmaceutical companies all over the world spend a lot of money on conducting research the target audiences. Thus, in [6] the results of analysis the relationship of marketing strategies of a number the leading companies with the specifics of target groups

of users pharmaceutical products, in particular, its innovative segments, are given. In [7] the results of studying the target audience behavior of users the unpatented medicines are presented. The constructed behavior model takes into account the benefits of Italian consumers groups, which differ in numerous features: demographic, self-identification, previous behavior, risk sensitivity, preferences for specific brands, etc.

The geography of such studies is great. As presentative examples of "field" experiments to assess the effect of responding target groups of users on pharmaceutical advertising (direct and contact) can lead [8-10].

One of the most problematic and ambiguous aspects of strategic decision-making is determining its effectiveness. The following sources are illustrative examples of research in this area.

In [11] are presented empirical studies of 25 large "field" experiments with aggregate spending on digital advertising of over \$ 2.8 million, conducted with major American retailers, that covering millions of customers. The results proved the impossibility of unambiguous determination the impact of advertising costs on the resulting end-points. In the course of the researches, economic and statistical methods were applied and, in general, more than 10 million man-weeks were used to ensure the informativeness of the advertising experiments.

An analysis of impact the advertising in terms of attracting investment is given in [12]. The promotion of products, focused on stock investors, was in the focus of this empirical study. An experiment was conducted with a representative sample of real investors to test the effect and study the main advertising mechanisms. The results proved that accentuation of product characteristics in advertising for investors increasing their subjective assessment of concrete products and interest of investing in shares of the company. In this case, the effect is manifested independently of existence the factors associated with the previous perception of brands. The authors came to the conclusion that the obtained data identifies and confirms various mechanisms of advertising influence on investors, however, the relative magnitude of influence can not be generalized.

An attempt to obtain an analytical solution to one of the specific tasks of evaluating the effectiveness of advertising in [13] deserves to attention. In work the dynamical, continuous-time model of optimal management of advertising costs is analyzes. It takes into account the lateness of users' reaction and the advertising influences on purchases, which made earlier. It take into account the effects of past sales and advertising (accumulated from specific intervals) to determine the impact of advertising. The solution of the optimization problem is reduced to the solution the system of non-linear integral equations of Volterra type and integral functional of quality. The authors prove the existence of a solution the problem of maximizing company profits in the planned period with restrictions on the advertising budget and the availability of functional dependence, which reproduces the reaction of the target audience. The authors discuss the issues of functional dependence of current demand on the accumulated reputation of the company and the accumulated effect of advertising. However, the applied results of application the proposed model are not presented.

A detailed analysis of existing mathematical apparatus for the study of dynamic advertising is given in [14], where authors made a reference to a significant number of literary sources (134 references). As example of using model applications in the field of pharmaceutical advertising can bring works [15-18] and other.

The using simulation methods of research aimed at advertising is sufficiently limited to date. The range of model simulation applications devoted to the reproduction of various aspects of advertising processes can be represented by follow sources.

In [19] the simulation model is proposed, focused on research the using of advertising funds in process promoting the products of Internet enterprise. The result of experiments is the choice an optimal set of advertising methods in conditions of minimizes costs. The model is implemented in AnyLogic system environment. The questions of advertising and pricing policy of Internet providers are raised in work [20], in which the model of reproduction thr users' behavior on the market of Internet services is offered. Modeling advertising budgets in the framework of general advertising strategies of enterprises presented in [21].

Although the presented model applications do not relate exactly to the pharmaceutical industry, the specific blocks and technology of simulation experiments can be adapted to its specificity.

International platforms, which regularly present the model applications with using various simulation paradigms, aimed at solving a wide range of tasks, in particular, in the context of the considered problem, are the following: Winter Simulation Conference [22], International System Dynamics Conference [23], German-language simulation community ASIM [24], IMMOD "Imitation Modeling, Theory and Practice" [25], European Congress of EUROSIM [26], webinars and publications by one of the world's leading corporations in the simulation industry – The AnyLogic Company [27].

Unsettled issues which are part of a common problem. Researches the various aspects of the formation and implementation advertising strategies, as a rule, are carried out separately, that violates the complex perception of the problem and reduces the validity and reliability of the results. On the other hand, the mediation of advertising actions and the dependence on components of the company's overall strategy (production, commodity, innovation, marketing, financial, investment, marketing) stipulate to take into account their specificity when making strategic advertising decisions. Practice proves that set tasks are relevant, and their final solution is far from complete - this is confirmed by the results of many empirical, "field" experiments.

In the context of this work, we are talking about the need to focus on complex consideration the processes of dynamic strategic advertising and the formation commodity portfolio of the pharmaceutical enterprise (taking into account the peculiarities of life cycle stages of individual nomenclature positions). At the same time, it is need to reduce the cost of experiments to make them accessible to a wide range of enterprises. According to this, not only the concept of research is important, but also mathematical tools, which are used.

The above review proves that in most cases the mathematical basis of decision-

making in the advertising field consists of economic-statistical, optimization methods and model applications based on them. But this greatly limits the possibility of obtaining adequate results in the absence of stable, equilibrium tendencies, clear algorithmic dependencies; the presence of recursive formulas; lack of required retrospective information.

Therefore, it is expedient to use modern paradigms of simulation on the corresponding software platforms to create model-simulators for the development the management solutions in a dynamic uncertain environment. Although improvement the means of setting up and implementing simulation models as well as the plans for carrying out experiments is a permanent process, the simulation tools will contribute to expanding the scope of the problem, reducing the duration and cost of conducting research. The use of multiapproach simulation paradigms on the software platforms of integrated systems as well as Internet technologies for the application of ready-made models create a single research space and carry out the system approach of conducting simulation studies. Today one of the most effective world-class software platforms supporting the main modern paradigms of simulation (discrete-event, agent and system dynamics) and their combinations is the AnyLogic system.

The purpose of the article is studying processes of decision-making in the field of strategic advertising of pharmaceutical enterprises using the multilevel paradigm of simulation on the software platform of the AnyLogic system.

The main material. Currently, according to the Law of Ukraine "On Advertising" there are restrictions on advertising of prescription medicines. Advertising of prescription medicines can be used taking into account the basic principles of advertising, all legislative requirements regarding its form and content, but only among a limited number of subjects - it is placed in specialist publications intended for medical institutions and doctors, and also distributed at seminars, conferences, symposia on medical topics. Therefore, the study considers the advertising activities of enterprises in relation to non-prescription (original and generic) medicines. Considering medicines as a market product category, the understanding of the terms "original" and "generic" (reproduced) medication is also important. The original (innovative) medicinal product is the product, first introduced to the pharmaceutical market, containing a new synthesized or received other way active pharmaceutical ingredient, authorized for medical use and patented for a certain period of time. A reproduced medicinal product (generic) is a copy, which correspond to an innovative (original) medicinal product by therapeutic efficacy and safety. It's manufactured by a pharmaceutical company after expiration of the patent protection period [28].

In the framework of creation the model complex of marketing activities of the pharmaceutical company, it was conducted an analysis the advertising strategies of OJSC "Farmak" - a leader in the pharmaceutical manufacturers of various pharmacotherapeutic groups in Ukraine. The basic sources of incoming data are the State Statistics Service of Ukraine [29] and the official website of "Farmak" [30].

Developed within the complex, the simulation model-simulator aimed at working

out the following solutions in the field of strategic advertising:

- Investigation the optimal level of prices for the product assortment in order to maximize revenue from sales.
- Minimize advertising budget and its distribution to promote original and generic medicines.
- Monitoring the effectiveness of research new and re-production of existing medications, depending on the duration of the life cycle.
- Determining the preferences of potential buyers depending on the level of demand and prices for assortment.
- Monitoring and forecasting the reaction of the target audience to product advertising, tracking the level of information about the product, etc.

The financial elements of the model are presented fragmentarily on Figure 1.

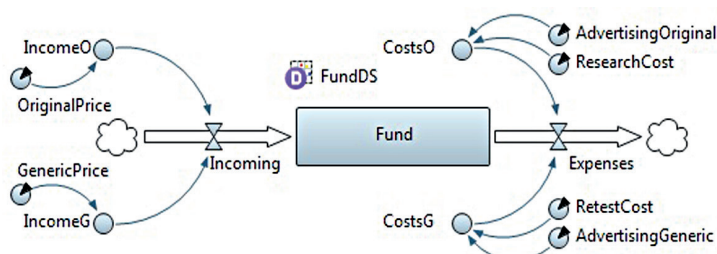


Fig. 1. Block of continuous simulation.
Source: developed by authors.

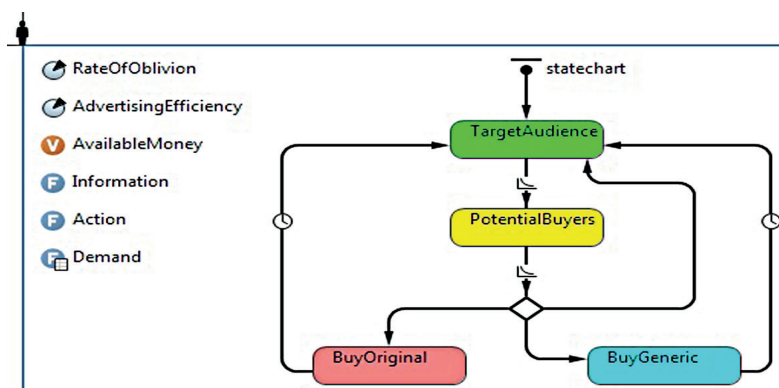


Fig. 2. Buyers State Diagram.
Source: developed by authors.

The system-dynamic block, shown in Figure 1, is designed to simulate the company's capital in real time (in the limits of the task), the movement analysis of which allows to make conclusions about the intensity of sales processes and investment in specific areas. According to this, the contents of storage device "Fund" are replenished with incomes

from the sales of original and generic medicines and reduced with costs of their research and advertising.

Factors affecting the level of income are directly related to the behavior of the user - potential buyer. The buyer in the system can be in four states: TargetAudience, PotentialBuyers, BuyOriginal and BuyGeneric (Figure 2).

The built-in graphic tools AnyLogic are used in the course of dynamic simulation objects - the schematic representation of elements and the change of colors for tracking states.

The process of buying medicines and switching to appropriate states occurs depending on the stages life cycle of preparats. So, if there will be no necessary preparat on the market at the time of purchase, the buyer choosed an analogue or completely refuse to buy. Life cycle stages of generic and original medicines are presented in system in the form of corresponding diagrams of states using agent modeling (Figure 3 and Figure 4).

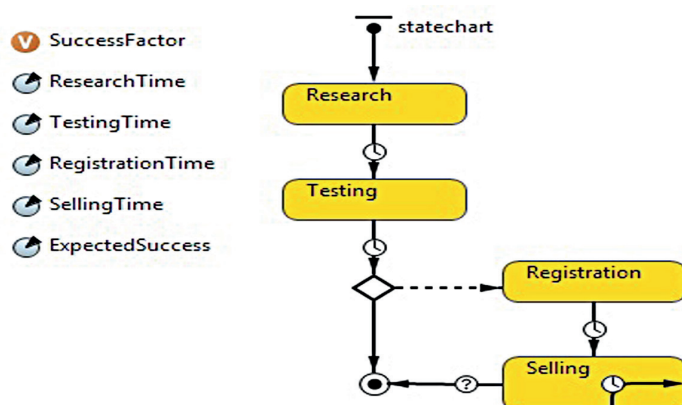


Fig. 3. State Diagram of original medicines.

Source: developed by authors.

Original medicines in the system can be in four states: Research, Testing, Registration and Selling, while generic medicines - only in two states: Retest and Selling. This is due to the fact that original preparat pass a complete cycle of preclinical and clinical researches and mandatory registration.

All blocks of the model are interconnected, allows to adjusting the required amount of expenses for advertising tools; determining the reasonable cost of pharmaceutical products; optimizing the effectiveness of marketing costs; maximizing revenue from advertising campaigns and the number of regular buyers; calculating the sales volume in kind. The simulation model provides the possibility of conducting computer experiments in order to make variations of significant environmental factors for choosing the optimal values in conditions of minimizing costs of advertising campaigns. The model-simulator of marketing activity of pharmaceutical enterprise allows analyzed in a short time the

current state of affairs, optimized the current activity of enterprise, reduced advertising costs, and also developed a plan for further action.

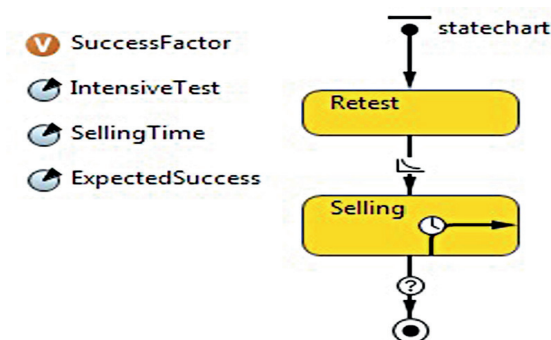


Fig. 4. State Diagram of generic medicines.

Source: developed by authors.

The process of decision-making support is due to realising different types of experiments on the model. AnyLogic tools allows to conduct the following experiments by type of analysis: Standard (simple) experiment; Optimization; Variation of parameters; Comparison of "runs"; Sensitivity analysis; Calibration; Monte Carlo; Non-standard. The first three types of experiments are considered in this study.

A Simple experiment launches a model with specified parameters values, supports virtual and real time modes, animation, debugging of the model. So, change in the level of capital during the simulation period (1 year) is shown in Figure 5.

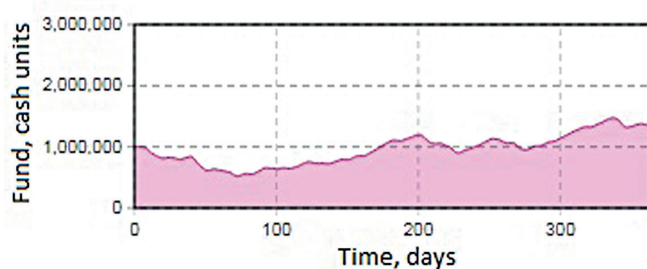


Fig. 5. Fund level during model time.

Source: compiled by authors based on simulation results.

Figure 5 shows that in the first half of the year the company suffers losses, while in the second it begins to make a profit. Because significant costs on research and advertising carried out, when new preparat introduction into the market, and only after a while buyers are beginning to recognize and actively buy the product.

The activity of the target audience and the transition to the state of buyers at execution of Simple experiment during model time (1 year) is shown in Figure 6. This fragment presents a generalized situation in the context of Ukraine regions.

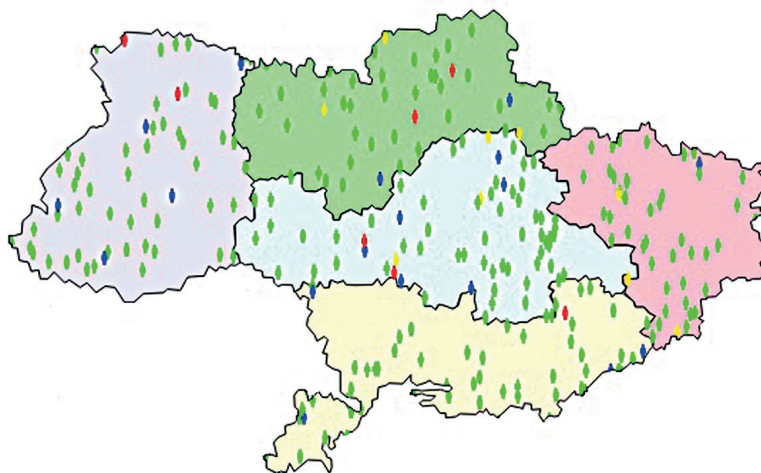


Fig. 6. Buyer activity during model time.

Source: compiled by authors based on simulation results.

So, in state TargetAudience agent is marked in green, in state PotentialBuyers - in yellow, in BuyOriginal and BuyGeneric states - in red and blue respectively. With the built-in "Time schedule" tool, it can be graphically monitored the level of buyers original and generic medicines (Figure 7). This allows in a timely manner to respond on changes in the situation, make decisions about increasing or reducing the intensity of advertising the certain type of preparat.

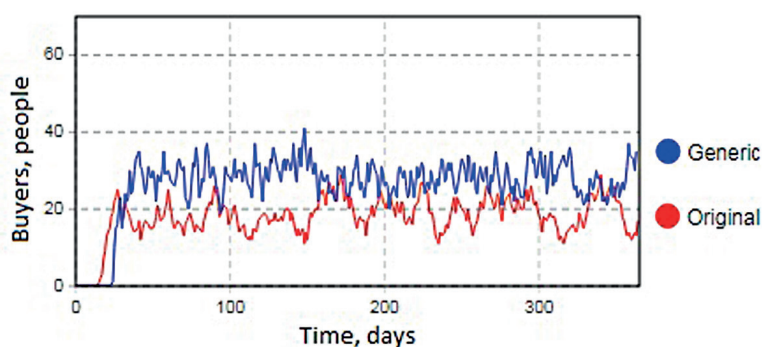


Fig. 7. The level of buyers of original and generic medicines.

Source: compiled by authors based on simulation results.

As Figure 7 shows, the sales number of generic medicines in kind prevails over the original. This is explained by a much lower price and a larger assortment.

The Optimization experiment looks for the value of the parameters at which the optimal value of the given target function is achieved. There may be a number of constraints on the values of the parameters and variables of the model. The optimization progress schedule is displayed. For this model, the target function of minimizing the advertising costs for both types of medicines was set. The result of the Optimization experiment is shown in Figure 8.

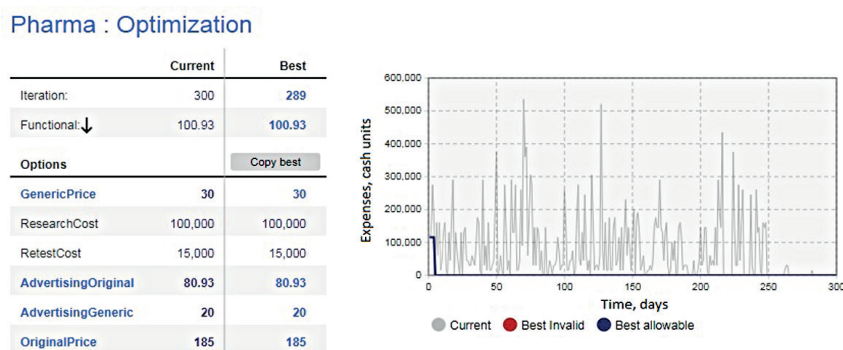


Fig. 8. Optimization experiment of minimizing advertising costs.

Source: compiled by authors based on simulation results.

Similarly, the system allows conducting Optimization experiment of maximizing revenues from sales of medicines, and also considering separately each type of preparat. Due to this type of experiment, the pharmaceutical company can quickly find the parameters in which the necessary market situation will be realized - increase or decrease of strategically important factors.

Experiment Variation of parameters performs several "runs" of a model with variations of one or more parameters. For the constructed model it was decided to conduct two experiments with change of only one parameter. The Fund serves as a factor, which changes under the influence of the chosen parameter.

The first experiment. The advertising costs of original medicines are acting as a parameter, which changes (Figure 9).

The second experiment. The advertising costs of generic medicines are acting as a parameter, which changes (Figure 10).

This type of experiment involves fluctuations of the main factor from the changing parameter. These predictive values help to make strategically important decisions to achieve certain goals about setting the level of advertising costs for each type of preparat, the level of medicines prices, etc.

Pharma : VariationAdvertisingOriginalCosts

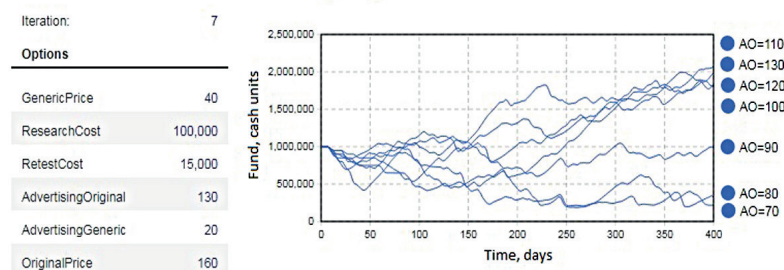


Fig. 9. First experiment of parameters variation.

Source: compiled by authors based on simulation results.

Pharma : VariationAdvertisingGenericCosts

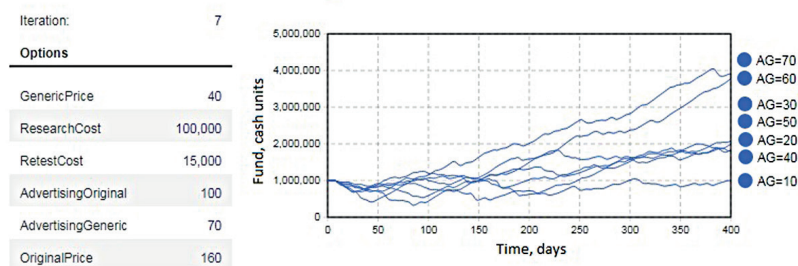


Fig. 10. Second experiment of parameters variation.

Source: compiled by authors based on simulation results.

Conclusions. Summarizing the foregoing, it can be argued that the simulation model-simulator is an effective basis for supporting decision-making in the formation advertising strategies of pharmaceutical companies. With the help of this model, it is possible to track real-time consumer behavior and the life cycle stages of medicines, taking into account the variability and instability of pharmaceutical market. Reproduction by means of simulation the stochastic nature of investigated processes and the dynamics of their changes provides a sufficient level of adequacy the developed model application, increases the reliability of the results.

The presence different types of experiments allows to getting statistical and predictive values in a variety of situations with the ability to configure specific parameters.

The model application is intended to repeatedly work out situational experiments for monitoring the saturation of the commodity market, promotion products in the regions of the country (which is especially interesting for innovative medicines), level of awareness the target audience, assess the impact of advertising efforts and a significant numbers of other parameters presented in the system. In general, it contributes to optimizing the budgets of advertising companies and the technology of their distribution in time,

especially on a strategic perspective.

Due to the openness and modularity of the model-simulator, the conditions for its adaptation to the specifics of the work of concrete industry enterprises are created.

Further research is planned to be conducted in the following areas:

- Take into account changes in the reputation of the company (by introducing into the model dynamic parameters-indicators of market situations) and competitor's actions (reproduction on the model of competitors' generalized advertising strategies with prediction of their impact on the results of product promotion of investigated enterprise) in the process of making strategic decisions.

- Detail forecast of financial results and risks of implementation the specific advertising strategies.

- Focusing on advertising strategies for innovative types of pharmaceutical products.

- Increasing the visibility of dynamic simulation experiments by using the HTML5 animation display mechanism.

- Development and testing of technology for embedding developed models-simulators into existing information flows of pharmaceutical companies, that is, integration with operating in enterprises CRM or ERP systems.

- Strengthening of the instrumental platform for experimentation through the use of cloud technologies, which will integrating the processes of making strategic advertising decisions of pharmaceutical companies at the sectoral level.

The general direction of research is the increase of the experimental base by expanding the range of investigated pharmaceutical industry enterprises in Ukraine.

References:

1. Shabelnyk, T. V. (2016). Modeli marketynho-orientovanoho upravlinnia farmatsevychnym pidpryemstvom [Models of marketing-oriented management of the pharmaceutical enterprise]. Doctor's thesis. Poltava, 383p. [in Ukrainian].
2. Melnik, I. M. & Holysheva, E. O. (2017). Osoblyvosti kompleksu marketynhu v systemi innovatsiinoho rozvytku farmatsevychnykh pidpryemstv [Features of marketing complex in the system of innovative development of pharmaceutical enterprises]. *Marketynh i menedzhment innovatsii – Marketing and Management of Innovations*, 4, 27-40 [in Ukrainian]. <https://doi.org/10.21272/mmi.2017.4-02>
3. Jekunen, A. (2014). Decision-making in product portfolios of pharmaceutical research and development – managing streams of innovation in highly regulated markets. *Drug Design, Development and Therapy*, 8, 2009-2016. <https://doi.org/10.2147/DDDT.S68579>
4. Jones, C. M. (2016). Managing Pharmaceutical Research And Development Portfolios: An Empirical Inquiry Into Managerial Decision Making In The Context Of A Merger. Doctor's thesis. Georgia State University, 150p.
5. Solo, K. & Paich, M. A. (2003). Modern Simulation Approach for Pharmaceutical Portfolio Management. SimNexus LLC. URL: <https://www.anylogic.ru/upload/>

iblock/6d4/6d45074aefb2d023be20115ec9c77301.pdf (Last accessed: 23.02.2019).

6. Kalotra, A. (2014). Marketing strategies of different pharmaceutical companies. *Journal of Drug Delivery & Therapeutics*, 4 (2), 64-71.

7. Zerbini, C., Luceri, B. & Vergura, D. (2017). Leveraging consumer's behaviour to promote generic drugs in Italy. *Health Policy*, 121 (4), 397-406. <https://doi.org/10.1016/j.healthpol.2017.01.008>

8. Pujari, N. M., Sachan, A. K., Kumari, P. & Dubey, P. (2016). Study of Consumer's Pharmaceutical Buying Behavior Towards Prescription and Non-Prescription Drugs. *Journal of Medical and Health Research*, 1 (3), 10-18.

9. Biswas, K. & Ferdousy, U. K. (2016). Influence of Pharmaceutical Marketing on Prescription Behavior of Physicians: A Cross-sectional Study in Bangladesh. *Journal of Accounting & Marketing*, 5 (2), 1-4. <http://dx.doi.org/10.4172/2168-9601.1000160>

10. Costea, D., Carter, F., Chou, S.-Y. & King, A. (2012). Is Advertising Effective or Not? Evidence from the Pharmaceutical Market. *NMIMS Management Review*, 12, 9-28.

11. Lewis, A. & Rao, J. M. (2015). The unfavorable economics of measuring the returns to advertising. *The Quarterly Journal of Economics*, 1941-1973.

12. Aspara, J. & Chakravarti, A. (2015). Investors' reactions to company advertisements: the persuasive effect of product-featuring ads. *European Journal of Marketing*, 49 (5/6), 943-967. <https://doi.org/10.1108/EJM-11-2013-0661>

13. Lutoshkin, I. V. & Iamaltidina, N. R. (2016). Sushchestvovanie resheniia zadachi upravleniia reklamnymi rashodami s raspredelennym zapazdyvaniem [The existence of a solution to the problem of managing advertising expenses with distributed delay]. *Izvestiia Irkutskogo gosudarstvennogo universiteta - News of Irkutsk State University*, 18, 48-59 [in Russian].

14. Huang, J., Leng, M. & Liang, L. (2012). Recent Developments in Dynamic Advertising. *European Journal of Operational Research*, 220 (3), 591-609. <https://doi.org/10.1016/j.ejor.2012.02.031>

15. Ahmed, R. R., Vveinhardt, J., Streimikiene, D. & Awais, M. (2016). Mediating and marketing factors influence the prescription behavior of physicians: An empirical investigation. *Amfiteatru Economic*, 18 (41), 153-167.

16. Avagyan, V., Landsman, V. & Stremersch, S. (2017). Marketing models for the life sciences industry. *International Series in Operations Research and Management Science*, 254, 385-430. https://doi.org/10.1007/978-3-319-56941-3_13

17. Bardey, D., Bommier, A. & Jullien, B. (2010). Retail price regulation and innovation: Reference pricing in the pharmaceutical industry. *Journal of Health Economics*, 29 (2), 303-316. <https://doi.org/10.1016/j.jhealeco.2009.11.015>

18. Leeflang, P. S. H. & Wieringa, J. E. (2010). Modeling the effects of pharmaceutical marketing. *Marketing Letters*, 21 (2), 121-133. <https://doi.org/10.1007/s11002-009-9092-3>

19. Berezovskaia, E. A., & Plotnikov, C. A. (2015). Imitatsyonnoe modelirovanie reklamnoi kampanii internet-predpriiatiia v srede AnyLogic [Simulation of an advertising campaign the Internet-enterprise in the environment of AnyLogic]. *Mezhdunarodnyi nauchnyi zhurnal - International Scientific Journal*, 9, 86-90 [in Russian].

20. Katalevskii, D. Y., Solodov, V. V., & Kravchenko, K. K. (2012). Modelirovanie povedeniia potrebiteli [Modeling of consumer behavior]. *Iskusstvennye obshchestva - Artificial societies*, 7 (1/4), 34-59 [in Russian].

21. Pesikov, E. B. (2003). Otsenka effektivnosti i stepeni riska marketinhovykh stratehii predpriiatiia na osnove imitatsionnoho modelirovaniia [Estimation of efficiency and degree of marketing strategies risk of the enterprise on the simulation modeling basis]. *Praktika imitatsionnoho modelirovaniia (IMMOD-2003) – The Practice of Simulation Modeling (IMMOD-2003)*, 2: 110-115 [in Russian].

22. Winter Simulation Conference. URL: <http://meetings2.informs.org/wordpress/wsc2018/> (Last accessed 11.02.2019).

23. The 36th International Conference of the System Dynamics Society. URL: <https://www.systemdynamics.org/past-conference-2018> (Last accessed 13.02.2019).

24. Arbeitsgemeinschaft Simulation. URL: <https://www.asim-gi.org/asim/> (Last accessed 12.02.2019).

25. Vosmaia Vserossiiskaia nauchno-prakticheskaiia konferentsiia “Imitatsionnoe modelirovanie. Teoriia i praktika” IMMOD-2017 [Eighth All-Russian Scientific and Practical Conference "Simulation modeling. Theory and practice" IMMOD-2017]. URL: <http://simulation.su/static/ru-immmod-2017.html> (Last accessed 11.02.2019) [in Russian].

26. Proceedings from «The Federation of European Simulation Societies». URL: <https://www.eurosim.info/eurosim/> (Last accessed 15.02.2019).

27. Official Site of AnyLogic Company URL: <http://www.anylogic.com/> (Last accessed 11.12.2018).

28. Levytska O. Likarski zasoby iak obekty farmatsevtichnoho rynku (chastyna 2) [Medicinal products as objects of the pharmaceutical market (part 2)]. *Farmatsevt Prakyk – Pharmacist Practitioner*, 2016, 2. URL: <http://fp.com.ua/articles/likarski-zasobi-yak-ob-yekti-farmatsevtichnogo-rinku-chastina-2/> (Last accessed 20.01.2019) [in Ukrainian].

29. Derzhavna sluzhba statystyky Ukrainy [State Statistics Service of Ukraine]. URL: <http://www.ukrstat.gov.ua/> (Last accessed 21.12.2018) [in Ukrainian].

30. Official Site of OJSC “Farmak”. URL: <http://www.farmak.ua/> (Last accessed 05.12.2018) [in Ukrainian].

WAYS TO IMPROVE MANAGEMENT OF UKRAINE'S EXTERNAL PUBLIC DEBT

Anastasiia Sofienko,

Ph.D. student,

Taras Shevchenko National University of Kyiv

Annotation. *This research paper deals with the development of ways to improve management of Ukrainian external public debt in modern conditions of both national economy development and integration into the world and European economic space based on the implementation of foreign experience on fulfillment of this type of management activities.*

Key words: *total public debt, external public debt; ways to improve management; management of external public debt.*

Problem statement. The post-recession recovery of the Ukrainian economic system and the intensification of the transformational processes in the national economy in the context of integration into the global and European economic spaces require the attraction and use of significant financial resources by all economic actors, where the state and local authorities play a key role. We note the limited opportunities for attracting financial resources by the national economic entities, which dramatically decreased due to their significant deficit in the national financial market, being a significant problem, first of all, for state authorities and local self-government institutions. The above is the reason for the intensification of state borrowing, especially in the external financial markets and from international financial organizations (donors), and leads to an increase in both the public debt of Ukraine in general and the deformation of its structure in favour of external government loans. Under these conditions, the problem of improving the management of Ukraine's external public debt through the search, development and implementation of the appropriate set of optimization measures (directions) is urgent. In this context, we agree with the statement of the team of scholars headed by O.O. Prutska, that the problems of public debt management (external public debt) may include the search for optimal ratios between: government loans and economic growth of the national economy; loans of government institutions in the external and internal financial markets; investing and consuming credit resources borrowed by the state; ensuring the solvency of the state and the formation of an optimal structure of borrowing, including the instruments for their implementation [1].

We emphasize that most countries of the world, both developed and developing, face the problems of public debt management in general and external public debt in particular, which is reflected in the availability of developed schemes, sets of measures and methods of managing public debt and its components. Therefore, we consider it appropriate to use foreign experience provided its adaptation to the conditions of the development of the country's socio-economic system in order to solve the problems of management of public debt and external public debt of Ukraine.

Analysis of recent research and publications. The problems of optimizing the management of public debt and its components, including external public debt, are one of the most relevant aspects of scientific research both in Ukraine and abroad. In this case, it is possible to identify a number of key areas of scientific research, which are important within the scope of author's research, including:

- Revealing the problems of managing public debt and external public debt in the context of different countries of the world (B. Eichengreen [2]; M. Melecky [3]; S. Karazijienė [4] and other scholars);

- Studying and finding similar problems of managing public debt and external public debt in developing countries (J. Bua, J. Pradelly & A. Presbitero [5], E. Buffie & M. Atolia [6] and others scholars);

- Coverage of the problems of managing public debt and external public debt in Ukraine (E.V. Kraichak [7], I.V. Furman [8], O.L. Shelest [9], and others);

- Study of the possibility of implementing foreign experience in the context of improving the management of Ukraine's public debt and the country's external debt in the modern conditions of the development of the national economy (L.A. Nekrasenko, L.V. Brazhnyk and O.O. Doroshenko [10]; O.P. Makar [11], V.V. Koilo [12] and other scholars).

In spite of significant scientific achievements in the context of improving management of public debt and external public debt, including in Ukraine, we note the urgent need to develop a modern set of optimization measures (directions) taking into account the trends of the development of the national economic system, especially as regards the management of the country's external public debt.

Research objective. Develop a set of directions and give them a description in the context of improving the management of Ukraine's external debt in the modern conditions of the development of the national economy and its integration into the world and European economic spaces, as well as taking into account the implementation of foreign experience in this type of administrative activity at the level of state and local government institutions.

Presenting main material. Government loans are one of the tools for managing national and regional economies, which is also characteristic of Ukraine. Against the backdrop of two successive economic crises and a post-recession shortfall of funds in domestic government institutions, as well as significant problems with the formation of the NBU's gold and foreign exchange reserves, we note a significant increase in the country's debt and its components, such as internally held and external public debt (Figure 1).

We consider it appropriate to conduct a study of Ukraine's public debt and its components in US dollars in order to minimize the impact of inflation and devaluation of the national currency. We take 2007-2018 as the time horizon of the study, when there were two economic crises in the country and post-recession recovery of the national economy.

According to statistics, the total public debt of the country increased by \$ 64,289 million or 458.09% during the study period. We note the dominating total public debt growth trend during the period of analysis, with the exception of 2014-2015, when the amount of internally held public debt denominated in local currency significantly reduced

due to high rates of devaluation. As for the external public debt of Ukraine, we note its growth for 2007-2018 by \$ 39,934 million or 379.28%. At the same time, this component of the total public debt showed a growth trend throughout the study period, except for 2013, when Ukraine had problems in relations with international financial organizations and donor countries. The internally held public debt has increased by \$ 24,355 million or 694.86% for the years of analysis. As noted earlier, this component of the total public debt grew until 2013, after the devaluation led to its significant reduction in US dollar against the backdrop of growing amounts of loans in local currency.

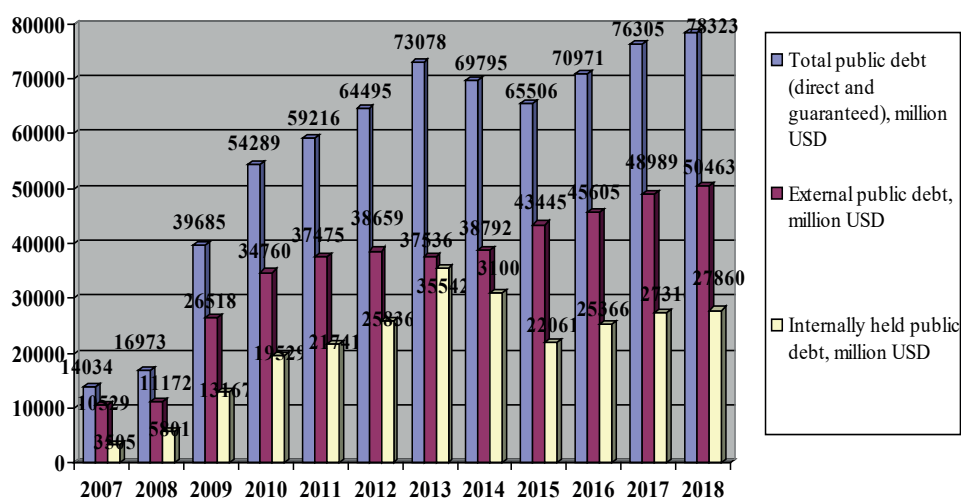


Fig. 1. Dynamics of total public debt, external and internally held public debt of Ukraine for 2007-2018, mln. USD

* - Composed by the author based on: [13].

An important aspect of the study is the assessment of changes in the structure of Ukraine's total public debt for 2007-2018 (Figure 2).

Based on the data presented (see Figure 1 and Figure 2), we can note the following main trends in the management of the total public debt of Ukraine and its components:

1. The growth of total public debt, external and internally held public debt during the study period, especially during the period of the first economic crisis and after the crisis period.
2. Inability of the Ukrainian state authorities to reduce the amount of loans in periods of post-recession recovery of the national economy.
3. The predominance of external public debt over internally held, both in size and in proportion to the total public debt throughout the study period, which requires special attention to the management of this component of the country's total public debt.
4. Shift of emphasis towards external loans, especially during the second economic crisis and during the post-recession recovery.

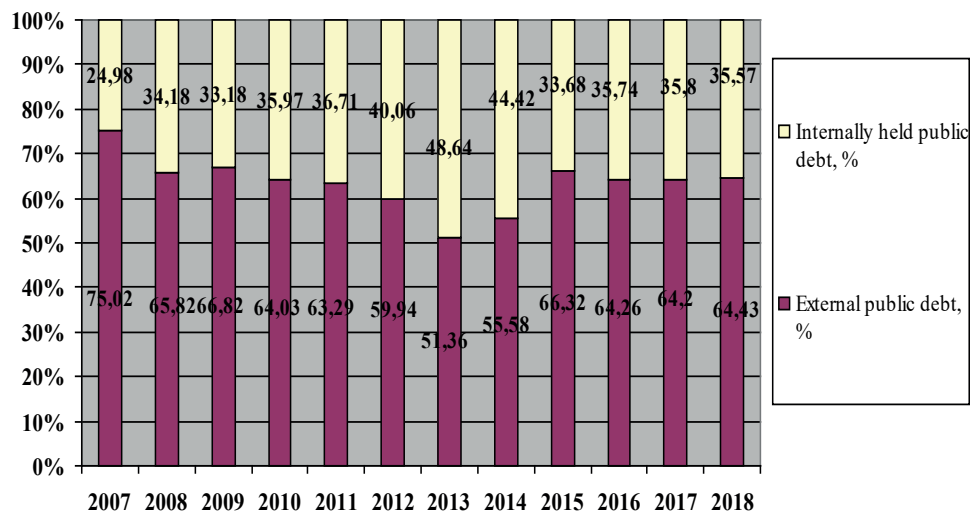


Fig. 2. Dynamics of changes in the structure of total public debt for 2007-2018,%
* - Composed by the author based on: [13].

The above situation led to a critical increase in the share of the total public debt and its components in the country's GDP during the study period (Figure 3).

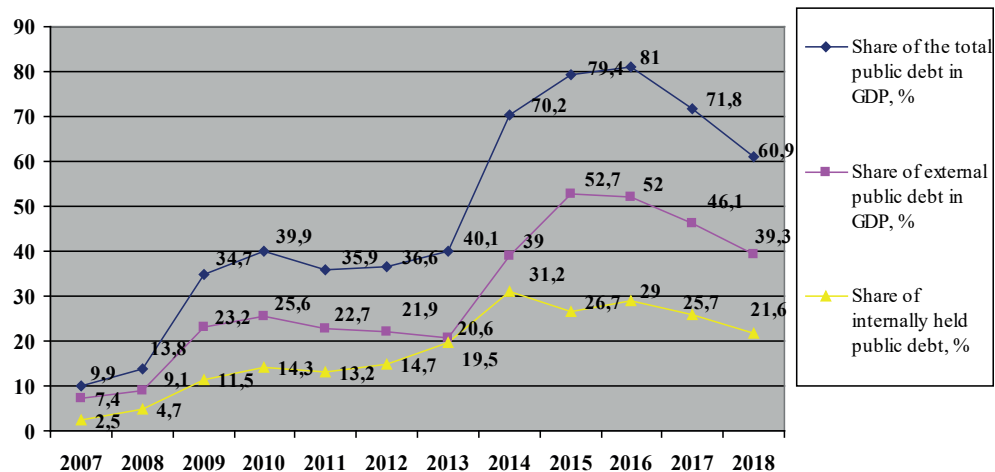


Fig. 3. Dynamics of the share of total public debt, external and internally held public debt in GDP of Ukraine for 2007-2018, %
*— Composed by the author based on: [13; 14].

Evaluation of the dynamics of the share of total public debt, external and internally held public debt in GDP of Ukraine in 2007-2018 makes it possible to clearly distinguish the growth trend of these shares in the country's gross domestic product of the country

during the periods of economic crises (2008-2010, 2014-2016) and to emphasize that external public debt was the driver of such growth every time, and also to note that the provisions of the Budget Code of the country [15] and the Maastricht Treaty [16] on the share of public debt in the country's GDP (no more than 60%) were violated in 2014-2018.

Thus, we emphasize that it is external public debt that is a key component of the country's total public debt in the current conditions. At the same time, problems and disadvantages in the management of external public debt negatively affect the management of the total public debt and the economy of the country, acting as a significant and stimulating factor in its post-recession recovery, which, in its turn, makes improving management of this component of total public debt the modern key task for the state authorities of Ukraine.

We emphasize that in order to improve the management of external public debt, it is necessary to understand its advantages and disadvantages for the national socio-economic system. The advantages of external public debt for Ukraine include: the possibility of attracting significant amounts of loans; the cost of attracting loans; availability of preferential loan servicing conditions; the inflow of foreign currency into the national economy. Disadvantages of external loans of national authorities are: a significant dependence on the exchange rate of the national currency to foreign currencies (high currency risk); high load on the country's foreign exchange market in servicing the debt; additional conditions in the provision of credit funds, especially by international financial institutions; significant bureaucratic procedures in obtaining credit funds; fuzzy timing of attracting loans, especially from international financial institutions (the need for complex negotiations). The above points to the complexity of managing external public debt and the high risks for the national economy in case of mistakes in this management. It is rather interesting in this context to study the experience of other countries in servicing of total public debt, as well as external and internally held public debt, and compare it with Ukraine. So, according to the data of the Ministry of Finance of Ukraine, as of 2018:

- Average share of the total public debt in GDP: developed countries - 59.5%; developing countries - 49%, Central and Eastern European countries - 61%, the countries similar in terms of the credit rating - 92.7%, the countries which are leaders of the region (Poland, Czech Republic, etc.) - 40%, Ukraine - 60.9% (see Figure 3);

- The share of external public debt in the total public debt was: in developed countries - 38.2%; developing countries - 50.6%, Central and Eastern European countries - 51.5%, the countries similar in terms of the credit rating - 55.3%, the countries which are leaders of the region (Poland, Czech Republic, etc.) - 34.2%, Ukraine - 64.4% (see Figure 2);

- The average term for repayment of total public debt was: in developed countries - 9.6 years; developing countries - 8.7 years; Central and Eastern European countries - 8.4 years, the countries similar in terms of the credit rating - 7.9 years, the countries which are leaders of the region (Poland, Czech Republic, etc.) - 9.1 years, Ukraine - 8.1 years;

- The average term for repayment of external public debt was: in developed countries - 10.3 years; developing countries - 7.2 years; Central and Eastern European countries - 7.7 years, the countries similar in terms of the credit rating 7.1 years, the countries which are leaders of the region (Poland, Czech Republic, etc.) - 9.2 years, in Ukraine - 6.2 years;

- The average term for repayment of internally held public debt was: in developed countries - 9.1 years; developing countries - 9.2 years; Central and Eastern European countries - 8.8 years, the countries similar in terms of the credit rating 8.1 years, the countries which are leaders of the region (Poland, Czech Republic, etc.) - 8.9 years, Ukraine - 10.3 years [17].

According to the above statistical information, Ukraine has significant problems with the management of the total public debt, where the main negative aspect is the management of external public debt. At the same time, we note that there are countries that successfully manage total public debt and external public debt, which urges the study of their experience in order to implement it in Ukraine (Table 1).

Table 1

Components of the management of external public debt of the countries

Country	Components of external public debt management
UK	Agency management model is used; emphasis on long-term loans; emphasis on minimizing debt servicing costs; constant strategic debt analysis with the help of the developed model; use of a wide range of debt management methods; tight control over borrowing and using credit funds.
Denmark	Banking management model is used; emphasis on long-term loans; emphasis on minimizing risk and debt servicing costs; use of a wide range of debt management methods; significant diversification of loan instruments; tight control over borrowing and using credit funds.
Germany	Agency management model is used; emphasis on long-term loans; emphasis on minimizing debt servicing costs while optimizing its structure; active participation of regional (local) authorities; use of a wide range of methods and debt management instruments; tight control over borrowing and using credit funds.
Poland, Czech Republic	Government model is used; the emphasis on mid-term and long-term loans; emphasis on increasing the efficiency of attraction of credit funds and their investment direction; active participation of local authorities; use of active management tools; countering the effect of “substituting investment”; tight control over borrowing and using credit funds.

*– Composed by the author based on: [10; 11; 12; 18].

Taking into account Table 1, it is possible to propose the following set of directions for improving the management of Ukraine’s external public debt on the basis of the implementation of foreign experience:

1. Transition from government to agency model of public debt management, which will increase: quality of management, legislative activity, quality of control over borrowing and use of credit funds, efficiency of attraction of credit funds. These advantages level the need to increase the bureaucracy apparatus and funding of the agency.

2. Implementation of strategic management aspects, where instead of a separate public debt management strategy a set of management strategies for the total public debt and its components will be developed based on the information obtained through the use

of the strategic analysis model.

3. Active involvement of local authorities in the management of the total public debt and external public debt within the processes of decentralization of power which is being implemented in Ukraine.

4. Gradual replacement of short-term and medium-term external government loans by long-term and internally held government loans in order to optimize the structure of attraction of credit funds by Ukrainian state authorities in the external financial markets and from international financial organizations.

5. Prevention and countering the effect of “substitution of investments”, as well as shifting emphasis in attracting external state loans towards their investment component, with the calculation of the effect of their investment in particular government projects. That is, the search for optimal proportions of the distribution of external government loans between the coverage of the budget deficit (current expenditures) and investments.

6. Change in the purpose of managing external public debt to the following: “Increasing the speed of restoration of national economic and social systems on the basis of external state loan while achieving their cost minimization and optimization of risk management”.

7. Increasing the number and variability of debt management methods and tools with an emphasis on active management tools, where the key ones are restructuring, as well as management methods which are innovative for Ukraine with the involvement of local authorities in governance, including: “external debt – shares” (replacement of debt instruments with shares of state- and municipally-owned enterprises); “external debt – export” (debt cancellation within the increase of export deliveries of the corresponding products, including individual regions of the country); “external debt – environment” (debt cancellation within the framework of implementation of environmental projects, including in separate regions of the country).

It should be noted that the use of the proposed set of directions for improving the management of external public debt will have a positive impact on both the management of the total public debt and the development of its economic system.

Conclusions. The conducted research has revealed the key importance of external state loans for the total public debt and economic development in Ukraine. At the same time, the problems with the management of loans of Ukrainian state authorities in the external financial markets and from international financial organizations that have a negative impact on the management of the total public debt and post-recession recovery of the country’s economic system are proved. Comparison of management of external state loans in Ukraine and other countries and a successful experience of such management in a number of states is presented. A set of directions to improve management of external public debt of Ukraine on the basis of implementation of foreign experience with the consideration of modern conditions of the development of the national economy and its integration into the world and European economic spaces is proposed.

Further research should focus on the development and implementation of methods (measures) to increase the level of Ukraine’s debt security on the way to its financial stabilization.

References:

1. Prutska, O.O. et al. (2010). The state debt management. Kyiv: The center of educational literature. [in Ukrainian].
2. Eichengreen, B. et al. (2019). Public Debt Through the Ages. IMF Working Paper. Institute for Capacity Development.
3. Melecky, M. (2007). A Cross-Country Analysis of Public Debt Management Strategies. World Bank Policy Research Working Paper No. 4287.
4. Karazijienė, Ž. (2015). Critical analysis of public debt and tendencies of its management. Public Policy and Administration, 2, 194-208.
5. Bua, G. & Pradelli, J. & F. Presbitero, A. (2014). Domestic public debt in Low-Income Countries: Trends and structure. Review of Development Finance, 4, 1-19.
6. F. Buffie, E. & Atolia, M. (2014). Fiscal Adjustment and Inflation Targeting in Less Developed Countries. Journal of Money Credit and Banking, 8, 12-25.
7. Kraichak, E.V. (2018). The management system of Ukrainian external debt. Economics and the state, 5, 38-42. [in Ukrainian].
8. Furman, I.V. (2013). The state of external debt of Ukraine for international creditors: assessment and ways to regulate. Financial space, 2, 66-73. [in Ukrainian].
9. Shelest, O.L. (2017). Ukrainian state debt: mechanisms of management and service. Economics and society. Mukachiv state university, 8, 710-715. [in Ukrainian].
10. [10] Nekrqasenko, L.A. Brazhnyk, L.V. and Doroshenko, O.O. (2017). The state debt management: foreign experience and Ukrainian realia. Economic space, 121, 15-30. [in Ukrainian].
11. Makar, O.P. (2012). World experience of state debt management and perspectives of its implementation in Ukraine. Economics and the state, 10, 54-57. [in Ukrainian].
12. Koilo, V.V. (2017). Foreign experience in external state debt management: perspectives of its implementation in Ukraine. Problems of the system approach in economics, 5(61), 199-204. [in Ukrainian].
13. MinFin (2019). The state debt of Ukraine (retrieved from [http:// index.minfin.com.ua/ua/finance/debtgov](http://index.minfin.com.ua/ua/finance/debtgov)). [in Ukrainian].
14. State Statistics Service of Ukraine (2019). Gross domestic product. (retrieved from <http://www.ukrstat.gov.ua>). [in Ukrainian].
15. The Verkhovna Rada of Ukraine (2010). The Budget Codex. (retrieved from [http:// zakon.rada.gov.ua/laws/show/2456-17](http://zakon.rada.gov.ua/laws/show/2456-17)). [in Ukrainian].
16. Council of the European Communities (1992). The Maastricht Treaty. (retrieved from https://europa.eu/european-union/sites/europaeu/files/docs/body/treaty_on_european_union_en.pdf).
17. The Ministry of Finance of Ukraine (2018). Medium-term strategy of state debt management for 2018-2019. (retrieved from [http:// www.minfin.gov.ua](http://www.minfin.gov.ua)). [in Ukrainian].
18. Novosolova, O.S. (2013). The world practice of institutional provision of state debt management. The Journal of economic reforms, 4, 54-60. [in Ukrainian].

FINANCIAL INSTITUTION COST ANALYSIS

Brigitta Szoke,

*Ph.D. student, Faculty of Economics and Social Sciences,
Institute of Business Studies, Szent Istvan University,*

Ildiko Sidlovicsne Toth,

*Ph.D. student, Faculty of Economics and Social Sciences,
Institute of Business Studies, Szent Istvan University,*

Judit Barczi,

*Ph.D. Associate Professor, Faculty of Economics and Social Sciences,
Institute of Business Studies, Szent István University, Hungary*

Annotation. *Our study deals with cost analyses of financial institutions, as in the case of a bank, costs can't be managed and controlled using traditional cost economisation methods. Using the operations of a given bank, we'll illustrate the process of cost allocation, furthermore, we'll show what costing methods can be used in order to make operations more efficient. Furthermore, it also identifies and analyses an organisation's internal activities, by which it aids decision making. The goal of our study is to highlight how novel costing methods can take part in the operations of a bank, and how they can help strategy making and development.*

Key words: *cost analysis, financial institutions, accounting, bank strategy, cost centres.*

Introduction. Our study deals with cost analyses of financial institutions, as in the case of a bank, costs can't be managed and controlled using traditional cost economisation methods. "The main goal of costing is to grasp the numerical expression of the production process conducted within an economic organisation, hence, it follows the production process from the first instance of costs until the point of selling." (Francsovcics A., 1995). Therefore, the bank has to be clear on the costs of its products, and offered services. Furthermore, it also has to know how much these impact total costs and profits. Lentner et al., say that the basis of reaching optimal income is to abide by the basic principles of bank regulation control, which affects the realisation possibilities of the "victorious three" (liquidity, solvency and income generation potential) on an operative level (Lentner et al., 2017, Lentner, 2016). The main reason we have to differentiate between unique and generic costs during bank calculation is due to accountability. Generic costs are the ones that are categorised by using some kind of chosen basis, due to how there's no option of direct accountability.

It's much easier to define fixed and variable costs. The basis for differentiation is how different costs react to changes in different factors influencing costs (Kalmár et al., 2014). In the case of financial institutions, progressive, linear and digressive costs are represented minimally. However, fixed costs, and their influencing factors are very decisive for bank calculation. They use the changes in numbers as the influencing factor of variable costs, whereas fixed costs are only dependent on the time factor (Vogler I., 1988). Our analysed bank divides expenses to units, based on the division in control of

them, in order to make cost control more efficient. In order to make realisation more efficient, a secondary cost system, based on cost locations has to be made. This system helps actualise the division of incoming invoices based on the organisational division requested by the Controlling Division, using the indexing of invoices by cost location codes. Their division is handled later, according to unique statistics. The determined order is indispensable for the division of centres. Allocation happens using the pyramid logic, which can be seen on Figure 1.

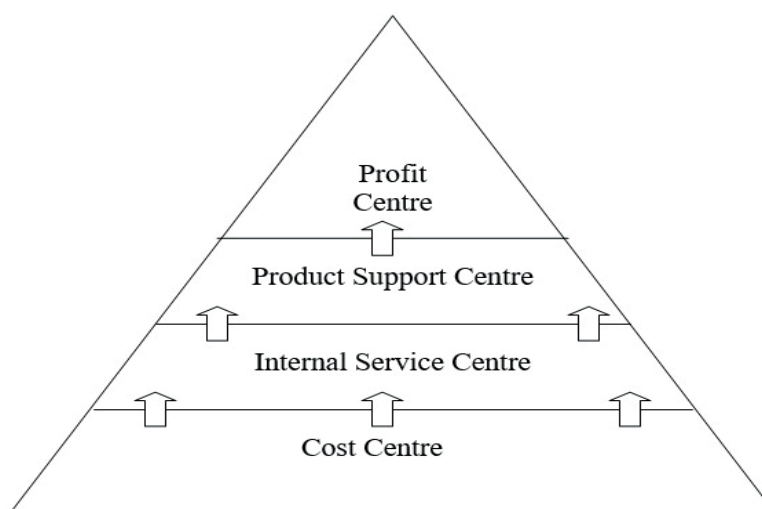


Fig. 1. Order of cost allocation
Source: Self-made

Based on the figure, we can determine the following: first, the costs of the Cost Centres are allocated to the Internal Service Centres, following this process, they reach the Profit Centre. It's an important point of allocation, as the divided centres are locked down, meaning from there, and in there, no further costs can be guided. The main point of cost allocation's order is to make all costs show where related income is generated, which makes calculating the operational results of the Profit Centres simple. The first task in the cost allocation operation is to actualise the division from the Technical Centres to the various centres. In this accounting system, we can see the duality of general account numbers: on the one hand, the general account number shows the income accounts used during the accounting process, and on the other hand, the accounts that don't exist in the general ledger, made for the purpose of cost division. Our bank uses general statistics to divide the total and indirect costs. As accounting only handles accounts based on cost locations, we also have to further allocate in order to determine the direct costs of organisation divisions.

It's a notable fact that by having an SAS databank, further opportunities can be gained, even to create more precise reports. It's operation is important, because we can't obtain appropriately deep, or the proper type of data from the base systems in order to

realise a sorting based on organisation divisions.

The following allocations already use SAS reports:

- Further invoicing cash-on-hand transaction costs of clients of another bank to the bank handling the account.
- Divisionary sorting of commission income from cash-on-hand currency transactions.

From the technical perspective, within the software, we need a so-called Pass and Rule number for allocation. Rule determines what share of a balance sheet value (cost) has to be allocated, and where. For each balance sheet value, there's a Rule. Pass means the logical group of allocation instances, which is made up of the Rules.

The Controlling Division bases on the interviews conducted with centre leaders, in order to make up the ratio values needed for allocation. The leaders of the centres may determine these numbers and statistics based on their own opinions. This process requires a lot of time, but it also allows an opportunity for communicating target goals to reach, and tasks to complete between the Controlling Division and the Centres' leaders in person. Feedback is an indispensable part of the process.

Cost division methods. The process of leading can be separated into three parts: planning, realisation and checking phases. within each of these phases, many decisions have to be made, which first need us to collect information which may be of help, analyse them, and in the end, utilise them. Cost division, and different performance indicators help these processes (Zéman, 2017).

However, some conditions have to be demanded from the cost- and performance calculation system. The most important criteria is being future-oriented. The data and information offered by the system have to serve the preparation of decision processes, which is of utmost importance. They also have to be actual, and trustworthy. Furthermore, we can't neglect the necessity of being economically sound. The bottom line of differentiating information is where the advantages of being precise is lower than the costs we need to invest in order to gain more precise information. The more classic systems of costing can be summarised as follows (Chart 1).

If we take a look at the chart above, and focus on the timeframe of costing methods, furthermore, mix it with the fact that a good system has to focus on the future, we can directly shrink the options of to-point methods from the perspective of controlling to planned costing. The reason is that both factual, both recurring (normal) cost groups refer to the past. And when taking a look at the other axis of the chart, we can state that during bank calculation, we get the most amount of usable information and data using partial cost analysis.

All direct and general, and standard and variable costs are divided into the different bank areas, customers and services - technically, all costs are divided by their related perspective referring to the analysis' topic during an overall cost analysis. Total costing organises all costs without any remaining, and in some cases, even by violating the logic of following their source, which has an impact on objectivity. However, partial costing does not try to cover dividing all possible costs. In this case, the so-called relevant costs are divided, as in order to reach the target goal, these are which have to be sorted by all

means. Altogether, we can say that when costing tasks are used for preparing business policy decisions, partial cost analyses show a more realistic picture. When dividing costs, we know two relevant logics which can be followed:

- Logic of source of costs
- Logic of capability for shouldering costs

Chart 1

Classic systems of costing

	Total costing	Partial costing
Factual costing	Calculation of factual cost, based on total costs Post-calculation	Calculation of factual cost, based on partial costs Direct costing Coverage calculation Standard cost - coverage calculation
Normal costing	Calculation of factual cost, based on normal costs Normal costing	Partial costing based on normal costs
Planned costing	Calculation of total cost, based on planned costs Planned costing	Partial costing based on planned costs Marginal costing

*Source: Horváth & Partner: Controlling –
Út egy hatékony controlling-rendszerhez, 2000 (p.63.)*

The logic of capability for shouldering costs means that the ratio of division refers to the capability of shouldering costs based on the current state of the market. As long as this capability doesn't run out, bank costs can be assigned to bank areas. Meaning, for this logic, we may see that banks assign more costs to higher profit rate products than what causality would suggest.

Marginal costing, coverage costing. In this case, we'll analyse planned marginal costing, and its relevant attributes in detail. Marginal costing is an evolved form of accounting partial costs. This is linked to coverage costing. This method simplifies things by considering the self-covered costs of a transaction (limited) with its marginal costs. Also, it doesn't divide standard costs between different products or services when applying its technique. In practice, performance accounting's system also changes, as we calculate the total amount of standard costs balancing the gross income. Marginal costs are the subtraction of gross income and standard cost's sum. We derive direct costs, which in result leaves us the clean profits of the financial institution.

Marginal income= Gross income – Standard costs

Clean income= Marginal income – Direct costs

Taking a look at the previous two equations, we can determine that in this system, marginal income has to offer coverage for the direct (marginal) costs of the service. Marginal income has to at least reach the value of the sum of direct costs. This marginal

value is called either profit break-even point, or simply break even. The financial institution increases its clean profits in case their income reaches above this number. This concludes that in this case, offering a service is economically sound. The correlation can be seen on Figure 2.

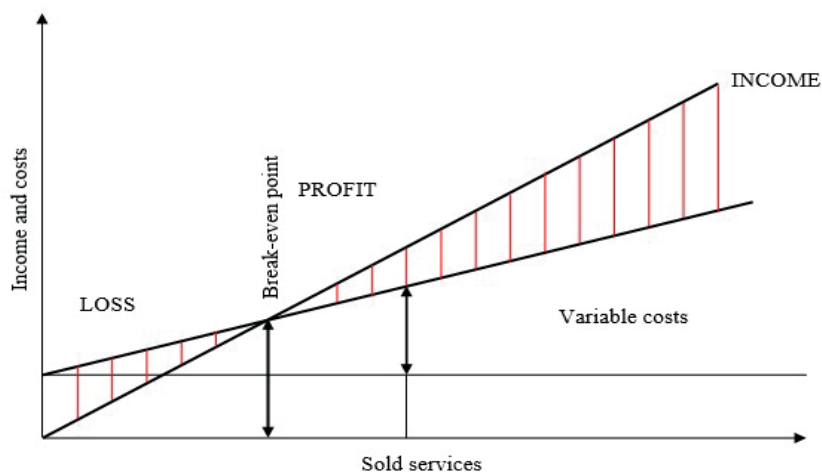


Fig. 2. Correlation between break-even point and profits
Source: self-made

In case we want to analyse if a decision is economically sound, we may want to use the principle of cost coverage. In case the income of the service covers the direct costs, introducing the service isn't economically unsound. When the commerce increases, the financial institution's profits are increasing with each unit of marginal income.

Notable problems may surface for a bank when introducing a new area of business, or construct, or perhaps sustaining, or developing these. This is in relation to the level of data and results gained from cost analyses are being used when preparing decision. In other words: to what extent are operational-oriented criteria taken into consideration?

At times, we may observe that economic analyses suggest that the introduction of a construct is ill-advised. Reason being, they consider these constructs to need too much costs, but for market-oriented reasons, even this construct can be introduced. Such a reason is f. e. possible popularity boom, or quantitative improvement of product palette. The basis of the decision is that on the one hand, the boom of the division can lower the volume of standard costs later, and on the other hand, we can assume these costs to lower even more. We must have a well-based costing system in order to make such decisions. Overall, we can state that business policy has a strong connection with the question of leadership realises, or disregards the market-oriented possibilities of bank costing, and the necessity of their usage.

Process costing. One of the most notable options of realising process costing is the so-called ABC (Activity Based Costing). The state today, and the demands made it

necessary to make an efficient cost accounting system recently. This is how the process costing system was created. However, I have to stress that this type of analysis has to be used in tandem with total and partial costing. When obtaining information that has an influence on making strategic decisions, it's mandatory to conduct process costing. During its analysis, we have to conduct many calculations, f. e. traditional cost currency and cost location calculations, but during introduction, we have to analyse, restructure and shape the analysis of cost location and defrayer calculations. When introducing process costing, we may realise the following conditions (Horváth & Partner, 2008):

- „It has to make generic costs transparent, thereby controllable;
- It has to make processes encompassing departments (main processes), and factors influencing these identifiable, and express them in costs;
- It has to analyse the partial processes happening at cost locations, departments, and divisions, and insert them into main processes;
- Inefficient processes have to be found, areas where we can spare costs have to be identified, necessary interventions have to be conducted, calculation has to be improved, and strategic decisions have to be explained.” (Horváth & Partner, 2008)

Activity Based Costing. Activity-based Costing (ABC method) is a tool which may cause fundamental differences and changes along multiple dimensions of the organisation. Such as in cost accounting processes, operational processes, service activities, and even in the basic structure of the organisation. Furthermore, within the organisation, it identifies activities and analyses them, thereby contributing to the assistance given to decision-making. The goal of the method is to show the areas where costs surface, and the changes in them, link operational and sustaining costs into the value chain. Therefore, by identifying the main elements of expenses, it contributes to efficient cost control. „The goals of the ABC system (among others) are as follows:

- to unearth why costs surfaced, instead of to realise how much cost surfaced;
- using the reasons in question to create a basis for double-checking costs;
- creating a basis for making it possible to link costs to activities, and to guide focus towards value-centric leading” (Mabberley J, 1999)

The various analyses of the ABC method consist of the behaviour of costs, in more detail, making the cause of costs surfacing identifiable by linking actual activities to costs that surface. Management needs the most optimal decision to be made, as such, the analysis makes all the information within the costs be within our means to understand. Furthermore, it shows the reasons costs surface, and the connection these factors have with either the institution's, or a division or department of said institution's profitability. It's obvious that those who use the information, have to understand how said information was gained from different data. In this way, they make the organisation's information usage easier and more precise. The interpretation of activity calculation helps us understand activity-based information. These connections can be seen on Figure 3.

One of the most easily applicable methods of optimising human resources is activity analysis, as in the financial institutions related to the service sector, most of the resources come from the abilities and experiences of employees. In order to calculate activity

costs, we first have to obtain the appropriate data, and also have to gain the information related to different cost factors and activity meters. These factors can form a database, which when constructed, results in an information system which makes it possible to check operations within the enterprise vastly differently than the traditional method.

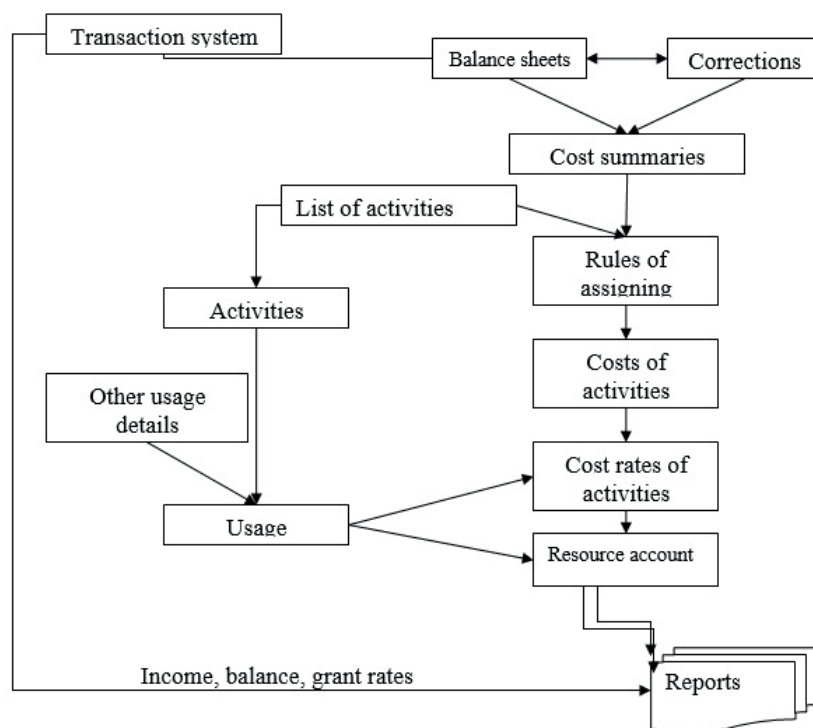


Fig.3. Activity-based costing
Source: self-made, using bank documents

a.) Making the activity list;

The basis of an activity-based information system is activities. A given activity can be defined as a task group which results in a product when executed, which product will be linked to one defrayer, in other words, a work phase of one organisational unit. The activities' specifics are as follows:

- the same activity comes up for multiple functional areas;
- all tasks can be categorised in the organisation, by activities;
- activities usually have a measurable output;
- activities utilise human and other resources;

The definition of the activity is determined by the goal of data usage. Therefore, understanding activities has to happen on a level, and in a detail sufficient for linking the activity to the location of the decision in any given state. We have to dedicate extra attention to conduct activities in sufficient detail. The importance of this can be seen in

the fact that by doing just this during the improvement of processes, the improvement itself will become identifiable, however, this will be different in the various organisational departments. Obviously, there are many more activities which don't change in an administrative unit, when compared to f. e. a department adapting to clients in a complex manner. It's important to note that the activities' definitions have to be precise.

b.) Assigning costs to activities;

If we take a look at the balance sheets of responsibility centres, we can say that we can always link costs to activities. Financial balance sheets are the source of financial reports regulated by law, and they record data in at least a detail comparable to an invoice level as a legal base unit. For stability, we can't disregard the difference between the information gained from the two main time-wise (monthly, annual) data. Short-term instabilities have a sensitive impact on monthly data. However, constant annual data can hide the dynamic changes happening in the business environment. Corrections are needed from the perspective of the data related to activities, as the information found in the balance sheet don't always follow the logic of being process-based. We have to study if they're properly assigned to activities from our perspective. If they're not, the given activity's related costs and data can be collected from multiple sources, but we have to do all this in a way that these components - in case decision-makers demand it this way - can be separated once again.

Usually, the costs related to the various activities are handled collectively. There's a main criterion of creating a homogeneous group, in other words, only similar accounts are placed in the same cost category. After this, the activities have to apply these categories the same way. The goals of cost contraction is to spare money and time during collecting, processing and understanding information, and to make analyses simpler and faster.

The rules of assigning, which help us with starting from accounts, using cost-assignment processes, and reach activities in the end. Normally, costs are assigned to activities by the time of activity, or the activity's physical output. Assigning by physical output can only be done in case of a homogeneous output. "The cost of an activity is the total cost within the given responsibility centres, which relate to the activity in question, calculated based on the assigning rules of cost contraction. " (R.S. Kaplan, et al, 2001)

c.) Linking activities to defrayers;

Costs have to be linked to defrayers, which can be done by determining the costs and cost rates of the activities, by using their measurement scales within the organisational units. The activity measurement scale is used for finding unit cost. With this, we can determine how much the activity in question added to costs in the case of defrayers. One condition is to have a high correlation between the activity scale and the activity's resource usage. Once again, being economically sound is a core criterion. There has to be a balance between information usage, and the costs spent to obtain and use them.

Activity consumption always refers to one given period, and it's the amount of activity expressed on the activity scale in the various responsibility centres. The cost rates of activities are the quotient of costs spent for activities and the amount / usage of the activity expressed on the appropriate unit of measurement. Interpreting resource

accounts can be done by comparing them to material cost accounts. Resource accounts are the list of activities with the extra information of including which defrayers used 'what amount' within.

Conclusions. Activity-based costing can be used for many various goals. Figure 4 was made in order to introduce the applicability of the analysis method to the many different areas. Activity-based costing stems from the continuous activity economisation, and includes activity-based budgeting as well. The transparency of the cost / resource economisation is helped by it analysing the causes of initial expenses, and checking the usage and capacity utilisation. It offers information aiding the decision-makers of management about the expense usage within the organisation, however, it doesn't control business activity.

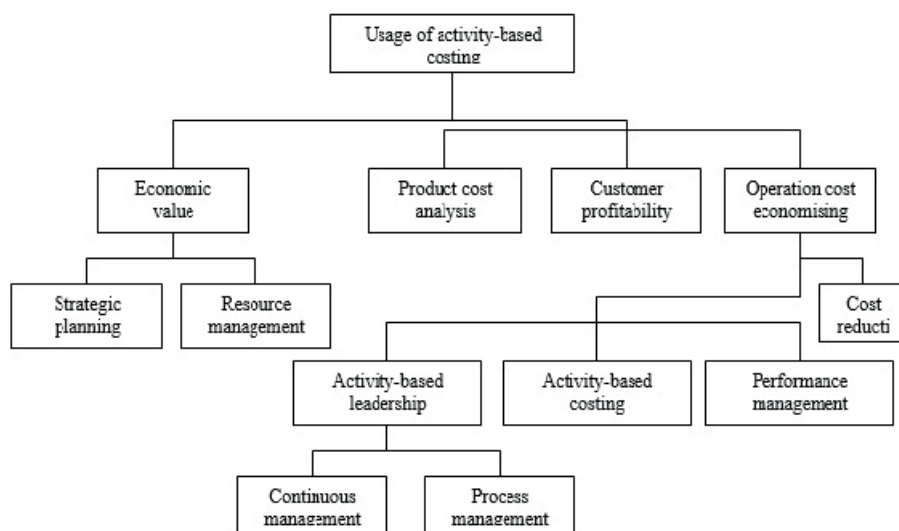


Fig. 4. Usage of activity-based costing

Source: self-made

Altogether, we can state that the novel costing methods may highly improve the strategy creation of banks, the actualisation of said strategies, and are an important part of developing their operations. However, during the analyses, we can't disregard the various problems related to the management of costs.

- The Controlling department has to make several changes by including accounting, in order to make data accessible to us. The reason for this is that the accounting system didn't use accounts in sufficient detail for the organisational units' data (f. e. employees, commerce) to be sorted from the system.

- There was a problem when trying to find out where a customer "should be put". Therefore, deciding the location of transactions as well.

- There's a need to further divide income and expense accounts, and to determine

the cost centres related to the accounts. By this, we can precisely report income and expenses.

- Furthermore, we need to solve that the premium income for authenticated transactions showing at the profit centres.

- Another significant problem of calculating profitability by organisational unit is that the decrease in value of items can't be viewed in a sorting which could make it possible to show the summarised value amortisation of the organisational unit in question. As a solution, we'd need a new item roster system where amortisation is registered in the same place, and where we can get a report of amortisation by organisational unit.

In conclusion, we can say that financial institutions must make more and more effort to keep their level of profitability, due to the increase in the bank sector's competition, and the globalisation's effect on financial markets. In order to do this, there's a need for significant efforts with expertise, and capital as well. It's indispensable to continuously evaluate feedback from activities' results, and profit-oriented bank operations are necessary.

References:

1. Francsovcics A. (1995): Controlling – elmélet és módszertan. Ligatura Kiadó. Budapest. p. 202.
2. Horváth & Partner (2008): Controlling – Út egy hatékony controlling-rendszerhez. Complex Kiadó. Budapest. p. 288.
3. J. Maberley (1999): Pénzügyi intézmények controllingja. Panem Kiadó. p. 30
4. R.S. Kaplan – R. Cooper (2001): Költség & Hatás. Integrált költség-számítási rendszerek: az eredményes vállalati működés alapján. Panem Kiadó. Budapest. p. 465.
5. Sztanó I. (2013): Számvitel alapjai. Perfekt Kiadó. Budapest. p. 388.
6. Vogler I. (1988): Korszerű üzemgazdasági módszerek a bankreform szolgálatában, Saldo Kiadó. Budapest. p. 97.
7. Vizsgált bank Controlling Osztályán történt interjúk és segédanyagok
8. Lentner Cs. (2016): A gazdasági válság hatása a globális, uniós és hazai szabályozási környezetre. In: Auer Á. – Papp T. (eds.): A gazdasági világválság hatása egyes jogintézményekre Magyarországon és az Európai Unióban. NKE, pp. 45-84.
9. Lentner Cs; -Zéman Z. (2017): A pénzügyi válság bankszabályozási kontroll elveinek meghatározóbb történeti elemei EURÓPAI JOG: AZ EURÓPAI JOGAKADÉMIA FOLYÓIRATA XVII: (január) pp. 8-13.
10. P. Kalmár – J. Lukács – J. Bárczi – L. Hajós – Z. Zéman (2014): Bank services and product marketing contorlling: Applying multivariate method for customer satisfaction variance analysis. ANNALS OF FACULTY OF ENGINEERING HUNEDOARA - INTERNATIONAL JOURNAL OF ENGINEERING 12:(3) pp. 229-234. (2014)
11. Z. Zéman - Cs.Lentner (2018): THE CHANGING ROLE OF GOING CONCERN ASSUMPTION SUPPORTING MANAGEMENT DECISIONS AFTER FINANCIAL CRISIS, POLISH JOURNAL OF MANAGEMENT STUDIES 18 : 1 pp. 428-441. , 14 p. (2018)

GLOBALIZATION AND CHALLENGES OF HIGHER EDUCATION INSTITUTIONS THE CURRENT SITUATION IN HUNGARY

Nikolett Mihaly,

*Ph.D., Faculty of Economics and Social Sciences,
Institute of Business Studies, Szent Istvan University, Hungary*

Annotation. *Globalization has changed not only the economic but also the academic world in the last centuries. Currently, higher education institutions compete in the same way as global large companies for higher returns (state supports, tuition fees, etc.) and students. Developing existing resources - research, teaching methods, material conditions, etc. - improve quality, thereby generating increased revenues and more importantly, enhancing the knowledge-based competitiveness of society. The question is the legal regulation able to create the conditions by which the institutions follow this logical chain, so they ultimately serve the long-term interests of students, the prosperity of society? In this study I am preparing to answer this question, presenting the challenges of certain globalization processes and a Hungarian answers of the last decades.*

Key words: *globalization, higher education, quality.*

Introduction. The conditions of technological and social transformation, globalization have changed the range of required student skills, and forced innovation in the management of institutions. Nowadays, expectations of globalization tendencies are being formulated in countless forums and in varied forms, which stimulate the man of our time to perform different from the previous ones. “The world of the labor market is fragmented, the difference between winners and losers has widened, and learning seems to be the only defense against hopeless displacement” (Hrubos 2006, p. 677). “Knowledge is an important source of long-term competitive advantage, and as knowledge is achieved through the development of skills, the education system is more appreciated. Countries can be the winners of the processes that invest the most in research, development, education and information infrastructure.” (Pintér & Karavalics 2001, p. 214). “The knowledge-based society demands massive crowds of educated people, trained professionals; it needs a workforce that can adapt to complex situations with a broad perspective, relatively independently: it is capable of recognizing, managing and solving emerging problems” (Barakonyi 2004, p. 66). Available knowledge is doubled every five to seven years worldwide (Inotai, 2001). It is therefore necessary to use a broader spectrum of basic education, the use of the latest software and programs; using new technical tools. The importance of international communication and the ability to navigate between cultures are valorized. The gap is widening not only between the skilled and the unskilled, but also between representatives of different professions - the structure of the knowledge that the market rewards with high value is significantly changing. The highest salary on the labor market is now given to professionals who have a high level

of mathematical knowledge (economists, architects, and informatics). In our changing world, the need for career change is frequent, and accordingly, the need for rapid position recognition, openness to new courses and training - the opportunity to adapt to new conditions. "Lifelong learning" has become a necessary condition not only for gaining a better position, but also for keeping a particular job. So staying in competition can only be imagined by the increasing of skills that can no longer be achieved by basic and intermediate level education, the accumulated amount of modern knowledge transfers this task to higher education.

Changes in Institution Management, World Trends in Higher Education. Higher education institutions also need to respond to the challenges of our age. By skipping here the history of university traditions, I would return to only two major changes: in the 18th century the Great French Revolution abolished the "medieval university" and in the 19th century new university models were born. One of these was the idea of the "University of Humboldt", which united the education and research, the academic freedom of professors and doctoral students, the partnership between the teacher and the student. (In the system, the student is not a consumer or a client who uses the service, but rather represents the academic side as the professors.) This kind of relationship system is now in a deadlock, the postmodern university philosophy takes its place. In accordance with the neoliberal principles, the governments have moved to the so-called indirect management, which practically meant the abolition of state and government subsidies, prompting universities to use external financial resources (tenders, training courses, scholarships etc.). The decision-making power of the academic world has been shrinking everywhere, with management principles and their representatives replaced. In the first phase (in the 60s and 70s, during the period of economic prosperity), the role of the state strengthened, but it started to decline again in the 1980s. The main reason for the headcount increase was the democratization, in the second stage the economic efficiency became the primary aspect, and finally the issue of the quality endangered by the growth became important. (Hrubos, 2006)

Current University Types. Originally, three basic models of higher education can be distinguished: the British model, the continental European model, the American model. In the following section, I characterize each type along the lines of funding, training systems, and research and education. The summary is incomplete, I consider the general presentation sufficient for my topic.

The British model - the guardian of the ideals of the medieval university, lived in the 18th century, but its effect is still prevalent not only in Great Britain but also in its former colonies. The main feature of the original model is respect for traditions, the prominent role of the academic community, the lack of state involvement and the idea of market competition. Universities are founded by secular or church individuals, private communities. They are also receiving state support today, but the distribution of support is independent of government.

The continental European model - the most influential model of the 19th century - has fundamentally influenced the birth of university systems worldwide. It is characterized

by the fact that the state appears on both the financing and the decision-making side. One of the ideal reasons for this is that state officials are trained here, so high quality is important. The model has two versions. One of them is Humboldt, whose main character is a professor appointed by the state and subject to strict requirements. The university is the intellectual community of scientists and students, the embodiment of high general education and spiritual freedom (Hrubos, 1995). The other model is the 'Napoleonic model', in which state control is even more prominent. (The intervention appears in the examination and even in the definition of the curriculum.) The primary task of the institutions organized in the model was to satisfy the bureaucracy of the state and to meet the demand of professionals brought about by the industrial revolution.

The American model - the most successful, dynamic model of the 20th century. It grew out of the English colonial heritage, taking democratic principles into account. An essential element is the competition for potential students and research grants. The primary task of the university is to provide useful knowledge and to produce practical research results. Similarly, the English model is founded by individuals or communities, and is usually maintained without state support. The governing body decides on budget, strategic issues, appointments, etc., and its members are generally non-university citizens. These universities are essentially economic organizations that provide for their own income. (Bárdi et al, 2001)

The Japanese model is a non-separable model, which is characterized by the fact that it combines the features of the three basic models (therefore it cannot be considered as an independent model). It resembles mainly the British model, with the exception that the first stage of the university (daigaku) is not three, but four years. There are also so-called "short-cycle universities" (tanki-daigaku), where the duration of training is even lower. Both forms can be state, municipal, and dependent on state-recognized school organizers. (Jun, 2006)

In the context of the emergence of higher education, these models were partly converging, while the original models retained their essential features. The labor market conditions had to be adapted to the educational programs. Switching to a multisector, then it happened everywhere, but it took place in different ways in different countries, but two models could be classified. In Europe, the dual model was generally used - the co-existence of the university and college sectors - while the Anglo-Saxon model became a feature of the multi-stage (linear) model, in which the programs are built on each other. (Bárdi et al, 2001). During the expansion in the 1960s and 1970s, the role of governments in financing higher education was strengthened everywhere. In continental Europe and at the same time in the United States where especially the federal government has been revitalized. Most of the students are currently trained in state universities in the USA.

In continental Europe until the start of the Bologna process (1999), the dual model was the most typical: colleges operated in parallel with universities, in a rather different system per country. In France, there are so-called vocational schools, where they are trained for certain professions (medical, legal, etc.) and do not expect research activities from teachers in office. The German-type university was originally a state institution, but

moved away from being a pre-vocational school. In some respects it can be characterized as an alloy of the Anglo-Saxon and the French type: it provides general and scientific literacy similar to that of the English University, but also prepares for professional careers. Here the unity of education and research is realized: the student gets the knowledge from the outstanding educator of science. A similar model was implemented at the beginning of the last century by Switzerland, Austria, the Netherlands, Hungary, and even by Russia. Although the latter, after the Soviet regime was set up, transformed this structure following a subversive example of the French Revolution. The current Russian model resembles the French model, dispersing faculties, separating research institutes from universities, and training for professions. From the 50s onwards, Hungary has partly moved to this highly centralized model. It can also be concluded that Hungarian universities have developed in the spirit of German models rather than English-speaking influence. (Barakonyi, 2004)

In both Japan and the USA and partly in the continental model, the funding is provided by maintainers on the one hand and on the other hand, by users of services - in the case of private universities, of course, this is a higher percentage. In some post-socialist countries following the continental model, the state still bears the cost of full-time training in a significant proportion of daytime training. The linear model has several advantages over the dual model, if it is more flexible, more favorable for student mobility, more suitable and more effective for the reception and treatment of student masses, and eventually it is also cheaper. The internationalization of higher education means the convergence of models in many respects, and within each country, the system of higher education is more complex and differentiated than before, and as a result of some combination of previous basic models, new “basic models” of certain regions are created. (Hrubos, 2006) The Hungarian National Bank's new social responsibility activities are an excellent example in higher education sector in Hungary. (Lentner et.al. 2015)

The situation in Europe after the Bologna Process. It can be clearly seen that the challenges of globalization and the institutional responses are different. At the start of the Bologna process in Europe – and hence in Hungary – there were many problems in adapting to change. I will highlight some of these in the list below.

- In the globalized world, there is stiff competition between the segments of the knowledge market; European universities have lost their attractiveness to non-European countries - the old continent has been able to attract less and less students from its borders.
- The outcomes of the education systems in Europe were not comparable - the evaluation of the institutions' activities was not uniform, so the individual qualities were difficult to understand - which hindered labor mobility.
- Providing competitive basic skills (knowledge) has been a growing challenge for member countries for an ever-increasing number of masses. The parallel decrease in public funding, while maintaining the instructor, administrative and instrumental conditions, has resulted in a reduction in quality in many places. In the next section, we will look at the starting points and results of the Bologna process.

The Bologna Process and its essence. The reasons behind the Bologna process are summarized in the following lines: "... the main obstacle to improving EU competitiveness is the low level of labor mobility, the incomparability of education systems. This is the reason why the modernization of higher education systems has become a focus - the compulsion to improve competitiveness has created the Bologna process... By the end of the decade, 2010, the EU targeted the catching-up of the US economy (Lisbon decision)." (Barakonyi 2004, p. 77) For this, the road has led to the modernization of higher education systems, the creation of student mobility, and the means to achieve this goal was the creation of a unified „European Higher Education Area”. As we already know, this goal has not been achieved by the European Union. The drivers of this process are illustrated in the following figure:

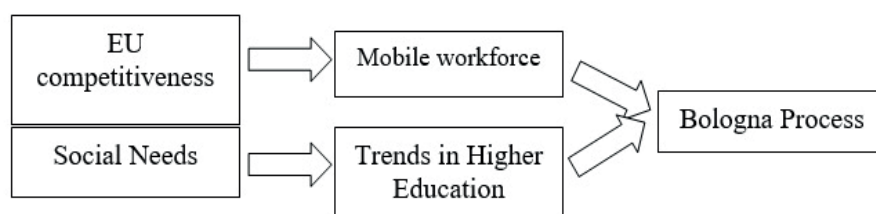


Fig. 1. Factors for enforcing the Bologna process
 Source: Barakonyi 2004, p. 81

In 2001, the Prague Consultation resulted in further strategic actions and evaluated the changes that took place. It also drew attention to the importance of lifelong learning; analyzed how students could be more effectively involved in decision-making. In 2003, the Berlin meeting further expanded the scope of cooperation (European Research Area, more distant targets) and clarified the need to accelerate reforms. Quality assurance was also a priority at the conference. Further refinements took place at the Bergen Conference in 2005, regulatory issues were clarified (the creation of the European Higher Education Area and the European Research Area, common guidelines for international accreditation, quality assurance, etc.). The 2007 London conference was already on the way to achieving the goals and expected fulfillment. (Hrubos, 2007) Several high-level meetings have taken place within the framework of the Bologna process since then, always organized by the governments of the host country: 2001-Prague, 2003-Berlin, 2005-Bergen, 2007-London, 2009-Leuven, 2010-Vienna-Budapest, 2012- Bucharest, 2015-Yerevan, 2018 Paris.

The situation in Hungary after the Bologna process started. When we joined the EU (2003), Hungary had not virtually choice of not accepting the new European education policy, and we needed some comprehensive change. In recent years, this has happened - our higher education has undergone a radical transformation. At the same time, it can be said that the reform is not yet fully appreciated. Although important changes are already visible. (E.g. achieving social mobility through student mobility.)

The following outputs indicate the further need for reforms and their current impact:

1. After the change of regime, the number of students increased several times. Between 1990 and 2007, it increased fourfold, but after it is steadily decreasing between 2015 and 2018, for example, the number of students and scholarship staff in public higher education fell by about 20%. (Kováts & Temesi, 2018). The reason of the increasing is that global competition has demanded more and more well-trained professionals so governments first initiated and supported the process. However, the opening gates and tuition waiver thus increased the number of entrants unreasonably, financing problems occurred. As a solution, the government have limited the number of students who can be admitted to publicly funded training, and became open to self-paid training. (Budgetary resources have not expanded, so institutions have had to provide other sources of money.) The situation is further worsened by Hungary's deteriorating demographic composition. The following figure illustrates this process:

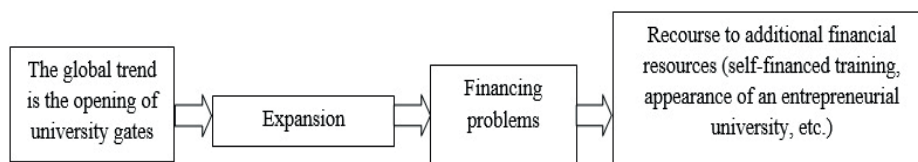


Fig. 2. Causes and consequences of student displacement in Hungary

Source: *Self-made*

2. The composition, values and motivation of the student mass have become more complex. In some cost-reimbursement training places, the payment of tuition fees already makes a deposit for the diploma. The benefits of the expected identity (diploma ownership) are often unduly valued (Garai, 2003), and there is often a lack of professional knowledge and a real commitment to studies.

3. In many cases, meeting the real needs of society can only be met through post-graduate training, with time wastage and extra costs. However, even at this time, we cannot speak of real needs in every case, for example, in the case of the necessary technical training, there is no adequate “supply”. In Western Europe, the same tendency has prevailed, and the solution techniques developed which can also serve as guidance in Hungary.

4. There is still no proper passage between the levels (bachelor, master, Ph.D.) to change the course of study. Even if the student has noticed that the demand for a particular career has decreased or his interest has changed, the student will not be able to leave the higher education system. In these cases, they often do not switch because the former studies are “lost”, there is no way to include them in a new academic faculty. At the same time, positive changes include the fact that the majority of today's students have a chance to study abroad.

5. Not to think, to educate for independent work, but to teach the students to

master the larger parts of the material. Accordingly, problem-solving competences, communication skills, ability to learn independently, team work skills, presentation skills, etc. are missing in a lot of places. (There is not enough emphasis in the secondary school to create the above, so the higher education system only generates forward the problem.) Most of the cases multiply choice tests are used for speed in large classes.

Finally, I quote Zéman's list (2016) which summarizes excellent the determining factors of the quality of the higher education:

- the know-how of the professors;
- the quality of the students' knowledge;
- the effectiveness of the education system as institutional system;
- the modernity of books, textbooks and digital learning materials;
- the adaptability of applied methodology (which determines the speed of knowledge transfer and knowledge acquisition) to economic and social processes.

In my opinion, we should focus on these factors if the Hungarian higher education wants to keep up with the challenges of globalization.

Conclusions. In this study, I have reviewed the effects of globalization on the higher education sector, the current trends and the gains and losses that we have to count on. Then I analyzed how the higher education sector is trying to meet the new challenges. I have examined what the demands of the Bologna process have come to life, a brief summary of how the process started in Hungary, what the consequences are. Nowadays the main currents problem are:

- The weak competences of Hungarians students.
- There is still no proper passage between the levels (bachelor, master, Ph.D.) to change the course of study.
- In many cases, meeting the real needs of society can only be met through post-graduate training with time wastage and extra costs.
- The composition, values and motivation of the student mass have become more complex which is not properly treated.

A better understanding of these outcomes can be found in the study of stakeholders in the higher education sector, which may be the subject of a subsequent study.

References:

1. Barakonyi K. (2004): Rendszerváltás a felsőoktatásban. Akadémiai Kiadó, Budapest.
2. Bárdi N. – Berki A. – Ulicsák Sz. (2001): Nemzetközi tendenciák a felsőoktatásban. Erdélyi Magyar Tudományegyetem megvalósíthatósági tanulmánya. [Online]: http://adatbank.transindex.ro/html/alcim_pdf469.pdf
3. Garai L. (2003): Identitásgazdaságtan. Tas Kiadó, Budapest.
4. Hrubos I. (1995): A felsőoktatási rendszerek válaszai a változó társadalom kihívásaira. Szociológiai szemle. 4. 93-109. [Online]: <http://www.socio.mta.hu/mszt/19954/hrubos.htm>

5. Hrubos I. (2006): A 21. század egyeteme. In. *Educatio*, Vol. 15, 4. 665-683.
6. Hrubos I. (2007): A londoni miniszteri konferencia után. [Online]: www.bkae.hu/fileadmin/user_upload/hu/corvinus/bologna/Universitas_Tanulmany07.doc
7. Inotai A. (2001): Gondolatok a globalizációról. In: Földes Gy. - Inotai A. (Ed.), *A globalizáció kihívásai és Magyarország*. Napvilág Kiadó, Budapest. 249-287.
8. Jun O. (2006): A japán felsőoktatás változásai. In. *Educatio*, Vol. 15, 4. 775-790.
9. Kováts G. – Temesi J. (2018): Összefoglaló megállapítások. In. Kováts G. – Temesi J. (Ed.), *A magyar felsőoktatás egy évtizede*. Budapest. [Online]: NFKK. Web: http://unipub.lib.uni-corvinus.hu/3302/1/MF_2008-2017.pdf
10. Lentner Cs. – Szegedi K. – Tatay T. (2015): Corporate Social Responsibility in the Banking Sector. *Public Finance Quarterly*, Vol. 60. No. 1. pp. 95-103.
11. Lentner Csaba (2018): Experts on New Hungarian State Finances from Legal, Economic and International Aspects. *Pravjni Vjesnik. Casopis za Prvane I Drustvene Zannosti Pravnog Fakulteta Sveucilista Josipa Jurja Strossmayera Osijeku*. Vol. 34. No. 2. pp. 9-25.
12. Zéman Z. (2016): Új lendületben a gazdaságtudomány. In. *Polgári Szemle* Vol. 12, 1-3. 202-207.

PEDAGOGY AND PSYCHOLOGY

ROLE OF THE METHOD OF PROJECTS IN THE INDEPENDENT WORK ON THE HUMANITARIAN DISCIPLINES OF STUDENTS OF TECHNICAL INSTITUTIONS OF HIGHER EDUCATION IN THE PROCESS OF FORMATION OF CONFLICTOLOGICAL CULTURE

Olena Hrechanovska,

Ph.D., Associate Professor,

*Department of Philosophy and Humanities,
Vinnytsia National Technical University*

Annotation. *In the training of future specialists of technical specialties not only professional skills, but also personal qualities that will ensure the formation of conflictological culture appear to be a priority. The article deals with the concepts of “conflictological culture”, “innovative learning technologies”, “innovative teaching methods” and educational and pedagogical approaches in the system of higher technical education for the efficiency of learning during humanitarian training. The method of projects is highlighted among the latest technologies, the methodology of its conducting and implementation into the educational process is described. The diagnostics of the method’s effectiveness in the formation of conflictological culture in the process of humanitarian training of future specialists of technical specialties is presented.*

Key words: *conflictological culture, method of projects, innovative teaching technologies, innovative teaching methods, future specialists of technical specialties.*

Introduction. Contemporary world technical tendencies are characterized by rapid changes and transformations, fast growth of professional skill, ability to cultural flexibility, increase of competitiveness. Today there are new educational paradigms that are based not only on getting knowledge by future specialists, but also on the understanding of its necessity in the process of labor activity, the formation of a personal attitude to social and cultural phenomena, the ability not only to present themselves, but also to get out of difficult, conflict situations. At the same time, the requirements for specialists are increasing, and the labor market is aimed not only at specialists in technical fields, but also at cultural, intelligent, highly educated individuals who have to orient in the cultural heritage of their country, be aware of the culture of other nations. Today, as never before, considering economic, industrial, technical relations with other countries, the employer requires a specialist to have an appropriate ethical and tolerant behavior, a culture of dialogue, and an intercultural tolerance.

History shows that humanity forms various cultures depending on the natural conditions of the existence of this or that nation, religious, political and artistic traditions that have been evolving for centuries, and any collision of cultures different in type

necessarily leads to a crisis situation and conflict. If earlier there was a long-term mutual isolation of cultures or a struggle between them for domination, then in today's world the idea of equality of cultures is being established more and more firmly. Each of them is perceived as a unique national experience of a separate nation or its peculiar experience of universal human cultural paradigms [1, p. 19]. Therefore we consider the formation of conflictological culture important in the process of development of professional competence among specialists of technical specialties.

Analysis of recent research and publications. The concept of conflictological culture appears in scientific and pedagogical sources at the turn of present century and is more actively used by domestic scientists and scientists of the near abroad. In their works this phenomenon was analyzed by: N. Samsonova, A. Verbytskyi, O. Shcherbakova, I. Pocheikaieva, N. Pidbutska, T. Cherniaieva, N. Serebrovska and others.

Analyzing the approaches of foreign scholars, we consider such concepts as “cultural conflict” and “conflict of cultures”, which are more common for foreign scientific thought and are in the basis of knowledge of conflictological culture. We are impressed by the approaches to the problem of the following foreign scholars: Daniele Novara, H. Turner Jonathan, William Kornblum, P. Hurevych, Y. Davidov, N. Zlobin, D. Petrov, S. Huntington, Kevin Avruch, L. Aza, V. Gosle, T. Colbina and others.

On the basis of the analysis of the multidirectional view of the scientists regarding the definition of the concept of “conflictological culture”, the author's definition of “conflictological culture of future specialists of technical specialties” is formulated.

We consider conflictological culture of the individual as one that unites the knowledge (doctrine) about conflict and culture, directs to the ability of applying it, provides the skills of forecasting, avoidance, preventing and actualizing the resolution of conflicts in different situations of life, the ability to adapt in a conflictual environment, basing on cultural and social experience. We consider conflictological culture of future specialists of technical specialties as a conflictological culture of the individual, and also as one which is a component of professionally important qualities of professional competence acquired during the process of studying in the institutions of higher education [2].

In order to facilitate the formation of conflictological culture of future specialists of technical specialties, innovative approaches in the system of education of high school are needed. To the issue of problem of technological promotion of higher education, innovations and interactive learning technologies in Ukraine the researches of the following scholars are devoted: M. Vylenskyi, S. Vitvytska, R. Hurevych, I. Dychkivska, O. Dubaseniuk, E. Zeer, M. Klaryn, M. Levyna, S. Nakhod, S. Nikolaenko, L. Onofriichuk, V. Petruk, A. Piekhota, I. Pidlasyi, N. Pobirchenko, L. Pyrozhnichenko, A. Pometun, J. Raven, A. Rybachuk, G. Selevko, L. Semushyna, A. Sichkaruk, A. Stepanov, I. Turchyna, M. Fitsula, V. Khymynets, D. Chernilevskyi, M. Choshanov, N. Shchurkova and many others.

Among the latest technologies, the method of projects occupies a significant place, the importance of which lies in the independent getting of knowledge and ability to apply it in practice. Problems, questions, implementation of project technologies in education

are highlighted by such scholars as I. Dychkivska, I. Yermakova, L. Pyrozhenko, E. Polat, A. Pometun, M. Rubynshtein, S. Sysoieva, M. Chanova and many others.

Research results. The process of formation of conflictological culture should be addressed within humanitarian disciplines, as we consider that humanitarian training is an important component of the professional competence of a future specialist with higher technical education.

Humanitarian training in a non-humanitarian institution of higher education is possible if its implementation is influenced by the fulfillment of the following stages:

- creation of educational and methodological conditions for the students' interest in humanitarian disciplines that include and are aimed at: accessibility; interdisciplinary connections; understanding of the content, goals and objectives of humanitarian disciplines in vocational training; the result is psychological, personal readiness to study humanitarian disciplines, at the new cognitive level, as necessary ones; motivation (to get knowledge) and adaptation (to the profession);

- integration into profession, which during the process of studying includes the ability to integrate humanitarian knowledge into professional activity; the ability to generate acquired knowledge into the innovative ideas; to use experience gained to resolve difficult, conflict situations, that is assertiveness; to be able to transfer knowledge acquired to scientific achievements;

- constructive assimilation of knowledge, abilities and skills of humanitarian disciplines that will have their separate form of humanization of professionalism of the student; this will be helpful for: the process of entering the profession; psychological readiness to accept the profession and identify with it; seeing himself/herself as a professional in a multicultural society, and personal identification; non-conflict interaction with the environment and communicative assertiveness;

- realization of knowledge, abilities and skills in professional activity, which will direct the student to: independent increase of humanitarian knowledge; self-improvement not only as a professional, but also as a socially active, creative person; systematic approach, constant learning throughout life [3, p. 245].

Consideration and implementation of these stages provide an opportunity for effective formation of the conflictological culture of future specialists of technical specialties in the process of humanitarian training; their sequence will ensure consistency and integrity of the system.

Positive influence on the formation of conflictological culture of future specialists of technical specialties in the process of humanitarian training takes place under the condition of using of interactive technologies: non-imitative developing (problematic, interactive lecture; seminar; problematic conversation; brain storming; discussion; analysis; workshop; interviewing experts; methods of working in small groups); imitative developing (studying of specific situations; resolution of production tasks; imitative exercises; imitative training); gaming (business game; role play; game designing); project (group project activity); training (group training, lessons with elements of training).

Implementation of innovative technologies requires from the teacher: study

of special literature (additionally); analysis of pedagogical experience of teachers-innovators; development of a plan for the implementation of a new technique; the optimal combination of humanitarian, natural scientific, mathematical and professional knowledge.

We consider innovative teaching technologies as effective psychological and pedagogical methods, forms, means, which are based on the cultural and educational aspect, on the traditional achievements of education, which remain effective, but transform depending on time, psychological features of the person and the specialty of the institution and are introduced in the educational process of an institution of higher technical education for acquiring knowledge, developing abilities and skills for specialty work after graduation and in everyday life of a future engineer. We believe that the introduction of innovative technologies cannot be reduced to some restrictions or “innovative stereotypes” that can be implemented in higher education institutions according to a relevant scheme. It is necessary to take into account the professional orientation of students (technical, humanitarian, medical, etc.), psychological characteristics of age and motivation in the acquisition of knowledge of a relevant discipline.

While innovative teaching methods are considered by us as a pedagogical fusion, where there is a harmonious blend of traditional and innovative technologies, various pedagogical approaches and concepts (eastern-western, domestic-foreign), and the integrity of sciences that are aimed at promoting the student’s professional development, are understandable to him and have a satisfactory final result.

In our work we consider innovative teaching technologies in a technical institution of higher education on the example of teaching the discipline “Pedagogy, Psychology and Teaching Methods in Higher School” for masters. It should be noted that this discipline is important for Master studies and belongs to the humanitarian training field. It is studied by students who during their studying in a technical institution of higher education in modern conditions of humanitarian training were aimed at studying specialty disciplines and have a low level of knowledge for mastering this discipline. Therefore, of course, a special approach to the teaching methodology is needed in order to interest students in acquiring knowledge, not to “load” them with a large amount of information that they will not be able to fully comprehend in a short period (one semester). A large amount of material from discipline is the extra-curriculum work of the student, which becomes important in mastering the profession by young people. Self-studying becomes a priority for today. The extra-curriculum independent work on humanitarian disciplines in technical institutions of higher education is significantly different from independent work on special disciplines, and primarily because students are not interested in its implementation. It is long since students lost interest to work on research papers, reports, self-preparation because of free and broad access to information that can be obtained without leaving home, and that has already lost its scientific and research element.

For independent work of students we use the method of projects and give preference to group projects because we believe that an individual project does not provide such

important skills as interaction with other people and non-conflict communication. In our opinion, students should work in groups, starting with the first courses, because it will contribute to the positive climate in the collective, which in turn will help to adapt faster and stimulate motivation for learning.

The method of projects is considered according to the structure that delimits the work of students and the work of teacher, because we hold the view that the work that is led directly by the teacher is not independent. In our opinion, for the fully independent work on the project, the teacher can only be a consultant and all the work must be done on a democratic basis.

We suggest considering the structure of work of students and teachers on the method of projects during the study of humanitarian disciplines in technical institutions of higher education. When working with students, we prefer group projects.

There are no more than 4 students to work on project (it depends on the amount of information they wish to cover in the project). To the stages of preparation of the method of projects we include:

- discussion (a stage that runs together with the teacher) — the teacher and the students resolve questions relating to the timing of projects, where the terms that students see for themselves as optimal and are fixed by the teacher for the correction (if necessary) of the work plan are considered;

- formation of groups (teams) — students choose independently the partners they want to work on one project with; they may be students from different groups and different faculties (at this stage, we prefer individual choice of students, taking into account their personal preferences and psychological compatibility, which will be an experience for work in a team);

- choice of the topic — the right of independent choice is given to students, but within the discipline; it is permissible to consider proposals for topics that are not planned to be considered at study time but are relevant to the discipline; there may also be mono projects — not only within the discipline, but also cross-curriculum;

- division of responsibilities — students in the group distribute: a team leader who, if necessary, consults with the teacher and corrects the work of the entire group; a person, responsible for working on the presentation and computer software as well as for the selection of information and literary sources; they choose those who will present the project to others (usually 2-3 students, that is, almost every participant has his or her part of the speech that corresponds to one question from the project plan); if there is a practical part or an experiment that students have the desire to implement within the project, people who are responsible for this part of the work will be chosen. Division of responsibilities does not mean that each participant in the project is engaged only in its own direction: everyone works on the project, but, as the experience has shown, there should be a responsible student for each stage of preparation, so that in future there would not be any conflicts like “I told him, and he did not listen to me” or “why should I do it?” Such a division will deprive the students of interpersonal and intra-group conflicts and will allow them to feel responsible for their duty, and others will also not be

pleased to fail a friend, that is, psychological preparation for responsible performance of professional duties after the graduation from the institution of higher education;

- announcing the topic and date of the project presentation at the lesson — this stage requires the presence of a teacher in order to schedule the project defense and identify the presence of similar topics. If this happens, the teacher has a conversation with both groups since it is possible that in different groups there is a different approach to the overview of one topic, which can then be held at one lesson and the discussion between two groups can be arranged, where they will defend the concepts they consider in their projects;

- preparatory part — a period when students prepare their own projects independently; if necessary they ask the teacher for a consultation and when there is the first draft, if necessary, students can demonstrate it to the teacher beforehand;

- presentation of the project — students will present the project on a chosen topic within a specific time frame, where other students are entitled to evaluate the performance or to declare a competition for the best project with the use of secret voting so that there is no bias towards one of the groups. Also, an option of evaluation by the teacher is considered, but in the case when the projects are interconnected and the teacher shapes them into a single lesson in the form of an oral journal (the description of which we will present in our further research), which can take place before a large general audience of students, not only groupmates. Taking into account the difficulty of public speaking for a large number of people (for example, the assembly hall), these projects are highly appreciated.

Students perform the projects in a free form, but there are requirements, components of the project, which are obligatory for defense: - determination of the topic, objectives, tasks and expected results of the project; - introduction (novelty, practical and theoretical application of the project); - main part (according to the students' plan of questions, which they wish to disclose); - practical confirmation, experiment; - conclusion (which includes the impressions of the whole group on work on the theme chosen); - references the group was guided by must include scientific sources (scientific articles, monographs, dissertations, etc.). Such a rule is necessary in order for students to use a scientific approach in the researching, and not be limited to the use of textbooks or Internet resources.

The designing of the projects takes place in a paper and electronic (presentation) version. Students can demonstrate their project in a different form, presentation is not always obligatory (it depends on the topic), the number of slides of the presentation is not limited if their presentation does not exceed the time proposed, which is allocated to the project defense, which can be from 5 to 10 minutes, depending on the difficulty of the topic. Students should be ready for questions that can be asked by their groupmates and all present.

We have identified the requirements for project evaluation: - compliance of the project to the topic stated; - protection of the project in due time; - active participation of all project participants in its creation and defense; - aesthetic design of a paper version

and presentation (color gamut, photo materials, pictures, videos, etc.); - relevance of the sources used and their reliability (for example: unknown links on the Internet without author and name are not taken into account); - clarity and logic of constructing a speech; - interaction with audience.

To test the effectiveness of the method of projects for students' learning and interest in this discipline, after the defense of projects we ran diagnostics on two groups of students, one of which (34 people) worked on projects (EG), and another one (31 people) worked in a traditional format of self-education (CG). After the evaluation of the results of knowledge on discipline it turned out that in EG "excellent" marks were 41%, "good" marks were 38%, "satisfactory" marks were 21%; while in the CG the number of "excellent" marks was 29%, "good" marks were 36%, "satisfactory" marks were 35%. As a result of evaluation we see a tendency to the marks decrease. To find out and clarify the effectiveness of our method, an anonymous survey was conducted. To the question "Did you like studying the discipline "Pedagogy, Psychology and Methods of Teaching in Higher School" and why?" we received the following answers: in EG the positive answer got 89% (because of the unusual format for conducting lessons; it is interesting to work in the team; the lessons go beyond the traditional ones; feeling of independence and responsibility; the desire to find the material better than other groups find while working on projects, etc.); for "didn't like much" there were 9% (because of the difficulty in finding materials; incomprehensible and difficult terminology; no desire to work in a team; lack of ability to public speeches, etc.); for "didn't like at all" there were 2% (because they do not want to study the discipline at all; do not see its implementation in their future profession; there is no motivation to study humanitarian disciplines, etc.). In CG group 53% of students responded "yes" (because traditional lessons are preferable and habitual; the teacher gives a task and there is no need to think over its execution; learning, telling — that is all, you do not need to show initiative and creativity, etc.); for "didn't like much" there were 38% (because lessons are not interestingly conducted, desire for interest and discipline; desire for greater independence; fear of the teacher who chooses the task him/herself, etc.); for "didn't like at all" there were 9% (because there is no desire to study humanitarian disciplines; the teacher restricts independence; it is not interesting to prepare for lessons according to the traditional format, etc.).

Conclusions. Thus, the method of projects helps to form the conflictological culture of the future specialist of technical specialties in the process of humanitarian training. According to the results of diagnostic of evaluation and the anonymous survey, we found out that a significant percentage of students tend to study humanitarian disciplines, but their motivation depends on the educational technologies that a teacher can offer. The method of projects is an effective technology that promotes the interest to the discipline and motivates its study; acquiring skills of independent work and continuous education, increasing the level of self-education; the ability of students to work in groups; the formation of communicative abilities and skills of public speaking; abilities and skills of search, systematization of knowledge in scientific researches; the development of creative potential and creative thinking. This latest educational technology is

multifaceted and requires further improvement and implementation in the educational process of institutions of higher technical education, which will help students to master the knowledge.

References:

1. Abramovy`ch S.D., Tillo M.S., Chikar`kova M.Yu. Kul`turologiya: Navch. posib. – K.: Kondor, 2007. – p. 351
2. Hrechanovska O. V. Problemy` formuvannya skladovy`x konfliktologichnoyi kul`tury` u studentiv texnichny`x VNZ / O. V. Grechanovs`ka //Aktual`ni py`tannya osvity` i nauky`: zb. nauk. st., materialy` III mizhnar. nauk.- prakt. konf. 2015.- Xarkiv, XOGOKZ: 2015. - P. 53–58.
3. Hrechanvaska O. V. Pedagogichna sy`stema formuvannya konfliktologichnoyi kul`tury` v majbutnix faxivciv texnichny`x special`nostej. Monografiya. Vinny`cya: TOV «TVORY`», 2018. 437 p.

THE COMPLEX OF EDUCATIONAL TECHNOLOGIES FOR DEVELOPING PROFESSIONAL MASTERY OF FOREIGN LITERATURE TEACHERS IN THE SYSTEM OF IN-SERVICE TRAINING

Larysa Chumak,

Doctor of Pedagogical Sciences,

CHEI “Kherson Academy of Continuing Education” of Kherson Regional Council

Annotation. *The article considers the use of a certain complex of educational technologies for developing professional mastery of foreign literature teachers in the system of in-service training. The article aims to theoretically justify and experimentally verify the effectiveness of the introduced complex of educational technologies for developing professional mastery of foreign literature teachers in in-service training. The article also justifies theoretical expediency of using the complex of educational technologies to develop professional mastery of foreign language teachers in in-service training, which includes the groups of interactive technologies (active, interactive and simulated ones).*

Key words: *professional mastery of foreign literature teachers, a complex of educational technologies, the educational process, in-service training institutions.*

Introduction. The acute need of society for specialists who are able to perform socially important tasks at a high professional level, are competitive in the market of educational services and know how to use innovative educational technologies, intensifies the problem of developing professional mastery of teachers, whose professionalism largely depends on holistic development of young people who are able to interact in society, determine themselves and develop culturally.

A complete rethinking of the professional mission of a foreign literature teacher, who acts as a bearer of cultural and historical experience and values of the world literature, facilitates the search for the ways to enhance the professional development of specialists. One of the effective ways to solve this problem is to determine methodological principles for developing professional mastery of philologists in in-service training, which involves using productive methods and forms of the learning organization, as well as introducing a wide range of innovative technologies.

The research aims to theoretically justify and experimentally verify the effectiveness of the introduced complex of educational technologies for developing professional mastery of foreign literature teachers in in-service training.

The objectives of the research are the following: 1) to disclose the concept of “professional mastery of a foreign literature teacher”; 2) to highlight the structure of the complex of educational technologies for developing professional skills of foreign literature teachers in in-service training; 3) to conduct an experiment on the effectiveness of its implementation.

Analysis of recent researches and publications. The problem of teacher professional

development in in-service training has been studied by many scholars. Theoretical and methodological principles for developing teachers' pedagogical and professional mastery have been analyzed by Ye. Barbina, A. Derkach, N. Huzii, L. Khomych, N. Kuzmina, O. Lavrinenko, L. Lymarenko, A. Markova, V. Mozhovyi, S. Palchevskyi, O. Semenoh, M. Soldatenko, O. Vozniuk, V. Zazykin et al. The issues about improving the content of Foreign Literature, as an educational subject, and elaborating the conceptual framework for professional training and professional development of philologists have been justified by O. Ivaniv, A. Lisovskyi, Zh. Kostiuk, S. Safarian, B. Shalahinov, V. Shuliar, Yu. Sultanov, V. Turianyst, N. Voloshyna et al.

Notwithstanding that scholars have disclosed various aspects of continuing professional development of teachers, methodological principles for developing professional mastery of foreign literature teachers in in-service training have not been properly studied yet.

In the practice of enhancing teacher qualifications in in-service training institutions, there are a number of contradictions, namely, between the current level of elaboration of theoretical and methodological principles for developing teacher qualifications and the need to update them in accordance with sociocultural challenges, transformational educational processes and changes in scientific paradigms; the potential opportunities of scientific principles of the branches related to pedagogy (pedeutology, philosophy, sociology, cultural studies, psychology) and the insufficient attention to using these achievements when developing professional mastery of teachers; theoretical and practical achievements of Ukrainian and foreign education in the improvement of humanities teachers' training and their insufficient incorporation in the technologies, methods and forms of foreign literature teachers' training; the objective requirements for professional activities of foreign literature teachers and the lack of the methodological complex for holistic development of professional mastery of foreign literature teachers in in-service training.

Results of research. The study of various Ukrainian and foreign scientific works (211 sources) has made it possible to determine that, despite the long history up till now [8], the searching nature of theoretical developments in the context of the basic concepts of this study leads to a different interpretation of certain terms ("a master", "mastery", "pedagogical mastery", "professionalism", "a professional", "professional mastery"), as well as to the ambiguity in approaches to improving professional mastery of teachers in in-service training. The approaches to interpreting these concepts are mainly justified in the context of theories, concepts, paradigms, scientific schools, countries, etc., within which researchers solve certain educational and professional problems.

A comparative analysis of definitions in scientific and reference sources shows that the content and target interpretation of pedagogical mastery prove the existence of disparate views on the teacher's personality and these or other aspects of pedagogical work. This concept is mostly characterized by the conceptual, structural and profound vision of the features of professional activities and the teaching profession in general, the teacher's role in it and the requirements for the specialist's personality associated with society,

culture, the system of value orientations, reflexion, psycho-pedagogical factors and the teacher's ability to develop their own psychological traits, which intensify the realization of its potential. The theoretical orientation of such concepts as "professionalism" and "professional mastery of the teacher" deals not only with the internal combination of personal values and the prevalence of qualification technologies but also actualizes the ability to operate methodological processes in solving educational tasks.

In addition, relevant scientific studies make it possible to formulate the definition of "professional mastery of the foreign literature teacher" as a set of personal qualities which are practice-oriented (philosophical, methodological, literary, cultural aspects), are reproduced in the conceptual thinking and productive, intra-motivated scientific, professional and self-study activities aimed at developing the creative potential of the individual and should be constantly improved. Professional skills of foreign literature teachers consist of three components [9, p. 472], namely, the axiological component (a civic position, social maturity, moral values, pedagogical abilities, deontological qualities, developed perceptual abilities, positive attitudes); the gnoseological component (methodological, literary, culturological, methodical competencies), knowledge about pedagogy and psychology, epistemological knowledge, the development of the intellectual sphere); the praxiological component (creative cognitive activities, reflection skills, ability to use constructive ideas of pedagogical experience, pedagogical techniques; acting skills).

It is also found that the level of professionalism of humanities specialists can be increased through a certain algorithm, which includes combining scientific knowledge and practical activities, namely, creative cognitive activities of philologists + professional experience + their reflection = the development of professional mastery of foreign literature teachers.

"Tracking the dynamics of these processes (from individual skills, that is, the art of the teacher, to the well-known and established active methods and forms of learning), one can see that the development of teaching and learning methods and related techniques increase their significance in the pedagogical systems, century by century [2, p. 96].

It must be noted that additional requirements for philologists' in-service training are conditioned by the andragogical component of the didactic process. In addition, the fundamental difference in teaching foreign literature in both general education institutions and in-service training institutions can be as follows: pedagogical activities of foreign literature teacher prioritize the method of conveying the semantic meaning of educational material [5]; andragogues prefer teaching learners how to acquire knowledge to intensify further independent professional development of theoretical basis, pedagogical tools and personal growth.

As one can see, the content of foreign literature teachers' in-service training should be specially elaborated and organized and also be complemented with relevant didactic tools. Therefore, it becomes necessary to scientifically justify the selection of pedagogical technologies following the basic patterns of educational and cognitive activities of adults.

In the Dictionary of Psychological and Pedagogical Terms and Concepts, pedagogical

technologies are interpreted as a certain order, logicity and consistency of presenting the content of training in accordance with the set goal; certain algorithmization of teachers and students' joint activities in the process of learning and the coherence of their actions and relationships [4, p. 12].

A conscious deliberate formulation of developing professional mastery of foreign literature teachers in in-service training has been disclosed in the complex of educational technologies of the above-mentioned pedagogical process created in accordance with the content of philologists' training, the characteristics of its two main interrelated vectors (learning through information and activity), taking into account didactic laws and patterns, methods of reasoning (inductive / deductive), analysis of technological resources, with the ensured completion of the pedagogical triangle (transferring knowledge – learning – building a knowledge system) with professional aspects linking training and research activities of students and trends in the integration methods and forms of educational technologies.

Its compilation, based on the type of interaction and taking into account the functionality of technologies, is aimed at improving the technological toolset of foreign literature teachers as creative individuals who can optimally realize themselves.

The components of the complex of educational technologies for developing professional mastery of foreign literature teachers in in-service training are classified based on the types of training (along with determining the inductive and deductive way of gaining knowledge) and the nature of educational activities as follows:

- the group of technologies for active interactions – the technology of problem-based learning; the technology of contextual learning; the technology of co-operative learning; the technology of situational learning; the technology of vitagenic learning with a holographic approach;

- the group of technologies for interactive interactions – the technology of research-based learning; the technology of heuristic learning; the technology of developmental learning; the technology of focused learning; the technology of segmental learning; the technologies for consolidating didactic aspects of learning; the technology of critical thinking; the technology, titled “Developing critical thinking through reading and writing”; the technology of project-based learning; the frame technology of learning; the technology of facilitating learning based on the schematic and semiotic models of educational material; the technology of productive learning based on Kolb's experiential learning theory;

- the group of technologies for simulating interactions – the technology of expressive psychotechnique; the technology of gaming activity; the workshop on scenic speech [7].

The characteristics of the proposed complex of educational technologies for developing professional skills of foreign literature teachers in in-service training are the following: an open and dynamic character; possible modifications; the optimization of using new technologies, methods and forms of learning which can help future philologists to make independent decisions in a relatively short period of time; the intensification of a dynamic interaction and mutual influence of the objects and subjects of the educational

process; the intensification of the exchange of information and results of activities which encourage teachers to take initiative, be creative in teaching and strive for achievement in their general education institutions.

The experimental study on the effectiveness of applying the complex of educational technologies for developing professional mastery of foreign literature teachers in in-service training was conducted at the communal higher education institution “Kherson Academy of Continuing Education” of Kherson Regional Council, Mykolaiv Regional Institute for Postgraduate Pedagogical Education, the communal institution “Sumy Regional Institute for Postgraduate Pedagogical Education”, the communal higher education institution “Dnipro Regional Institute for Postgraduate Pedagogical Education”, Kherson State University, Volodymyr Hnatiuk Ternopil National Pedagogical University, the National University “Taras Shevchenko Chernihiv Collegium”. In total, the experiment involved 380 respondents, namely, 231 individuals – foreign literature teachers, who are the participants in in-service training; 149 individuals – philology students of higher education institutions.

The development levels of foreign literature teachers’ professional mastery were assessed based on the outlined criteria and their indicators: the motivational criterion (the interest in enhancing their professional mastery): its indicators – the need to improve professional knowledge, abilities and skills; the motivation to identify relevant professional problems; eagerness to solve them); the cognitive criterion (a full comprehension of the content of scientific and methodical support): its indicators – the acquisition and application of special professional knowledge (the knowledge about relevant literary, psychological and pedagogical aspects, as well as about foreign literature teaching methodology and innovative technologies); the connative criterion (the efficiency of mastering the complex of educational technologies for developing professional mastery of foreign literature teachers in the system of in-service training): its indicators – the quality of using technological tools to solve educational developmental tasks when teaching foreign literature at school. Based on certain criteria and their indicators, the generative, reconstructive and creative development levels of foreign literature teachers’ professional mastery have been justified.

During the experiment, the control group (CG) respondents were trained with the help of traditional methods and forms of learning. In the experimental group (EG), the educational process was based on the complex of educational technologies for developing professional mastery of foreign literature teachers in in-service training.

The implementation of problem-based learning in the educational process of foreign literature teachers was facilitated by boosting motivation and ensuring pedagogical work following the technological scheme of problem-based learning; constructing the didactic content of educational material as a chain of problematic situations, which was reflected in the development of the gnoseological component.

When foreign literature teachers were applying the contextual activation of educational information, they relied on perception, memory, as well as creative and productive thinking and constructive interaction. Such a process has significantly

intensified the axiological and gnoseological components.

The introduction of cooperative learning has made it possible to ensure indirect training of foreign literature teachers through lectures and practical work in small groups, united by common educational goals, and special tasks aimed at realizing their desire for communication and motivating learners to perform a collective task. This activity has helped to increase the levels of the gnoseological and praxeological components.

The technology of situational learning was used to analyze pedagogical situations reflecting a practical problem and find out how to optimize the awareness/comprehension of the way to transfer/activate the complex of knowledge to solve it; to improve skills to act effectively and make the right decisions. These educational activities have improved the condition of epistemological and praxiological components.

When implementing vitagenic learning with a holographic approach in the educational process of foreign literature teachers in in-service training, teaching activities aimed at adjusting scientific knowledge to life meaning, revealing their true and imaginary differences, proving their interdependence, which has significantly improved the components of their professional mastery.

Therefore, the use of technologies for active interactions in lectures and practical work was aimed at facilitating foreign literature teachers' mastering of the content of educational subjects in accordance with the features of multidimensional perception of the outside world and their life experience, which greatly enhance their intellectual activities and educational work, including independent acquisition, memorization and application of knowledge.

The group of technologies for interactive interactions (interactive learning) of the complex of educational technologies for developing professional mastery of foreign literature teachers in in-service training includes the following: the technology of research-based learning; the technology of heuristic learning; the technology of developmental learning; the technology of focused learning; the technology of segmental learning; the technologies for consolidating didactic aspects of learning; the technology of critical thinking; the technology, titled "Developing critical thinking through reading and writing"; the technology of project-based learning; the frame technology of learning; the technology of facilitating learning based on the schematic and semiotic models of educational material; the technology of productive learning based on Kolb's experiential learning theory;

When using the technology of research-based learning following the same algorithm, the level of foreign literature teachers' professionalism has been increased due to philosophical reflections based on deep and diverse knowledge; activating logical and analytical thinking; broadening their worldview; motivating them to producing their solutions to this or that pedagogical problem; searching for interesting facts from writers' biographies which optimize the perception of each of them as a person living in certain historical circumstances and living conditions; understanding the characteristics of the creative process, etc. Such actions have significantly increased the level of the gnoseological and praxeological components.

The technology of heuristic learning has facilitated the transformation of education into a mechanism of self-movement of foreign literature teachers since they were not so much focused on acquiring answers (knowledge) as on finding questions (ignorance), created educational products for educational subjects, were able to plan and implement an individual educational trajectory of professional growth. Such work has improved the gnoseological and praxiological components.

The introduction of developmental learning in lectures and practical work of foreign literature teachers, orienting the educational process towards the realization of philologists' potential taking into account the patterns of development and individual characteristics of the individual, has involved combining the content to motivate them to solve certain problems through the logic of performing educational tasks. This method has contributed to developing mental functions of specialists (enriching imagination, improving thinking and memory, etc.), improving their skills (constructing their knowledge, navigating in cyberspace), expanding the field of communication and enhancing the axiological, gnoseological and praxiological components.

The use of focused learning was reflected on individual planning of lessons for a year and preparing lesson plans based on relatively independent consistent blocks, sections, topics with the aim to intensify the motivational sphere (eliminating the constant changing of learning motives); to activate the intellectual sphere (focusing on the relatively complete block of educational material, one can improve the ways of thinking and a considerable amount of information can be realized holistically at the expense of its greater systematization without increasing educational time and the knowledge can be acquired systematically and thoroughly, which promotes cognitive and learning development); to adjust the educational process of philologists with their natural psychological characteristics of perception (the fragmentation of perception is eliminated and the nervous tension is removed), etc. Such work has greatly increased the level of all the components.

The introduction of segmental learning into the educational process (along with such pedagogical techniques as "A Lecture with Stops", "A Prediction Tree" and the scheme "An Algorithm of Educational Work Using the Clusters Technique") has allowed foreign literature teachers not only to fully use their potential (to realize their own ability to absorb a vast array of knowledge, to invoke the desire to learn, to comprehend and process scientific information both in lectures and independent work, etc.) but also to improve the gnoseological and praxiological components.

The implementation of the technologies for consolidating didactic aspects of learning (information technologies with operational elements) in the educational process has made it possible to meet the need of foreign literature teachers to acquire thorough and effective knowledge for a short period of time. It has been also used to analyze artistic works and perform certain tasks using certain methods (induction, synthesis, generalization), which are objectified in consciously acquired knowledge and the increase in the levels of the gnoseological and praxiological components of their professional mastery.

The use of critical thinking has made it possible to improve the ability of foreign

literature teachers to interpret artistic works; to identify any existing problems; to make constructive decisions on the verification of the obtained information; to determine the presence/absence of its subtext; to synthesize the acquired knowledge; to search for the links between educational subjects; to interpret them in the light of alternative positions; to formulate reasoned conclusions and, as a result, intellectually independent judgments, which prevent the manipulation of the reader's mind; to develop a creative reader with independent critical thinking, developed humanistic outlook and a high level of universal culture and improved aesthetic tastes; to increase the level of the axiological, gnoseological and praxiological components.

The technology, titled "Developing critical thinking through reading and writing", has increased teachers' awareness of their goals to improve the study and teaching of foreign literature, to develop their critical thinking and argumentation skills in terms of their ability to formulate and ask thought-provoking questions about the content of an artistic text and have contributed to informative and search activities aimed at finding, processing, evaluating, comprehending and applying information, along with understanding the influence of many factors on the forming of a common decision, etc. This activity has helped to increase the levels of all the components.

The technology of project-based learning (modelling, the denotation graph pedagogical technique and the method of educational and cognitive projecting) has contributed to increasing the levels of the axiological, gnoseological and praxeological components of professional mastery of foreign literature teachers and to developing their ability to plan taking into account the ways of solving problems, namely, outlining the problems and achieving the results and has expanded the knowledge of specialists about the creation of educational projects using multimedia tools and computer programmes, such as Movie Maker, PowerPoint and has intensified the creation of joint and individual presentations on the previously read works/individual scenes from works, book trailers, posters for theatrical productions, advertisements, compilation of music video for poetry, presented at conferences, seminars, etc.

The frame technology of learning, filled with a specific content and a specifically coloured table of lectures, has attracted the attention of foreign literature teachers to a certain slot through visual perception, improved the ability of philologists to narrow, structure and organize information in the table, algorithms, matrices for reducing educational time and developed their navigation in different schemes. Such actions have contributed to increasing the levels of the gnoseological and praxeological components.

The use of the technology for facilitating learning based on the schematic and semiotic models of educational material (along with a group of didactic methods, namely, "the landing method" – exercise, assignment, conversation; "the chain method" – exercise, conversation, assignment, competition; "the on-off test papers" – exercises; "tests on self-control sheets" – conversation, exercise, work with visual aids, the scribing technique, etc.) through compiling and applying a set of keywords, characters, brief support schemes and notes and other supports for thinking has provided foreign literature teachers to easily memorize and restore the information in memory, to minimize/

maximize it, to move from general provisions to their specification and vice versa, etc. This activity has improved the gnoseological and praxeological components.

The use of productive learning based on Kolb's experiential learning theory [6] has updated the content and pedagogical tools during the course period to increase the levels of the gnoseological and praxeological components of their professional mastery, to direct the educational process to improve philologists' competencies, to reveal their ability to act effectively with full impact in various educational, life, professional situations, independently identifying and solving problems based on the knowledge, skills and abilities acquired during in-service training.

Therefore, the technologies for interactive interactions within the complex of educational technologies for developing professional mastery in in-service-training has facilitated the realization of philologists' inner potential. Their reflection and self-reflection have intensified self-determination of one's own weaknesses and strengths to further eliminate shortcomings, creativity in judgments, prediction and modelling of acmeological vectors for improving pedagogical activity through discovering constructive ways of promoting the set aim and achieving specific goals, subjective control of one's actions and actions, readiness for constructive cooperation, manifestation of empathy in various situations of pedagogical interaction.

"The main weapon of gaming technologies is simulation" [1, p. 50]. The introduced technologies for simulating interactions (the technology of expressive psychotechnique; the technology of gaming activity; the workshop on scenic speech) in in-service training have optimized the self-expression of foreign literature teachers, facilitated their creative skills, allowed them to feel like literary heroes perceiving the mentality and outlook of other cultures and people, to reproduce their language, intonation, to release their own unconscious experiences into metaphors, fantasies and engage in new activities. This group of technologies has helped to increase the levels of all (axiological, gnoseological, praxiological) the components of professional mastery of foreign literature teachers in the system of in-service training.

Based on the results obtained from the initial assessment of levels of foreign literature teachers' professional mastery, the average score was equal to 81% in the CG and 81.1% in the EG. According to the indicators of the final assessment, after the introduction of the complex of educational technologies for developing professional mastery in in-service training, the results were as follows: the increase in the axiological component was equal to 12.9% in the EGs and 2.7% in the CGs; the increase in the gnoseological component – 15.6% in the EGs and 3.8% in the CGs; the increase in the praxiological component – 11.9% in the EGs and 3.2% in the CGs. The results obtained are shown in Table 1.

The effectiveness of the experimental work was verified based on a comparative analysis of quantitative and qualitative changes in the indicators of development levels of foreign literature teachers' professional mastery in EGs and CGs at the beginning of the forming stage of the experiment and after its completion. The obtained results show that the teachers in EGs have increased the creative level of professional mastery

(from 23.3% to 46.1%) and decreased the reconstructive (from 26.42% to 16.1%) and reconstructive (from 50, 3% to 37.8%) levels. At the same time, the CGs have not demonstrated statically significant changes in the levels of professional mastery during the formative stage of the experiment (the creative level (+1.1%), the reconstructive level (+2.7%) and the reconstructive level (-3.8%)).

Table 1

The results of the effectiveness obtained from the implementation of the complex of educational technologies for developing professional mastery of foreign literature teachers in in-service training

Development levels	The effectiveness of implementation in CG and EG (%)											
	the axiological component				the gnoseological component				the praxiological component			
	CG	%	EG	%	CG	%	EG	%	CG	%	EG	%
Neutral	31	16.6	29	15	34	18,1	30	15.54	35	18,7	33	17.1
Reconstructive	104	55.6	91	47.2	97	51.87	82	42.5	101	54	88	45.6
Active	52	27.8	73	37.8	56	30	81	41.96	51	27.3	72	37.3
Total	187	100	193	100	187	100	193	100	187	100	193	100
The increase in the indicator	5	2.7	25	12.9	7	3.8	30	15.6	6	3.2	23	11.9

The tabular value of Student's t-test for those foreign literature teachers who participated in the experiment (380) and significance levels of 1% is the following: ttabular is equal to 0.0124 [3, p. 181]. Since teaculated equal to 3.939 is greater than the table value, the null hypothesis has not been confirmed.

The obtained results are presented in the histogram (see Figure 1).

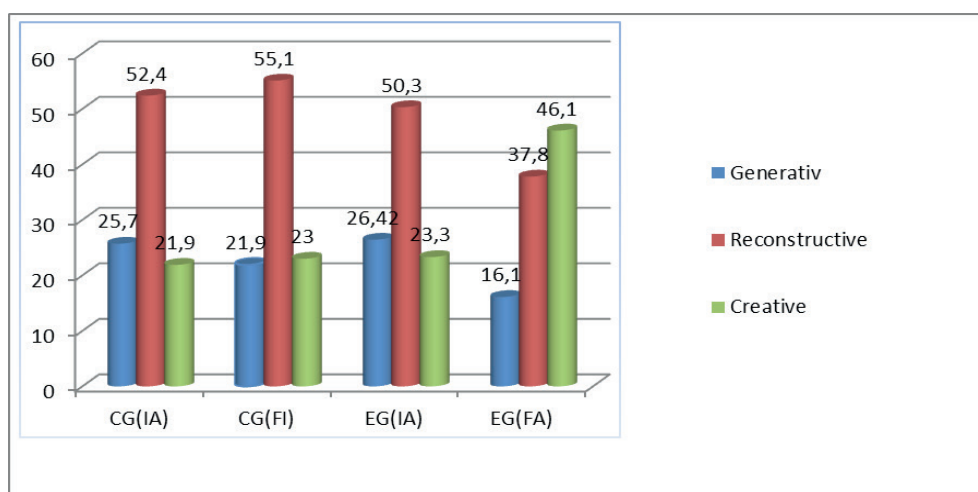


Fig. 1. The dynamics of development levels of foreign literature teachers' professional mastery at the beginning of the formative stage of the experiment and after its completion

The scientific value of the research findings consists in the fact that, for the first time, the complex of educational technologies, which facilitates the process of developing professional mastery of foreign literature teachers in the system of in-service training, has been justified.

The theoretical value of the research involves deepening the notion of “teacher’s professional mastery”, enriching the ideas about the specifics of the structure of foreign literature teachers’ professional mastery, supplementing the theory and practice of developing professional mastery of foreign literature teachers’ in the system of in-service training with the complex of educational technologies.

The practical value of the research implies that the proposed complex of educational technologies can be used by the employees of in-service training / continuing education institutions during lectures and practical work with philologists to improve their professionalism. The obtained results can be the basis for conducting fundamental and applied research in the theory and methods of professional education.

Conclusions. Based on the results of the research, the following findings can be summarized:

1. The expediency of applying the complex of educational technologies for developing professional mastery of foreign literature teachers in in-service training has been theoretically justified.

2. The results of the experiment confirm the effectiveness of applying the complex of educational technologies for developing professional mastery of foreign literature teachers in the system of in-service training. Based on the results of its application in the system of in-service training, relevant positive dynamics has been established. Student’s t-test proves that the positive changes detected are statistically significant.

Prospects for further studies include a systematic analysis of the experience accumulated by in-service/continuing education institutions to justify the methodological foundations of implementing technological development.

References:

1. Volianska, S. Ye. (2016, August). Teacher’s dictionary: an ABC for a deputy principal. Intended for deputy principals. Everything needed. An ABC for a deputy principal, 15-16 (183-184), pp. 32–56.
2. Voskoboinikova G., Doroshenko T., Rudyk A. (2019). Integrated approach to providing technology of educational processes in terms of masters course in institutions of higher education. Modern Science – Moderní věda Modern. № 3. pp. 95–102.
3. Kyveryalg, A. A. (1980). Research methods in professional pedagogy. Tallinn: Valgus. 335 pp.
4. The dictionary of psychological and pedagogical terms and concepts (2009). Education management. Inset. Methodologist – Best. December. Number 12 (41). pp. 7–12.
5. Chumak, L. V. (2017). Teaching foreign literature at school: a textbook. Kherson: Kherson Academy of Continuing Education 279 pp.

6. Chumak, L. V. (2016). Pedagogy, andragogy, hutagogy as acmeological stages of educational professionalism. In O. O. Ohneviuk, S. O. Sysoieva and Ya. S. Fruktova (Eds.), *Modern acmeological studies: theoretical, methodological and applied aspects*. Kyiv: Borys Hrinchenko University of Kyiv, pp. 417–437.

7. Chumak, L. V. (2017). *Developing professional mastery of foreign literature teachers in the system of in-service training: a monograph*. In A. M. Pylynska (Ed.). Kherson: Kherson Academy of Continuing Education, 780 pp.

8. Chumak, L. V. (2014). *Developing professionalism of the philologist: implicitness, explicitness, institutionality*. Kherson: Kherson Academy of Continuing Education, 271 pp.

9. Chumak, L. V. (2013). The essence of structural components of developing professional mastery of world literature teachers in the system of in-service training. *Relevant problems of public administration, pedagogy and psychology*, 1 (9), pp. 472–477.

PHILOSOPHY AND THEOLOGY

AGILE METHODOLOGY FOR A MODERN HIGHER EDUCATION INSTITUTION: POSSIBILITIES OF APPLICATION

Olga Avyerina,

*Ph.D., Associate Professor of the Department of Management,
Information and Analytical Activity and Eurointegration,
National Pedagogical Dragomanov University*

Annotation. *The presented study is the author's attempt to consider the possibility of applying flexible management methods in the field of higher education. Namely, the technology of developing qualification paper on the principles of the Adgile approach is proposed.*

Key words: *project approach in the management, Agile methodology, Scrum methodology, graduation work.*

The issue of reforming the modern educational system is extremely relevant both on a world-wide and nation-wide basis. It is connected with the fact that the existing educational systems fail to respond adequately to changing social and cultural realities in due time. If earlier most people perceived higher education as a great life opportunity the today's study at a higher education institution can turn into lost time and disappointment. One of the mandatory requirements for vocational education is the link to reality and the graduates' skills and abilities to apply their knowledge and to achieve their goals. In our opinion the project approach is the best to manage this task. The project management is an up-to-date and progressive management technology that covers all spheres of life and the sphere of education in particular. The concept of the project integrates both a certain idea, a project, and the measures of its implementation and receipt of a specific result, the product. Experience in the project education accounts for about twenty years and has proven to be the most effective form of accumulating knowledge, skills, of solving realistic problems and creating proprietary products. However, like any methodology the project management has certain disadvantages. In particular, the project approach in the classical sense is rather static and is unable to respond quickly to constant changes in the dynamic environment. For example, when developing a curriculum, a project of a certain discipline, a graduation study, we start from the reality existing at the moment and disregard the coming changes in order to obtain the final result. However, during implementation of the project, we are confronted with inconsistency between the strategy and the real situation that has already changed. Therefore, we often learn what is no longer relevant, investigate what has already become known, create a product that does not meet the needs.

The Agile technology attempts to overcome such inconsistency in the framework of the project approach. Agile is a flexible approach to management that includes various methodologies (Scrum, Canban, XP). To be precise in defining Agile, it is rather a

generalization of the name of various methods and approaches to management, which:

- Focus the team on the needs of the client;
- Simplify the organizational structure and processes;
- Offer short cycles in work;
- Use feedback actively;
- Give more authority to employees;
- Are based on a humanistic approach;
- Are not a final state but rather a way of thinking and action [3].

This approach appeared as early as in 2001 in the field of IT technologies where the dynamics of the environment and the speed of development and innovation reached peak marks. And the main goal of any project team is to respond quickly to actual needs creating the best product. Agile approach has received wide support and is used in many business structures. The specified principles certainly require a high level of self-organization, individual responsibility, professionalism, employees' conscious inclusion, so not everyone is ready for it. However the above qualities are topical requirements for a modern professional which should be developed during study.

An important component of higher education is composition of a qualification paper that is a graduate's own project, an embodiment of his/her ideas, a demonstration of research potential, creative thinking, an attempt to create his/her own product and achieve his/her goal. Another important condition for a successful graduation work is the practical implementation, that is, it must be an intellectual development by which a certain real task is solved. Therefore, we consider it expedient to present a model of a qualification paper using the Agile approach.

Before describing the Adjai technology for the development of a graduation work, the general principles of this approach contained in the official Declaration "Agile Manifesto" should be indicated. The four of the specified values display the general philosophy of this method:

1. "People and interaction are more important than processes and instruments"
2. "The working product is more important than the detailed documentation"
3. "Cooperation with the client is more important than agreement of the contract conditions"
4. "Readiness for changes is more important than complying with the original plan.[3]

Now let's take a look at how it can be used when writing a qualification paper.

1. The principle "People and interaction are more important than processes and instruments". In terms of the humanistic approach, the most valuable resource of any organization is people - employees. From the point of view of Agile, the most important thing is the interaction among employees in the course of which their individual potential develops, new ideas arise and collective results are enhanced. Therefore, the main administrative unit in such a company is a team (a group of professionals who are focused on achieving the goal in the best way).

From our point of view, in order to create a graduation work students should also be divided into such project teams (4-10 persons) where they will be able to explore

the chosen subject through interaction with colleagues and experts. The project team is headed by a teacher who is an expert on the selected topic, coordinates and advises his/her project team. Collegial work in this context has the following advantages:

- formation of personal responsibility for the overall result;
- awareness of the processes of intragroup dynamics;
- enhancement of the I-concept;
- development of communicative skills;
- receipt of new knowledge and experience by means of communication

2. The principle “The working product is more important than the detailed documentation”. According to Agile technology, the documentation goes to the background so that the agreement and approval procedures do not delay the development of the product. Document circulation and subordination in such structures are as simple as possible. By their procedure, composition and defense of a qualification paper at the university do not require a large number of permits, only the subject and the admission of students to defense are regulated with a finished project at hand. However, there is a rather cumbersome system of requirements for composition of a graduation work which prevents from focusing on the content and meeting the rules. There are several ways to simplify this procedure: a) holding of a training webinar on the structure and composition of work for all students; b) creation of an on-line form, with automatic settings; c) appointment of a responsible person in each project team that will handle the documentation process properly.

3. Cooperation with clients is more important than agreement of the contract terms. One of the main achievements of Agile is the customer’s maximum approximation to the final product through continuous cooperation between the team and the customer (the client). The client is informed, invited to the meeting of the team of developers, is able to test the product and give his/her feedback. Thus, all his/her requirements are taken into account and the contract terms just do not make sense.

A client for a project team when writing a graduation work is an object of research, an organization or a person who is interested in solving a particular problem. The project team is a group of researchers who thoroughly study the situation, find options for its solution, submit to the customer for consideration, together implement the best solution and analyze the consequences. Such a partnership aims to achieve a real result rather than its formal design. The cooperation of students and business, government and non-governmental organizations is mutually beneficial: customers receive information and decision options, students have the opportunity to apply their potential in real time, to evaluate the result of their work. In order to organize the educational process, this approach has a number of advantages:

- practicing theoretical knowledge;
- obtaining research experience;
- developing negotiation skills;
- gaining experience of self-presentation and presentation of the work results;
- improving communication with the external environment;

- an opportunity to evaluate the result of own efforts.

4. Readiness for change is more important than complying with the original plan. This Agile principle focuses on creating the best solution, product, result through an adequate response to changes and adjustments during the workflow. If our ideal original plan is not working, or the realities have changed and the new requirements have actualized, the project team must always be ready for change. To keep a finger on the pulse, the working group holds sessions once a week where the customers' new requests and the ability to implement them in the product are discussed. Similarly, during the development of a graduation work, a schedule of meetings is set up where the working group together with the manager and all interested persons discusses the achieved results, problems and plans for further work. A similar organization of the process of writing a graduation work has the following advantages:

- realization of planning and timing skills;
- optimization of brainstorming abilities;
- improvement of analytical abilities;
- application of flexible methods of goal-setting.

Jeff Sutherland, the author of Scrum technique, outlines only 3 key elements that form a basis of the flexible and efficient management:

1. Roles
2. Artifacts
3. Process [1,4]

To manage the process of preparing a graduation work these three elements will also be enough:

1. Roles: the owner of the product (client, customer); Scrum-master (scientific supervisor); team (students).
2. Artifacts: backlog (basic wishes and requirements for a qualification paper); sprint backlog (desired changes in the graduation work); product increment (pilot variants of a project).
3. Processes: planning (schedule of writing a graduation work); sprints (scheduled meetings and consultations), presentation of the result (defense of a graduation work).

So, summing up all the above, we can offer a model of technology for writing a graduation work according to Agile principles. In our opinion, it is realized in the following stages.

Stage 1. Preparatory. At this stage, students are asked to choose a general thematic direction and a scientific supervisor. For this purpose, pages with general themes and faculty experts on these areas are specified on the board of the profile department. Within 2 weeks a student has to determine the general direction and enter his/her last name.

Stage 2. Setup conference. There is a meeting of students with supervisors of graduation works during which students are divided into groups at will and for each group the scientific supervisor is assigned. The teams also discuss timing and format of further cooperation.

Stage 3. A general educational webinar on the technology of writing and composing

a graduation work. This measure is necessary for forming a common reality and understanding of all project participants.

Stage 4. Start of projects. The first meeting of the team during which the general vision of the graduation work is shaped:

- the customer's wishes (an organization or a person interested in this project);
- clarification of the subject (advised by an educational supervisor)
- the main goal and objectives of the project are determined;
- distribution of thematic parts of the project among the participants;
- formulating the main objectives of the project on the backlog;
- the working code of the group is approved

Stage 5. A series of sprints. At this stage a series of meetings and consultations is held according to the established schedule. During the meeting, the group discusses its intermediate goals and results of work, solves the problem issues, plans further steps, makes changes to the project.

Stage 6. Compliance check - verification of the completed graduation work for compliance with the requirements for writing qualification papers.

Stage 7. Presentation of the final result to the customer. Discussion of the work done, analysis of the final product.

Stage 8. Defense of the graduation work before the State Commission.

In our opinion this technology allows adhering to the modern requirements for the organization of the educational process and provides:

- transparency of processes;
- minimization of risks;
- speed of decision of questions;
- effectiveness;
- personal interest of each participant of the process.

This technology is the realization of Agile principles in practice where people, product, readiness for change and cooperation are far more important than bureaucratic documentation, long co-ordination and plans. That's what the modern high school in Ukraine lacks. So, in the course of this small study, we came to the conclusion that the principles of flexible management that are successfully used in many areas of business are extremely relevant to the educational system and can adapt to the realities of a high education institution, simplify and streamline educational processes.

References:

1. Jeff Sutherland. Scrum: The Art of Doing Twice the Work in Half the Time (Revolutionary Project Management Method)// Sutherland J. - M.:MIF, 2016. – 331p.
2. Jurgen Apello. Agile Management. Leadership and team management/ Apello Ju. - M.: Alpina Publisher, 2018. - 534p.
3. Natalia Baranova. Principles of Flexible Project Management Methodology Agile: Why People Are More Important Than Bureaucracy [Electronic Resource] -

Access point: <https://te-st.ru/2017/07/06/principles-of-agile/>

4. Alexei Deryushkin. What is Agile approach and why we need it in business?
[Electronic resource] - Access point: <https://scrumtrek.ru/blog/hto-takoe-agile-podhod-i-zachem-on-nuzhen-bisnesu/>

RELIGIOUS SELF-IDENTIFICATION IN UKRAINIAN MENTALITY

Olha Hordiichuk,
*Candidate of Sciences (Philosophy),
Zhytomyr Ivan Franko State University*

Annotation. *The article considers religious identity as an important form of social self-identification in Ukrainian mentality. It is established that self-identification in conditions of ethno-confessional and regional differentiation is an integral, poly structural and multi-level phenomenon, which manifests itself in different forms and levels of development. The essence of religious identity is determined not only by the adherence to the denomination, but also is a direct reflection of a certain system of world perception. In the process of updating the worldview, the individual or social community perceives a basic religiously motivated symbolic device through which a person learns socio-cultural experience and determines his place in the world.*

Key words: *mindset, mentality, world perception, national solidarity, religious identity, self-identification.*

General presentation of the problem. Understanding the essence of the phenomenon of mentality in the context of the historical development of Ukrainian society is one of the important tasks of the domestic social philosophy. Taking into account the research results of the peculiarities of its formation and transformation provides much more effective reformation of the main spheres of society's life, as well as determining the priorities of further development and progress of Ukraine. After all, effective social transformations will only be possible if the values of the Ukrainian ethnic group, the peculiarities of world perception, world outlook and world transformation are taken into account.

An important component of the Ukrainian mentality is its religiousness, which acts as a factor in self-identification in conditions of ethno-confessional and regional differentiation. In modern socio-cultural discourse, religious identity is one of the most sought after problems. The interest in the analysis of attributive features, forms, levels, stages of the religious identity formation in the context of the increasing social transitivity strengthening in the conditions of globalization remains actual problem of socio-philosophical analysis. In a situation of irreversible acceleration of the pace of a modern person life, religious identity is an important factor in self-identification and self-determination as an individual, as well as entire social communities.

Analysis of recent researches and publications. The problem of religious mental determinant in the foreign and domestic scientific paradigm was studied by representatives of various scientific disciplines and theoretical and methodological approaches. In particular, the essence of national and religious identity was considered in the works of A. Aristov, V. Yelensky, S. Zdioruk, A. Kolodny, M. Marinovich, O. Sagan, T. Voropaeva, L. Filipovich and others who defined religion not only as important, but also as a decisive factor in the ethnic existence of Ukrainians and drew attention to the unequivocal role

of Christianity in the process of ethnic identification of Ukrainian society. Consequently, the question of the religious place and significance in the formation and transformation of Ukrainian mentality is currently not sufficiently investigated; scientific intelligence is fragmentary and requires systematization and philosophical comprehension.

Presentation of basic material. In order to understand religious identification as the fundamental factor of Ukrainian mentality, we define the meaning of the concepts of "mindset" and "mentality" and the problem of their correlation. Consequently, "mindset" from a philosophical point of view is a kind of "principle of interpretations" that synthesizes (mainly on the rational, emotional latent level of conscious and unconscious) traditions, beliefs, customs of a particular human community (or person) in their real and "imaginary" (superstitions, fantasies, myths, symbols, rituals, phobia, etc.). Mindset is like a peculiar context ("ether", "background", "horizon"), which finds expression of a specific, unique way of vision ("reading") of the world around [2, p. 823]. It should be noted that mindset combines higher levels of social consciousness (philosophy, science, religion, art, etc.) with structures of unconscious cultural codes.

Instead, the concept of "mentality" is defined by domestic philosophers S. Krymsky and V. Zablotsky as characteristics of world perception and interpretation in the system of spiritual life of one or another people. Scientists emphasize that the content of mentality is given by the established and embossed historical experience of the forms and methods of intellectual and emotional reactions expression by stereotypes of behavior, archetypes of culture and socio-psychological predisposition of social subjects [4, c. 369-370]. Therefore, the mentality acts as a unifying link between the development of the material world and the spiritual life of society, the common psychology of its subjects. It is the peculiarities of mentality that deliberately and unconsciously determine the way of perceiving the world and the life of the people in general.

M. Yuriy in the monograph "Ethnogenesis and mindset of the Ukrainian people" defines mindset as the unity of consciousness, intelligence and reason, which manifests itself in the character of the people's thinking, the way of his actions, psychological peculiarities, worldview and behavioral reactions, in culture and beliefs, traditions and habits of people" [7, p. 584] A. Furman proposed the concept of mindset as a direct-acting layer of national culture [6, p. 10]. The phenomenon of mindset is regarded by the scientist as "spiritual substance", which has a long-historical origin in the complementarity of individual, group and social invariants as derivatives of the components of the culture of the people, his religion, life-style, philosophical ideas, education and life.

We draw attention to the fact that in the writings of some researchers, both the concept of "mentality" and "mindset" are often used in synonymous terms, but sometimes they are separated. In our opinion, it is important to distinguish between these two concepts as a phenomenon and its practical implementation, since in general mentality is a way of thinking, a general spiritual mood, and mindset is a formed system of beliefs, ideas and views of individuals and social groups that reproduces integrated experience of generations [1, p. 15].

In general, the problem of religious identity in the aspect of Ukrainian mentality,

according to I. Klimchuk, is a complex poly-level and poly-functional phenomenon, the essence of which is to construct religious ideas that can be formed independently on the basis of accessible religious narratives or to be offered by the denomination and fully or partially acceptable, conscious or unconscious, to be reproduced and expressed in religious practices [9, p. 251].

On the aspect of the mentality of religious self-awareness in the sense of religious identity emphasizes M. Primus. In his interpretation, religious identity is to a large extent a reflection of the hopes and aspirations of some individuals and social communities that have not materialized in the realm of real social life. In this sense, religious identity appears as one of the ways of "realizing the world of "its" spiritual orientation in correlating with "other" context of spirituality. At the same time, the world religions history eloquently demonstrates the possibility and even the usefulness of the interpenetration of high standards of religious spirituality" [10, p. 307-308]. In a way, supporting the author's thoughts, it should be borne in mind that in various periods of historical development the question of religious self-identification was actively used by secular elites and church hierarchs as an effective means of manipulating the consciousness and behavior of both individuals and social communities [11, p. 259].

The role of the church in public construction cannot be overestimated. This is confirmed by the centuries-old experience of different peoples. The Orthodox tradition largely determined the ethnic and geographical direction of the development of Ukrainian history, since religion is "the fundamental form of civilization synthesis – an orientation in eternity" [7, p. 138]. On its basis, a culture is formed that dissolves a person in a social absolute. Such an approach was typical of the Byzantine socio-cultural space. The restriction of identity itself was laid down at all levels of culture.

Within limits of the Catholic and Protestant traditions, the appeal to rational arguments, as the basis for the spiritual development of the individual, was consistently established. Instead, in the Orthodox dimension of distribution, an appeal to ritual practice based on the suggestion of a collective experience becomes an important category in the Orthodox cultural environment. Collective religious experience was perceived as an explication of truth and changed the study and proof of the latter.

The modern period of social development in Ukraine is characterized by the formation and transformation of both individual and collective identities, including national, political, religious and cultural ones. Obviously, this does not apply to all Ukrainian citizens, but the majority of society is influenced by domestic revolutions and upheavals, as well as global economic, political and spiritual changes that are developing into a global crisis.

The new civilization identity, which is formed in Ukrainian society, is influenced by global globalization processes. Modern difficulties with confessional-church self-determination, as a component of future identity, are determined by public uncertainty due to a number of socio-political, socio-cultural problems, the origins of which are sought out by scientists in the depths of the history of the Ukrainian people. At the present stage of development, ethno-confessional identity undergoes significant transformations,

the identification of which course of events will enable not only to trace the process of formation of a new Orthodox identity, but also to predict the dynamics of its deployment among Orthodox believers.

Leading domestic scholars determine the inalienable relationship between ethnicity and religiosity. Ethnic and religious identities are often superimposed and interdependent. Although it is evident from the history of the Ukrainian state that a change in religious identity does not necessarily lead to a change in ethnic identity. This prompts our society to continually seek and form a new universal national-religious identity.

The ability to religious self-identification as an attribute of the mentality allows the subject, in our opinion, to isolate itself in the social space among other individuals. Therefore, the idea of V. Shevchenko seems to be correct, that in the mentality the religious identity manifests itself as a certain construct and marker of self-awareness, which, firstly, postulates religious imperatives; and secondly, there is a set of identification practices and ways of describing the world; thirdly, it presents an alternative to confessional affinity and other constants of self-affirmation in a concretely determined place, environment and circumstances; fourthly, there is a transcendental experience that usually absorbs everyday life and becomes a factor in its legitimization; fifthly, determines the behavior and social role of the subject, being the basic element of practical action, from which answers to important questions of human existence follow [12, p. 272].

In the context of analyzing the forms of religious identity within the Ukrainian mentality, it is necessary to study the structure of the subject identification process with a specific religious tradition. In the scientific paradigm, according to A. Aristova there are several approaches to defining the structure of the believer identity process. Some part of modern scholars, under religious identification, understands the person's choice of expressive ideological orientations, self-determination as a person of a believer or unbeliever, and a clear attitude towards religious and secular institutions. Another part of researchers considers religious self-identification as a person's awareness of belonging to a particular denomination, church, organization or community operating in the country. Proponents of the third point of view understand the religious self-identification of a certain model of behavior believer's individual – the election of an active church or passive outside the church's existence in the faith, nominative or real involvement in the system of religious relations. The fourth group consists of researchers who interpret religious self-identification as an internal, subjective, reflexive phenomenon, which results in an awareness of the subject of his personality in faith, the uniqueness of his religious experience, distinguishing himself among other members and groups of the religious space. [13, pp. 77–84]

Not less important role in revealing the structure of religious self-identification process is played by the work of another domestic scientist A. Nikolaevskaya. At the first stage of identification, a person self-determines as religious or not (recognizes the existence of God or not). At the second stage confessional identification takes place, which is accompanied by the choice of the system of dogmas and conscious inclusion in the system of specific religious relations. The third stage of religious identification

is related to the self-identification of laity with a particular religious community, participation in its life, and the observance of a number of everyday behavior rules, which gives grounds to consider a person not only religious or believer, but "churched" [14, pp. 85–89].

The sacred way of believer's life also implies his particular behavior. About 25% of the respondents regularly visit the temple, understand the worship and know the main prayers and postulates of their church. This is in Western Ukraine, because exactly there this indicator is much higher in comparison with other regions. An important and revealing fact is that among those who do not adhere to any faith, about a third part of respondents are equally attending temples in the largest church holidays (Easter, Christmas, Trinity, and Savior) [14, pp. 85–89]. In general, the most visited temples are Orthodox all three jurisdictions, it's historically in Ukraine. However, in the West, almost 40% of the respondents are parishioners of the UGCC.

It can be stated that for many Ukrainians, religion is not the subject of faith, in the sense of a combination of certain canonical and dogmatic norms, but it is a part of culture. For example, if I'm an Orthodox Ukrainian, so did my ancestors, so I follow certain traditions without resorting to their substance. I'm so used to identifying myself from my childhood. This is evidenced by the fact that in most sociological surveys, the "Orthodox" themselves refer to more respondents than those who indicate that they are "believers". Thus, the respondents nominally attribute themselves to Orthodoxy; therefore, this is not always an indicator of religiousness [14, pp. 85–89].

Conducted theoretical and empirical studies prove the presence of two different dominant groups of the population of Ukraine. The first one is to identify the citizens who mostly identify themselves as "Christians" (Orthodox all jurisdictions, Roman Catholic and Greek Catholics, Protestants). They have a pro-European or national identity. It is important that the very first group is characterized by a higher level of patriotism. With regard to pro-European identity, it is the fastest growing population of metropolitan areas.

The second group includes representatives of more post-Soviet identification. They represent themselves as "Orthodox" (mainly representatives of the Moscow Patriarchate). The presence in the process of religious identification of all levels directly indicates the process of religious ceremony of believers. However, it is worth remembering that during a religious self-identification, often identification acts can be limited to only one or several stages. In particular, the religious identification of some part of the believers can stay at the level of acknowledgment of God's existence and faith in him. Such people can be neither religiously nor even associated with a particular religious institution. In this regard, the stages of religious identification can be relatively arbitrary, because in different socio-cultural conditions, they can have different levels of actualization.

In the process of religious identity formation traditionally rational and practical levels are distinguished. The first helps to understand someone's place in a certain religious group, to find out someone's own functions and to consider oneself a full member of a religious organization. Instead, the second demonstrates a certain "unity in faith" within

a particular group, outlines the rules of conduct.

It is necessary to note the fact that the general results of sociological research refute that a significant part of Ukrainian citizens are in general religious uncertainty. A large percentage of people recognize themselves as believers, but consider themselves far from church. At the same time, most indicate specific motivational reasons. The non-church way of life suits them. In particular, the respondents explained this behavior as follows: the church creates psychological pressure; worship is tedious and incomprehensible; interfere with the determination of a permanent inter-confessional enmity; the infamous moral and material behavior of the clergy; politicization of the church; lack of grace; lack of time and financial insolvency. Such dissatisfaction is expressed by about 50% of those polled. It is noteworthy that such reasons are called respondents who have already left the church, but stayed there for a while. Again, similar impediments are indicated by people who could and would like to return to the womb of the church at their positive decision [13, p. 81–82]. On the other hand, a large number of people today practice chaotic choices of their own religious practices and beliefs. Today they visit Orthodox churches, later practice with Protestants, and in everyday life they resort to various religious prejudices, go to the fortune-tellers, use magic, and so on. It is basically not church people who find it difficult to identify themselves religiously.

It should be noted separately that the bearers of the Orthodox identity, who joined the norms of religion, life and behavior of the Orthodox environment as a result of socialization. Own religious experience is not the main content of this identity. In contrast, in the Ukrainian society, an individual-personality religious identity can be traced. It is formed as a result of personal communication with God. This path is complicated and requires effort. In particular, attempts to pass the ascetic Christian way, reading the holy literature, active participation in worship. In life, a person can change its fundamental views on life and the church; it also influences the change of its own religious position and identity with a certain religious group.

The confessional blurriness of today is a consequence of the transitional state of Ukrainian society. Traditional religions, in particular Orthodoxy, significantly lose their influence on believers. The powerful missionary activity of Protestants and representatives of the newest religious movements, including occult ones, promotes religious uncertainty of citizens and departure from traditional values. Therefore, in determining the confession, a significant number of Ukrainians hesitate to make religious choices. Therefore, the problem of confessional identity should be evaluated through the prism of the classification of the faithful ones (practitioners) and nominal ones that can correlate with a certain denomination, but not belong to it. On the contrary, consider oneself to be unbelievers, but to visit a certain temple on big holidays because it is a social tradition.

Nevertheless, in the process of religious identity formation, it is appropriate to apply the division of religious identification to four key stages: faith, religious awareness, participation in religious practices and extracurricular religious activities. It is at these stages that a religious identity is formed. Speaking of faith, its presence is often associated

with the mystical experience of the believer.

Despite the intensification of traditionalist tendencies and as a consequence of the radicalization of the religious sphere, religious institutions are forced to step up or over time, adapting to changes in the socio-cultural environment. A modern person, who, on the basis of critical thinking, received much more knowledge than his ancestors, can no longer only accept at the level of prohibitions the religious principles and guidelines that have been used for thousands of years. It needs more and more rationalization and explanation of the basic components of its own religious identity. In this regard, in the second half of the twentieth century – the beginning of the twenty-first century modernization was subjected to the social doctrine of the Roman Catholic and Orthodox churches, their understanding of general civilizational environmental problems, the problem of mortal sins, artificial insemination and interruption of pregnancy, etc. These processes bear witness not so much decline of religiosity in the modern world, but the attempt of its "new reformation" (T. Parsons). However, the half-heartedness and unsystematic nature of modernization processes leads to an increase in the number of non-traditional religions adherents in the modern world.

Thus, religious identity is one of the key factors in the formation and maintenance of ethnic and national identity, actualization of which in the conditions of growing nonlinearity and uneven development of modern society, can actualize the function of preserving the self-identity of a person. In Ukrainian realities, the process of forming a national identity coincided with the proclamation of the local Orthodox Church as an important factor in consolidating the religious identity of majority of Ukrainian population. However, the presence of several Orthodox churches in the process of state-building, which have different subordination and foreign policy orientations, leads to a certain disintegration of Ukrainian society and Ukrainian state.

Thus, on the one hand, the process of growth of the institutional network of religious organizations shows that Ukraine establishes the foundations of tolerance and democracy. On the other hand, a number of new socio-ecclesiastical problems arise, which include both the state-church and inter-church factors, and sometimes intra-confessional contradictions [15, p. 64]. The second is precisely the absence of tolerant inter-confessional and state-church relations, as well as the need for constructive dialogue between these institutions.

As regards the establishment of interfaith tolerance, and, accordingly, the peaceful harmonization of the religious identity of our fellow citizens, it is worth remembering the teachings of E. Kant. According to his theory, religion not only forms civil principles but also regulates relations in confessions and in society as a whole. Religion is the mean of learning the duties of each of us in the form of divine norms and ordinances, which are binding for a believer [16, p. 850].

The establishment of inter-confessional world is associated with the process of establishing independent Local Ukrainian Church. Analyzing this issue, experts came to the conclusion that only the Orthodox Church corresponds to Ukrainian mentality. In this context, the actual category that comprehends one of the most important characteristics

of the Orthodox consciousness stands – unity. It is interpreted as the mystical unity of the orthodox in the temporal and spatial continuum.

During the years of Ukraine's independence, the UOC-KP and UAOC repeatedly declared unity councils or mergers into one church, which ended only in the form of declarative statements. Therefore, the problem of overcoming the division of Orthodox churches into various jurisdictions is currently unresolved. The desire of the Ukrainian people to gain their own church independence is prolonged in time, but it is clearly expressed not only religious but also purely nationalistic and political subtext. And today the formation of a local church is a key issue of the existence of Ukraine as an independent state. Only a full course of own independence, rather than focusing on various foreign religious centers, in conditions of armed confrontation in the East of Ukraine, will be able to establish peace in interfaith relations, which will lead to stabilization of the socio-economic crisis in the country.

Appealing through the prism of geo-ethnology and political science to the modern administrative-territorial structure of the largest number of parishes of the UOC of the Moscow Patriarchate, it becomes apparent that it does not conform to the modern principle of the institution of Orthodox denominations. It is clear that the UOC today has a landmark at its cultural and political center, which is located in Moscow. Of course, the influence of a foreign center for Ukraine today is disastrous. This exacerbates the influence of Russian ideology on the underdeveloped Ukrainian national identity. Political significance and subtext have many points from the Charter of the UOC of the Moscow Patriarchate. It only strengthens the aspiration of our people until the proclamation of the Local Church.

In general, the current religious situation in Ukraine performs a more imbalanced function. Inter-church confrontation is a consequence of the long-term influence of various factors: historical circumstances, political influence, ethno-national factors. Therefore, the solution of a religious issue and the creation of a single church is one of the main strategic tasks of Ukrainian society. This includes the improvement of legislation governing the religious sphere, the development of a Ukrainian vector of state policy on religion, and the establishment of state-church relations in general. However, it is practically impossible to take into account the interests of all ethno-national and ethno-confessional entities at the same time, because religious and ethno-confessional self-identification plays a key role in this matter. Thus, documented, the church is separated from the state, although in practice, without state regulation today, there is only the deepening of the old and the development of new religious confrontations [17, p. 56].

We can summarize one thing – the question of the Single Local Orthodox Church creation is extremely complex and politicized, in addition, it reflects the national-religious identity of the population. Definitely, his positive decision will seriously affect the new religious situation in the country. Will put a completely different level of state-church relations and change the structure of inter-confessional cooperation in Ukraine. However, the enormous degree of politicization and obscurity of the world's attention to this issue greatly complicates its solution.

Conclusions. Consequently, the confessional structure of Ukrainian society during the period of independence has undergone significant transformations. Despite the significant growth and apparent quantitative and qualitative increase of parishioners of absolutely all confessions represented in Ukraine, religious buildings, material support, influence on public opinion and others, the religious situation in Ukraine has not become stable and has suffered numerous complications. The process of modern nation-building in our country has come under the significant influence of those religious processes that today divide Ukrainian Orthodoxy into different jurisdictions. Accordingly, the citizens of the state, who religiously identify themselves with a certain church, remain divided. High level of politicization of religious processes adds tension, and it further complicates the establishment of inter-confessional and state-church relations.

References:

1. Gordiychuk O. Archetypes of Ukrainian Mentality: Socio-Philosophical Analysis / O. O. Gordiychuk // Journal of Zhytomyr Ivan Franko State University. – 2018 – No. 1 (84). – P. 15–19. [in Ukrainian].
2. History of Philosophy. Dictionary / For coll. edit V. I. Yaroshovets. – K.: Knowledge of Ukraine, 2006. – 1200 p. [in Ukrainian].
3. Krymskyi S. B. Archetypes of Ukrainian Mentality / Problems of the Theory of Mentality. – K.: Scientific Opinion, 2006. – 405 p. [in Ukrainian].
4. Krymskyi S., Zablotsky V. Mentality / Philosophical Encyclopedic Dictionary / V. I. Shynkaruk (chair of the editorial board) and others. – Kyiv: Abris, 2002. – 742 p. [in Ukrainian].
5. Strazhny O. S. Ukrainian Mentality: Illusions, Myths, Reality. – K.: Book (Knyga), 2008. – 368 p. [in Ukrainian].
6. Furman A. Psycho-culture of Ukrainian Mentality. – Ternopil: Economic Thought, 2002. – 132 p. [in Ukrainian].
7. Yuriy M. Ethno-genesis and Mentality of the Ukrainian People. – K.: Tucson, 1997. – 237 p. [in Ukrainian].
8. Yuriy M. Socio-cultural world of Ukraine. – K.: Condor, 2004 – 738p. [in Ukrainian].
9. Klimuk I. Religious Identity: Essence and Stages of Development / Scientific Herald of Chernivtsi University: Collection of Scientific Papers. – Chernivtsi, 2014. – Issue 706-707. Philosophy. – P. 249 – 253. [in Ukrainian].
10. Prymush M. Religious Identity in the Conditions of Globalization / Identity in the Contemporary Society: Materials of the International Scientific and Theoretical Conference. – Donetsk: South-East Ltd., 2006. – P. 306 – 308. [in Ukrainian].
11. Vassyian Y. To the Main Principles of Nationalism // Nationalism: Anthology – K., 2000. – P. 257 – 264. [in Ukrainian].
12. Shevchenko V. V. Orthodoxy in Ukraine and Civilization Challenges: History and Modernity. – K.: Publishing Department of the UOC of Kyiv Patriarchate, 2013. –

639 p. [in Ukrainian].

13. Aristova A. Religious Self-Identity in a Modern Society (Sociological Aspect) / Ukrainian Religious Studies: Bulletin of the Ukrainian Association of Religious Studies and the Department of Religious Studies at the Institute of Philosophy of the National Academy of Sciences of Ukraine. – 2005. – № 33. – P. 77 – 86. [in Ukrainian].

14. Nikolaevska A. M. Religious Identity in the System of Social Identities of Ukrainian Students / Socio-Space: Interdisciplinary Collection of Scientific Works on Sociology and Social Work. – №. 1 (2) '11. – P. 85 – 89. [in Ukrainian].

15. Babiy M. Problems and Prospects of Inter-Confessional Dialogue // Ukrainian Religious Studies. – 1999. – 12 bulletins. – P. 63 – 72. [in Ukrainian].

16. Sociology. Encyclopedia / Compiled by A. A. Gritsanov and others. – Mn., 2003. – 1138 p. [in Belarus].

17. Predko D. Y. Religious Feelings as a Presentation of Spirituality: Ukrainian Context. / Sophia. Humanitarian and Religious Herald. – 2015 – №. 2 (4). – P. 54 – 57. [in Ukrainian].

AUTOCEPHALY APPROACH AS THE BASIC FACTOR OF THE STRUCTURE OF THE UNIVERSAL ORTHODOXY

Andrey Kobetyak,

*Associate Professor of the Department of Electronic Security,
State University of Zhytomyr Polytechnic*

Annotation. *Modern ecclesiastical and secular science can not unequivocally give an answer to the problem of autocephaly, which has become much more active with the proclamation of the independence of the Ukrainian church. Therefore, the study of the problem of autocephaly today is a key task of world Orthodoxy. Since the foundation of Christianity, autocephaly is the basic principle of apostolic sermon, which takes into account the national and ethnic features of the Roman Empire. Autocephaly is one of the most ancient institutions of the Church, which is a decisive feature of Orthodoxy today. For two thousand years this phenomenon remained unchanged, but there were various, even fundamentally opposing approaches to its understanding. Since the theory of autocephaly arises along with Christianity, it is not some imposed or borrowed from the outside of the institution, but the very essence of Orthodoxy, the way of its existence.*

Key words: *Autocephaly, Orthodox Church, Ecumenical Orthodoxy, Primate, canon, cathedral, Local Church.*

The actualization of the study of church structure and ecclesiology as a whole relates to a new wave of inter-Christian dialogue, especially between Orthodox and Roman Catholics (including Greek Catholics), as well as numerous misunderstandings in world Orthodoxy through Providing Tomos to the Orthodox Church of Ukraine. The problem of autocephaly is not new, and in fact, all of the twentieth century it was in the center of scholarly and theological discussions of all Local churches. On a global scale, few problems caused such a resonance. It is worth mentioning only the confrontation between the Constantinople and the Moscow Patriarchate in recognition of the Polish, Czech and Slovak, American churches. The problem with the possibility of proclaiming autocephalous status remains the most painful.

Today, in the Ecumenical Orthodox Church, a certain number of churches either have no general recognition, or have a status (such as the exarchate) that does not satisfy them, or are generally considered to be schismatic precisely because of the unresolved issue of autocephaly and the possibilities for its acquisition. This problem is adjacent to the issue of feeding the diaspora and its jurisdiction. On the one hand, the problem of autocephaly is one of the most popular topics for discussion, both in scientific and everyday aspects, and on the other hand, it remains scientifically unfounded and undiscovered. In a future, this issue brings the division into inter-Orthodox relations at the world level.

At the time when discussions took place on the way of proclaiming a new autocephalous church, the very concept of "autocephaly" remained in the shadows, so there was no decent scientific and theological discourse. It is obvious that in the situation of the All-Orthodox misunderstanding concerning new autocephalous churches, the definition of the term itself should be completely unambiguous. The main task of scientific

intelligence is a detailed analysis of the autocephalic system of world Orthodoxy, its division into separate churches and their mutual recognition and interaction.

The best theologians, hierarchs and great fathers of the Church addressed the problem of autocephaly and the structure of the universal Orthodoxy, both in the era of the Ecumenical Councils, and in modern times. Particularly this issue has exacerbated before the convening of the Great All-Orthodox Cathedral in Crete in 2016, and with the signing of another Tomos for the newly proclaimed church. The Ukrainian question was no exception, and therefore the wave of world and Ukrainian discussions on the status of autocephaly and its possibilities to provide is one of the most popular topics not only in Ukraine (both in the church and in scientific circles), but also in the world community as a whole.

First, we must define the basic concepts, since their understanding will depend on the progress of scientific intelligence. The term "Ecumenical Orthodoxy" is not a theological, rather collectable, and means the totality of all Local churches and Diasporas, regardless of whether their autocephaly recognizes diptychial churches. This also includes Church formations that disappeared from the map or transformed, in their historical retrospect. Being the only in essence, the Orthodox Church is divided into autocephalous (independent) forms of government and nationally-based internal church education. Over time, an appropriate list has created – diptych of mutually recognized churches [1, p. 427]. Although today there are two different lists of diptychs (Constantinople and Moscow), we deliberately drop it in the designated scientific intelligence. There are also other church formations, such as the Eastern (Doha Clinton Churches), unrecognized, fighting for autocephalous status (for example, Montenegro and Macedonia), but there are unrecognized churches that do not seek external confirmation of their own legitimacy, but simply exist in a closed environment (for example, the pagan churches in a number of countries or the Ukrainian Apocalyptic Church).

The term "Local Church" in our understanding has a Church Slavic origin. The Greek equation "τοπική ἐκκλησία" should translated as "a local church", and that is located in a certain place. Therefore, the adjective "τοπική" indicates the territorial structure of the Orthodox churches. In English, the equivalent is the "local church". Today, separate theologians, in particular Russian and Ukrainian, try to separate the concept of "local" (small) and "local" church. As part of this study, as in general, it has no scientific basis, because in other languages of the world there is no such division [2, p. 40].

The concept of locality is unequivocally an early Christian, since it was supposed to understand the first church formations in their place of their foundation by the apostles, and they were united by one of the language and cultural features of a certain ethnic group of the population. In the first centuries, when it was about churches in the plural, local ones meant, that is, local communities, but the church remained with one and the same, as expressed in the Eucharist - a common communion [3].

The ecumenical character of the church is that it unites all communities (local churches) without divisions (linguistic, cultural, national, class), and the local principle – In a location on a certain territory. The Ecumenical Church could realized only through local.

On the other hand, every local church (in the narrow sense) is already an Ecumenical, because it has been endowed with the fullness of God's grace. Orthodox ecclesiology considers the local church not only as part of the Universal, but as the whole Ecumenical Church in one community. God is the same and indivisible, and He is present in the Eucharist. Another issue is that the sign of unity with the Ecumenical Church is the fulfillment of certain conditions (canonicity of the clergy, structure of worship), that is, unity in doctrine and rites with other churches [4, p. 91].

The ecumenical character of the local church has been expressed in the prayer of the bishop for his first hierarch and who mentions the Liturgy of the Primates of other Local churches (by diptych). In addition, there are parish churches, where bishops and the laity confirm unity, making joint decisions, and most importantly - it is a common Eucharist. Thus, the Ecumenical Church is unique in the Eucharistic communion, and it defines the boundary of the church on a global scale, but local, that is, local churches are the expressions of the Ecumenical Church on a particular territory [5, p. 201]. In the Gospel, this principle can be compared to the words of Jesus Christ that He is the Loza (that is, the Unified Church), and the apostles are sprouts (Local churches) (Jn 15:5).

Today, the term "Local Church" has been used not only in the original sense of the individual community, but also as a synonym for autocephaly, which is much more widespread. A local church is a collection of eparchies in a certain country or a certain nationality with self-government (apart from autocephaly, there may be an autonomous church with its own rights in management but in a way dependent on the Cyrillic Church).

Another term that denotes the actual object of research is autocephaly (from the Greek αὐτός - itself and κεφαλή - head). This term refers to an administratively independent Orthodox Church, which is part of the Universal Orthodox Church, but is not nominally accountable to anyone. Traditionally, the autocephalous division of churches coincides with the territorial division of the state. Autocephalous status regulates the relationship between Local churches. In the modern theological sense and practice, autocephalous may also be called a church organization that has the right independently, regardless of other churches, to resolve its internal issues, and to elect and ordain its bishops, including the first bishop. The phenomenon of autocephaly is unique to the Orthodox Church. Autocephaly is the basic principle of the Apostolic Sermon, which takes into account the national and ethnic peculiarities of the population of the Roman Empire of the early Christian period. It is no accident that the apostles received the gift of glossolalia (γλῶσσα "language" and λαλέω "I speak") - the opportunity to preach in different languages (Acts 2, 6-11). At the same time, autocephaly is a purely administrative and territorial division of a single Ecumenical Church into smaller religious organizations for ease of management and coordination. It is important that the autocephalous church can only be through mutual recognition and the Eucharist with other Local churches [4, p. 91].

In modern theological and religious studies, there is no precisely defined single source for the definition of autocephaly; this is one of the main reasons for the lack of consensus on the possibility of gaining autocephalous status in modern Orthodoxy. On the one hand, it complicates scientific research, and on the other hand, it substantially

updates it, since the study of the problem of autocephaly today is a key task of world Orthodoxy at the level with the formation of objective tools for further research. Today, the only unchanging authority and source of church teaching is the Scriptures and Rules of the Holy Apostles, the canons of the Ecumenical and Local Councils, and the rules of the Church Fathers [6].

Autocephaly is one of the most ancient institutions of the Church, which is a decisive feature of Orthodoxy today. It is around the autocephaly that the main disputes and misunderstandings unfold on a global scale. The phenomenon of autocephaly remained unchanged, but during the history of the Christian Church, there were different, even fundamentally opposing approaches to its understanding. The theory of autocephaly arises along with Christianity. It has not imposed or borrowed from the outside of the institution, autocephaly – it is the very essence of Orthodoxy, the way of its existence. The apostolic communities are autocephalous entities that did not report to each other. Each of the founding parish churches was equivalent [7, p. 110].

In the process of the Church's expansion, it automatically merged with the Roman Empire, under whose laws it lived. Thus, the first privileged communities began to form, depending on the status of the city or settlement. Parishes of small settlements began to obey significant communities. In minor church parishes, autocephalous status has disappeared. The largest communities began to address the key issues of supervision, the court, and the main thing – to ordain bishops. Such parishes were located in the administrative centers of the empire. The state-administrative principle has completely transferred to the Church. Thus, from the basic imperative of the existence of autocephaly transformed into a privileged state. The first autocephaly was based in district centers, and later only in the regional (diocese). Only the most ancient departments left the autocephalous, based on which the theory of patriarchs has constructed (the period of the Fourth Ecumenical Council, 451). At first, patriarchy considered leaders of a privileged community, and later they were given leadership functions over the entire countries. There were cases where the patriarchs ruled not only religious matters, but also secular, for example, Kir Alexandria in the 7-th century. The title of "patriarch" began to use in the Antiochian Church in relation to individual elders and pious devotees, and later to all bishops of the elderly. In the modern sense, the term patriarch has used in the 7-th rule of the Trullo Cathedral.

In the process of the formation of the Church as a social institution, autocephaly has transformed into a church-political phenomenon, which remains in the twenty-first century. From the first centuries, there is pressure from the state on church events. In particular, this involved the formation of ancient patriarchal chairs. The rulers wanted to have an independent church in their possessions, they wanted to see in the church the resistance of their leadership actions, and so the Church took over the state model of governance and administrative-territorial division [1, p. 217].

In the modern theological sense, the autocephalous status has the churches that at one time were freed from external influence, that is, proclaimed independent, and have their own spiritual leader – the Primate. Mostly, autocephalous churches coincide

with the borders of national states. Hence the theory, which has its confirmation and canons of the church, for example, 34 apostolic rule that the independence of the state automatically entails and church autocephaly [8, p. 54].

It is important that since their foundation they were autocephalous, that is, it is not acquired status, but the basic imperative of their existence. Higher ecclesiastical institutions formed several centuries later, as evidenced by the rules of several Local and Ecumenical Councils, for example, the 6-th Council of Nicean Council. The state delineation in the province or the diocese (hence the church name) was predominantly on the verge of ethnic settlements conquered by the empire of peoples. Therefore, for the administrative basis of the church taken not the national, but the territorial division [9, c. 176]. The same opinion on the pages of the two-volume "Autocephaly" defended by the well-known Ukrainian church figure of the twentieth century Professor O. Lototsky.

The Russian canonist V. Tsipin clearly defends the idea of a territorial rather than a national principle of the formation of Local churches. He testifies that the present state of the Ecumenical Orthodoxy takes the foundation from the first centuries. It is in the I-III centuries the structure of Orthodoxy has formed, which is still unchanged today. Christianity preaches the principle of the absence of national attributes, since the apostle Paul says that there is neither Ellina nor Judah ... neither a slave nor a free (Colossus 3, 11). That is, in ideal conditions, people of different nationalities living in a certain city must be members of one Orthodox community, which obeys one bishop. Thus, the state-administrative division is the basis for church separation. On the one hand, in the state, or even in the empire, can live a large number of nationalities, and they must be united into one church, on the other, one nation can be divided into several states. This means there should be several independent churches there. As for the 34 Apostolic Rule, which testifies to the fact that every nation, and not a country, must know the first hierarch, then Father Vladislav explains this by the fact that in the first centuries the term "people" was denoted by a certain country [10, p. 276].

Professor O. Lototsky believed that the canons of the Orthodox Church foresee the autocephalous status of the church for certain independent peoples. It is impossible to refuse it according to canonical norms, when a new state has created with the prevailing Orthodox population and asks for autocephaly for its church. But it is unacceptable to deny the church of disparate tribes and national minorities living in a non-Orthodox country [11, p. 462].

From the first centuries, the territorial principle knew certain exceptions. First, this was due to the presence of certain "representations" (apocrisians) of the Ancients of the Primate, especially the Patriarch of Constantinople in the territory of other autocephalous churches in order to maintain contact between the churches. There was a similar situation with monasteries and dormitories. Another example is stauropegia when the temple, monastery or bishop find one on the territory of one local church, and obey the primate of another [10, p. 277].

Another important exception to the questions of autocephaly during the Ecumenical Councils was Cyprus. According to the canons, the Cypriot church was supposed to

be subject to Antioch, because it was administratively dependent on it, but at 431 the Cypriot hierarchs opposed the Cathedral in Ephesus and the Cathedral retained the ancient traditions of their independence. Other autocephaly arose purely because of the political transformations of the empire.

Understanding autocephaly in the first century came from the fact that the local church was self-governing. That is, from the outside, no one imposed on her any decisions, and the church itself chose and ordained a primate. This also included the authority of the trial of the bishops and the first bishop. This expression in canonical creativity has confirmed by the 8-th Canon of the Third Ecumenical Council. Over time, the character of the Primate's power changes. His powers are expanding and becoming authoritarian. Bishops of smaller cities delegate their powers to metropolitans and patriarchs [7, p. 114].

Subsequently, autocephaly turns into a political instrument, since it goes beyond the Roman-Byzantine Empire in its relations with neighboring countries. Autocephaly is a new instrument of diplomacy. Every state that wished to have an independent church had to address the emperor. This is especially noticeable in the relations of Byzantium with the Balkan countries (Bulgaria, Serbia), where the issue of autocephaly has repeatedly been the cornerstone of political relations. It is worth noting that church autocephaly became an inalienable characteristic of an independent state, which provided political self-sufficiency.

Such a "game of autocephaly" becomes possible due to the special canonical creativity of the Byzantine church and the actual monopolization of Church rights and privileges by Constantinople. As for canonical creativity, there are also a number of contradictions and disadvantages. In particular, the problems of the formation of the ancient eastern patriarchs, which were a priori autocephalous, separate canons directly, contradict each other. This is a consequence of the intervention of the state and the personal interests of the emperor in church matters. Canon 6 of the First Ecumenical Council testifies to the primacy of Alexandria in the East, in particular in Egypt. Antiochus occupied a similar position. Canon 3 of the Second Ecumenical Council declares the superiority of Constantinople after ancient Rome; after all, it became the capital of New Rome [6, p. 42].

The rise of the Constantinople Patriarchate destroyed the unity and long-standing harmony of Christianity in the East. The theological search of the justification for this conditional separation continued. On the other hand, if not for state intervention, then the entire East would definitely accept monophysitism, which was simpler, and therefore closer to ordinary believers. On the other hand, the rational Tomos Pope Lion I was unacceptable for the mystical East [12, p. 54]. The victory of Constantinople in the struggle for primacy contributed to preserving the purity of faith, and was the result of a strong centralized power, but transformed the Church into an instrument of influence on society in the hands of the emperor. The visible symbol of the rule of the Patriarchate of Constantinople was the title "Ecumenical Patriarch" (οἰκουμενικός πατριάρχης), which was used from the beginning of the 6-th century.

The autocephalous status itself and its acquisition are all less dependent on the church factor, and the role of the empire becomes more and more important. An example

is the Bulgarian autocephaly of the tenth century, when it gives the decision on church independence, and then takes away the imperial Senate, and the Ecumenical Patriarch. Moreover, the request for church independence has provided not by the Bulgarian Church, but by King Petro. Autocephaly is a typical instrument of political influence. According to the model of Constantinople, autocephaly becomes an example of the political identity of independent states. Bulgaria, Serbia and the Moscow State considered autocephaly as a permanent attribute of their independence. A certain legitimizing measure of the existence of the state. Thus, the states, especially Russia, wanted to imitate the sacred Byzantine Empire. Empire imputed through church independence. New empires thus borrowed the Constantinople identity [7, p. 129].

Understanding of autocephaly in a new era is noticeably different. In the nineteenth century. The wave of autocephalous movement has affected a few, especially the Balkan, countries. On the world stage, a new type of identity is emerging - a nation that replaces the imperial paradigm. The era of great empires has gone past. Decaying Osmania gave an impetus to the rebirth of the institute of autocephaly. The formation of new national states of the Orthodox orientation raised the question of the independence of the churches of these countries. Through the struggle with the empire that oppressed the nation, the latter comes to the fore as a symbol of the revival of state independence. This is a completely new paradigm. In the Middle Ages, autocephaly acted as a unifying force of the empire, an instrument of political influence on neighboring countries; in the New Age, autocephaly was based on national feelings, and thus the empire was denied [7, p. 135].

A new wave of state-church and inter-Orthodox opposition in the struggle for ecclesiastical independence began. In the twentieth century, it also concerned Ukraine, which sought state formation and tried to use the church as a tool of self-respect from Russia. The Polish Orthodox Church has referred to as an example of the newest auto-racist confrontation and theological thought about autocephalous status. The All-Ukrainian Orthodox Church Council (1925) protested against the granting of autocephalous status to Poland, since it believed that the Church-Mother for Orthodox inhabitants in Poland has the Kyivan Metropolitanate, which was just in the struggle for its own Church independence. Consequently, the Patriarchate of Constantinople was an external factor in the case of autocephaly. According to the 34th Apostolic Rule, a separate people (Ukraine and Poland) must have their first bishop, and external forces can not influence the course of intra-church events. Therefore, the Council of Vologda, headed by the ideological leader O. Lototsky, denied the need for the establishment of an independent Polish church, because in fact the Poles were Catholics, and the Orthodox were Ukrainians and, to a lesser extent, the Belarusians living on the territory of the newly formed state. Ukrainian ideologists sought recognition of autocephaly for the Kyivan Metropolitanate, and the Polish dioceses were supposed to join [13, p. 614]. Constantinople has guided by the 17-th canon of the Chalcedon Cathedral, which testifies to the possibility of acquiring autocephaly after gaining state independence.

Professor I. Vlasovsky observes that the historical practice of acquiring autocephaly

has changed, since there are various ways of proclaiming an autocephalous church, but more often, it was due to "measures of state power" [14, p. 33]. Regarding the autocephaly of the Polish Orthodox Church, it is precisely because of the initiative of the Government of the Polish state and its indissolubility in this matter until 1924, when the Constantinople Patriarchate signed Tomos.

To conclude, we note that autocephaly is the basic imperative of the Orthodox Church; this is the basic principle of its functioning. Unique in its essence, the Ecumenical Church in an administrative national division has divided into separate autocephalous churches, which are independent in management, but have a limited character in the field of doctrine and canonical creativity. The autocephalous church is not only one part of the Universal, but its full implementation in a particular place (therefore called Local).

On the one hand, the problem of autocephaly aroused a resonance both in the era of Ecumenical Councils and on the verge of the second and third millennia. The best theologians and scientists in the world tried to analyze this problem. On the other hand, the autocephalous status and possibilities for its acquisition have no clear solution today, which greatly complicates the inter-Orthodox dialogue. Of course, there are a number of canons regulating the administrative arrangement of the church, but the canonical work on autocephaly is somewhat controversial, and today it does not answer the question of the creation of new independent churches.

With the development of the Church in the era of the Cathedrals, autocephaly from a purely ecclesiastical formation and the unified existence of communities turns into a political instrument. It was precisely because of the non-granting of autocephalous status the Byzantine Empire often conducted foreign policy. The Emperor sought the exaltation of the Metropolitan Patriarch, who received expression in the constituent rules, which give the Constantinople Church significant privileges. Today, the problem of autocephaly acquires a new wave of scientific research and theological discussions on a global scale because of the signing of Tomos for the Ukrainian church. If the problem of acquiring canonical autocephaly is not resolved in the near future - Ecumenical Orthodoxy can be on the verge of great schism.

References:

1. Sagan O. Ecumenical Orthodoxy: Essence, History, Modern State // O. N. Sagan. - K.: World of Knowledge, 2004. - 912 p.
2. Gergelyuk M. Canonical and Ecclesiological Principles of the Autocephalous Structure of Churches in the Structure of the Universal Orthodoxy: Historical Context / M. Gergelyuk. - Dissertation for obtaining the scientific degree of the candidate of historical sciences - specialty - 09.00.11 - Religious studies. - Chernivtsi, 2014. - 199 p.
3. Kuzmenko D. Ecclesiology and Autocephaly. Sharp Corner // Religion in Ukraine. - July 9, 2010 - Access mode : https://risu.org.ua/ua/index/monitoring/religious_digest/36428.
4. Lossky N., deacon. Cathedral-catholicity and Primacy in the Orthodox

Ecclesiology // Orthodox Doctrine of the Church. - M., 2003. - P. 90–94.

5. Joan (Zizioulas), Metropolitan. Genesis as Communication. Investigation of Personality and the Church - K.: SPIRIT AND LITERA, 2005. – 276 p.

6. The Book of the Rules of the Holy Apostle, the Holy Synod of the Ecumenical and Local, and the Holy Father. - M.: publishing house of Saint Leo, Pope of Rome, 2010. – 447 p.

7. Cyril (Govorun), Archimandrite. Church Sculpture: Aside from Post-Structural Ecclesiology // Archimandrite K. Govorun / translation from English O. Pakanych. - K.: THE SPIRIT AND THE LITER, 2019. – 312 p.

8. John H. Erickson, The Challenge of Our Past: Studies in Orthodox Canon Law and Church History, Crestwood, NY: St. Vladimir's Seminary Press, 1997. – 174 p.

9. Bolotov V. Lectures on the History of the Ancient Church / V. Bolotov. - In 4 volumes. - Volume III: History of the Church during the Ecumenical Councils. Church and State. Church system. - M.: [b.v.], 1994. – 767 p.

10. Tsylin V., Archpriest. Church Law Course: Tutorial. - Klin: Round Table on Religious Education in the Russian Orthodox Church, 2004. – 703 p.

11. Lototsky O. Autocephaly. Volume 2. Essays on the History of Autocephalous Churches. Reprinted Reproduction. Ukrainian Orthodox Church of the Kyiv Patriarchate. – K., 1999. – 560 p.

12. Gayuk I. Armenian Apostolic Church as a Specific Phenomenon of the Christian World: Thesis for obtaining the scientific degree of the candidate of philosophical sciences. – K., 2003. – 217 p.

13. Mulik-Lucyuk Y. History of the Ukrainian Greek-Orthodox Church in Canada. - Volume 4. Ukrainian Greek Orthodox Church in Canada under the Jurisdiction of Archbishop Ivan Teodorovich. - Winnipeg: Publishing Union "Ecclesiastes", 1989. – XIX, 831 p.

14. Vlasovsky I. Essay on the History of the Ukrainian Orthodox Church. - Volume 4 - Part II / reprint edition. – K., 1998. – 398 p.

SUGGESTIVE COMPONENT OF THE SYMBOLISM OF SACRED ARCHITECTURE IN CHRISTIAN CULT

Maksym Melnychuk,

*Candidate of Philosophy, Associate Professor,
Rivne National University of Water and Environmental Engineering*

Annotation. *In this scientific research the author focuses on the phenomenon of suggestion and symbolic character of places of worship of religious-sacred content on the example of Christianity. The author of the research article indicates that the cult architectonics not only reflects the concept of two worlds as material and ideal, but also focuses on interharmony and dialectics in the process of sacral doings. There are revealed psychological mechanisms for providing object-oriented suggestive effect on parishioners.*

Key words: *sacral architecture, suggestive effect, religious cult, and catharsis.*

The topicality of the research is caused by the need to study and generalize the processes that take place in the spiritual life of modern Ukraine.

The purpose of our scientific study is the implementation of the structural-functional analysis of the place and role of architectural cult of art in Christianity and identifying the mechanisms of its suggestive influence on the minds of believers in the context of ritualized behaviour.

Thus, there is both theoretical and practical rationale for providing an integrated analysis of the specifics of the role and place of cult architecture of Christianity and its complex art content with attraction of the aesthetic and religious studies advances.

Analysis of recent research and publications. In the process of implementation of ritualized performances the Church purposed to strengthen religious beliefs by means of suggestive influence on feelings of congregation as a whole and on the psychological and mental state of a single believer in different ways. Many scholars, researchers studied the peculiarities of the suggestive influence of different kinds of religious art on both devout believers and those who were driven by aesthetic emotional moods while contemplating works of spiritual art.

In our opinion it is worth mentioning the whole number of studies regarding our scientific interest. Since the second half of the 19th century in the countries of the West there have been intensely carried out studies on the problems of psychology of religion. The number of such studies particularly increased over the past century. Among the most famous foreign psychologists of religion we should mention William Dzhems, Peter Johnson, William Clark, William Betson, etc. Soviet scholars did not sidestep this problem, especially since the 60-ies. Among them the most notable are K. Platonov, V. Bukin, V. Nosovych, M. Popova, V. Pavliuk, D. Ugrynovych, etc. The views of these two world-view opposing groups of researchers at best in some moments only resonate, but basically their methodological statements and findings are contrasting because of different approaches to the appraisal of the phenomenon of religion. Thus, an American

psychologist P. Johnson stated that religion is the connection of a personality with the Creator of values, and his colleague V. Clark defines the basis of religion as internal experience of an individual, who feels transcendental. The weak point of Soviet scholars is an absolute rejection of religion as a phenomenon, which is, in their opinion, absolutely harmful. We will not take on the role of an arbitrator in this disputable situation, we will only say that this connection in some points of views has at least one indisputable benefit that scholars of both mentioned above groups separated psychology of religion from theology or obvious fideism, and so betake to use scientific research methods – observation, experiment, comparison, mathematical processing of results, etc. That is to say, it is about the creation of a new field of psychological science – psychology of religion.

The researchers also did not leave out the phenomenon of a ritual and its symbolic component in various aspects. J.Frazier, B. Malynowski, T.Parsons, and M.Eliade made attempts to explain this phenomenon while running them through different worldview positions. Such famous scientists as D. Ugrynovych and E. Yakovlev dealt with the problem of essence of a ritual and its aesthetic functions in the religious complex. Among the foreign scholars it is worth mentioning V.Vundt, K.Levi-Stross, J. Mariten, E. Tailor, A.Tenase. Among the Ukrainian scholars of the religion we should mention N.Kravchenko (secular fine art), A.Leshchenko (aesthetic component of religious faith as a form of world perception), and later Leshchenko depicted his scientific studies in the monograph “Coevolutionary processes in Christian sacred art”.

Scientific studies of essence and problems of sacral proved to be very useful for us. The phenomenon “sacral” was investigated by both native and foreign scholars in the field of religious study, philosophy, study of art, social psychology and anthropology such as: V.Holovei, A.Lieshchenko, M.Eliade, R.Zherar, G.Pol Bekker, R.Otto, V.Sheliuto.

Presentation of basic material. Ceremonial-religious events with a huge amount of ceremonial things, objects, always created certain emotional atmosphere, close to the perception of theatrical performances. We think it is necessary to say a few words about suggestion, as a psychological phenomena. Suggestio (suggestion) is an active influence on the imagination, emotions, consciousness and subconsciousness of a person by using remote thematic, graphic and sound associations. But it is not the only purpose of suggestion. As its result religious beliefs of followers become firmly established. This is the main purpose of suggestion, which is widely used in the ceremonial practice of Christianity and other religions with the help of different kinds of art. Young people who are looking for their place in life or who are experiencing or have experienced some deep emotional turmoil, some stressful situation and are in a state of disarray and despair more often yield to suggestion That is the category of people that in the process of ceremonial events, readily fall under the influence of religious art.

In this context it is necessary to emphasize that a religious person possesses less developed ability to interpret sensual, visual impressions on the level of consistent, developed logical analysis and make conclusions. It usually takes them immediately in the scope of principles and beliefs that were formed on the basis of religious belief. That

is why in the art, organically linked to some cult rite, the elements of artistic imagination, aspiration to go beyond the Canon are strongly suppressed. That is the main value of the Canon: it provides the possibility to transfer emotional, sensual, vague reaction immediately to the level of strict religious views.

So what is a ritual? Modern scholars, I. Bogachevska in particular, notes that a ritual is "... a dynamic communicative formation that occurs on the basis of a meaningful action that goes under symbolic reinterpretation (ritualization)" [1]. It involves a mechanism of persuasion, due to certain actions. According to V. Moskalets: "The main aim is to make the proclaimed information in the course of time, be implanted in the consciousness, the cogitative logic of the recipient..." [3, s. 63]. But there arises a question: what does the Church start from to create conditions for its ceremonial performances? The first and indispensable of this is the church architecture, which itself is already one of the strongest impacts on the feelings of believers. According to the priests, "God's Houses" – church buildings, cathedrals, monasteries, etc. – with their different from conventional buildings architecture and interior decoration, must serve the cult, cause sacred awe, promote the faith. Prayers for the sanctification of the Orthodox Church. In prayers for the consecration of an Orthodox Church it is referred to as not just "the image of God's dwelling", "home of the sky like", it is the "image of the Holy Church of Christ, that is, the image of the Church as the body of Christ", as calls it the Apostle Paul (Ephesians 1.23, Kolos. 1.18). In "The reference book of a clergyman" it is stated: "The temple, which covers the world, expresses not a reality, but expectation, hope of any creation. It personalizes the ... heaven, which attracts, but the humanity has not reached yet" [4, s. 161].

The creations of church architecture are the organic unity of religion and virtually all forms of art: painting, music, poetry, sculpture, theatre, applied and decorative art, design. All this both psychologically and ideologically enriches the rite itself, promoting more full, deep expression of religious feeling.

For reason given, on the basis of the multi-functionality of houses of worship, let us try to determine their typical functions and analyze the most important of them. Even the spatial range of cult actions provides the functions of communication, entertainment, ideological and artistic expressiveness. Actually, this is one of the most important religious function of the temple: to be the architectural environment for theatrical ceremonial performances. This aesthetic environment was created by church architecture and its influence was no less than the dramatic performance itself. [6, s. 53]. In addition, in churches there are no manifestations of dramatic art, but fixed "forevermore" quite monotonous spectacular performances. Secondly, in churches the audience appeal is only a moment, an element. Adaptation for the stage of cult events, the sound of the organ or the polyphony of choir, religious-instructive images – all these are to maintain cult rituals and sermons. Thirdly, the performances canonically require clearly defined planning aspects, lush interiors, in a word, canonical and fixed architectural proposals.

To generalize one can say: one way or another, but as a result of interaction of customers of the Church and creative activity of architects and builders there were formed particular types of religious buildings of different historical periods. If we turn to the

world architecture, we will find grandiose “imperial” cathedrals in Roman architecture (Mainz, Worms), and majestic urban cathedrals in Gothic style, and small fine Chapels in the form of rotunda, created by humanist culture of Renaissance in Italy, and charming in its simplicity parish wooden churches in the Ukrainian Carpathians or in Polissya.

Therefore, the architecture of a temple, its reasonably thought-out interior, theatrical performances of priests, the singing of a church choir, church-wide singing, the smell of incense, icons reflections of blazing candles – all this and much more, that you cannot enclose on a standalone basis, because in a temple everything that is integrated into a single overall performance, called service, inevitably causes and forms specific religious feelings. Theatricalized performances that take place in temples arouse feelings of elation, tranquility, readiness for all-forgiveness. Thus, this function of feelings itself has exceptionally important evolutionarily-adaptive value. In addition to that the feelings seize the entire body, touch different aspects of its life: not only the psychic sphere, but also the corporeal one. One feels catharsis.

While considering the power of influence of aesthetic feelings in the cult, the Church has always tried to subdue them to the task of deepening religious worldview of believers. In this respect, A.Leshchenko made some neat remarks. “The sacred essence of art itself and its artistic receptiveness of religious orientation due to the mechanisms of artistic perception of a believer contributes to efficient cooperation of psychological mechanisms of exteriorization and extrapolation, which, in turn, allows believers to feel high numinous feelings and spiritual unity with God” [2, p. 228]. That is why the Church has always tried to keep under the watchful supervision the inner, emotional world of a person, emphasizing that a human soul is covered with spiritual impurity while the flesh is continually taken by evil craving and passions. While preaching humbling and submission for which the believers will be rewarded in their eternal afterlife, the Church constantly condemns “sinful passions” – anger, hatred, pride, excessive life optimism, etc. All of this, they say, is from wandering away from God. So it is necessary to “run away” from jealousy, pride, lest the death catches a person being not ready for meeting with God.

Theologians, of course, realize that it is not that easy for people to “run away” from their passions, that they need some “treatment”. And the role of a healer of “sick” souls is offered to the Church. The humanity is combating diseases by using a variety of means trying to lessen the suffering. And when there is internal moral suffering, then remedies for healing are only in the environment of the Holy Church.

Set aside the complex problem of classification of emotions, we only note that the palette of emotional reactions, which accompany a religious service is too wide. The relationship between the religiosity and a person’s age is obvious here. In childhood and adolescence, when the emotional and sensual reactions are especially bright and expressive, the religiosity is often characterized by greater emotional saturation. In older age due to the emotional expansiveness, faintheartedness, anxiety, fear of death, feeling of physical and mental inferiority, the religiosity is often painted a little gloomy tones, that leads a believer to mysticism, belief in the reality of miracles. While feeling his

helplessness, weakness, dependency on higher forces, a religious man would always pray, putting into words his most secret expectations and hopes for help. And he felt relief. How could this be explained? A person suggested a thought that God would take upon himself all everyday cares to prevent any misfortune, and it would bring emotional consolation.

The artistic side of ceremonies plays a similar role in the influence on the sensuous world of a man. Aesthetic pleasure, which believers derive from the contemplation of religious-theme paintings or from participation in the liturgy, was considered to be a result of God's influence, not a virtue of art objects of great merit. It is difficult to argue the fact that emotional factors in the perception of religious dogma creates certain difficulties when trying to do their free-thinking interpretation. "In the fight of reason and faith, – said K.Platonov, – the reason is physiologically in a worse position, because emotional dominants are stronger than intellectual ones" [5, p. 12]. In addition, during the divine service a believer can develop different feelings and undoubtedly interpret them from a religious viewpoint. And it can be very difficult to prove that such feelings were not a result of any divine influence, but a result of suggestion and autosuggestion mechanisms. A man finds it hard to believe in unreality of his feelings which he clearly senses, especially since the man is a believer whose nature is focused on expected "Grace of God".

Theatrical performances of emotional feelings and empathy are used in all religious rituals. I.Bogachevska points out: "Religious rituals have a certain magical function. Projectivity of a ritual is that its participants feel special significance of the ritual moment, and think that any wish or request put into words at this moment, is more powerful and effective than the same wishes expressed in everyday communication. The lack of a ritual in situations when it is expected, demoralizes the community, just as communication is put in jeopardy when the norms of actual communications are violated" [1]. As an example would be the entry of the Patriarch or metropolitans in the Orthodox Churches, or the Pope and Catholic Cardinals, accompanied by ringing of the bells or mighty sounds of the organ – it was a touching performance. K.Paustovskii recalls how as a child he happened to be with his grandmother in the cathedral, where they kept the icon of Holy Mother of Czestochowa: "We gropingly entered the cathedral. I could see nothing. There was not a single candle, no ray of light in the midst of thick darkness between high cathedral walls filled with the breath of hundreds of people. This impenetrable darkness smelled sickly-sweet flowers. I felt old cast iron floor under my feet, I took a step and bumped into something. "Stand still, – whispered my grandmother, people are cross lying on the floor ...". People who were lying on the floor, were quietly breathing. Sad murmur was all over the place. All of a sudden this heavy gloom was broken by similar to weeping sounds of the organ. On the instant hundreds of candles were lit. A big gold curtain that covered the icon of Holy Mother of Czestochowa, slowly started to move apart. Six old Roman Catholic priests in ornamented vestment were on their knees in front of the icon, with their backs to the crowd. Their hands were raised to the sky. Only a skinny Cardinal in purple soutane with a wide purple belt was standing upright also with his back to the believers – and was as if listening to the storm of the

organ and sobbing of the congregation...” [7, p. 86-87].

A feature of modern Christian art in the West has been the temple architecture of The Church of Jesus Christ of Latter-day Saints (Mormons). Its development – from the simple church-like design of the Kirtland Temple (constructed 1830s), to the intricate Gothic styles of the early Utah temples, to the mass-produced modern temples of today – chronicles the evolution of modern religious architecture itself. The most recent postmodernist churches include the Community of Christ Temple in Independence, Missouri; Unity Temple, the Unitarian Universalist in Chicago designed by Frank Lloyd Wright (1867-1959); the Pietro Belluschi-designed Cathedral of St. Mary of the Assumption (San Francisco); and the Jose Rafael Moneo-designed Catholic Cathedral of Our Lady of the Angels (Los Angeles). Sadly, the 20th century has also witnessed enormous destruction: many beautiful churches and other religious works of art were destroyed by the Communist regimes of Eastern Europe. As far as sacred painting is concerned, 20th century painters have, with a few exceptions, ignored it, preferring to cater for the more secular modernist and contemporary art collector. Exceptional modern religious paintings include: *Christ on the Cross* (1936) by Georges Rouault (1871-1958); *Ecce Homo* (1925) by Lovis Corinth (1858-1925); *Christ at Emmaus* (1963) by Patrick Caulfield (1936-2005); *Crucifixion 3.85* (1985) by Antonio Saura (1930-98); and the strange abstract work *St John* (1988) by Gerhard Richter (b.1932). Meantime, postmodernist religious sculpture is surely exemplified by *Virgin Mother* (2005) by Damien Hirst (b.1965), which stands in the Plaza of Lever House, New York City.

Conclusions. Therefore, the cult architecture in harmonious unity with a ritual, contain considerable suggestive loading in the religious complex. The aesthetic element of the theatricalized ceremony in ceremonial-religious events supports the religiosity of a person, though it cannot raise deep faith, but it can deepen religious feeling. Every architectural and picturesque part of a temple is strictly regulated by the Canon according to the fundamentals of the branch of Christianity with the aim to influence the religious feelings of believers in the most effective way. However, despite the tightening of the Canon, Church Architecture in its sacral, artistic-psychological fullness often has national specificity, and its masterpieces are included into the treasury of world culture due to the fact that in a temple the form, decoration and other aesthetic items are determined by the national-cultural aesthetic or artistic tradition when creating the object of sacral-religious type.

References:

1. Bogachevska I. (2006). Religious Discourse and Religious Rituals. *Multiversum: Philosophic Almanac*, Issue 54, 180–188 [in Ukrainian].
2. Leshchenko A. (2016). Coevolutionary processes in the Christian sacral art: [monograph]. Kherson: Aylant, 348 [in Ukrainian].
3. Moskalets V. (2004). *Psychology of Religion: A Manual for Students of Higher Educational Institutions*. K.: Akademvidav, 240 [in Ukrainian].

4. Handbook of the priest. (1992). 2nd edition. Moscow: Moscow Patriarchate, Volume 1. 704 [in Russian].
5. Platonov K. (1967). Psychology of religion. Facts and thoughts. M.: Politizdat, 239 [in Russian].
6. Assumption L. (1958). The First Christian Art. Journal of the Moscow Patriarchate, № 8, 52–60 [in Russian].
7. Yakovlev E. (1969). Aesthetic Consciousness, Art and Religion. M.: Iskustvo, 175 [in Russian].

MEDICINE AND PHISIOLOGY

ANALYSIS OF CHANGES IN THE LEVEL OF SERUM BILIRUBIN IN PATIENTS WITH PANCREATIC HEAD TUMOR

Oleksander Kutoviy, Doctor of Medical Sciences, Professor,

Dmytro Balyk, surgeon, Department of Surgery №2,

Ksenia Denisova, post-graduate student,

SE "Dnipropetrovsk Medical Academy of Health Ministry of Ukraine"

Annotation. *Surgical treatment of patients with the pancreatic head tumors complicated by the severe degree of obstructive jaundice is associated with an increased risk of postoperative complications. One way to reduce the level of bilirubin in blood before the radical surgery is drainage of biliary tract. However, this procedure also associated with certain risks of complications. Therefore, it is so important to perform the radical surgery before the severe obstructive jaundice develop. In this work the rates of bilirubin levels growth were calculated depending on the age and the level of incoming bilirubin in patients with the pancreatic head tumors. The obtained data allow to predict the dynamics of bilirubin level growth in each particular case of the disease.*

Key words: *tumor of the pancreatic head, obstructive jaundice, rate of bilirubin level growth.*

Introduction. The problem of oncological diseases of the pancreatoduodenal zone does not lose its relevance. Thus, according to studies in Europe, malignant tumors of the pancreatic head occupy the 4th place among diseases of the gastrointestinal tract (morbidity - 7-10%) [1]. One of the main symptoms of pancreatic head cancer is mechanical jaundice, which develops as the result of the tumor pressure on the biliary tract.

It is known, that in patients survived the operation for obstructive jaundice, the number of post-surgery complications and lethality are directly correlated with the level of bilirubinemia [2, 3, 4, 5, 6]. The standard treatment of the severe obstructive jaundice caused by a pancreatic head tumor involves a two-stage approach. The first stage is decompression of the biliary tract, the second stage is the radical surgery, if it is possible. Percutaneous drainage of the biliary tract is associated with the level of complications about 7-10% and mortality of up to 2% [7,9,]. It also has an additional risk of tumor seeding along the drainage tube, which leads to a faster growth of a potentially curable tumors [8]. All this points at the expediency of radical surgery to development of the severe jaundice. It is known that such factors as an initial bilirubin level, the age of patients, the secondary illness presence (diabetes mellitus, hepatitis, urinary tract disease, etc.) can affect on the rate of bilirubinemia increase [5].

Thereby, the rate of bilirubin level increasing is interesting in patients with a distal block of choledochus on the background of the pancreatic head tumors as a criterion for the rate of the severe jaundice development, depending on a number of factors.

Determination of the rate of bilirubin level growth depending on the age and the level incoming bilirubinemia in patients with pancreatic head tumors.

Materials and research methods. We carried out a retrospective analysis of the diseases history of the patients with obstructive jaundice caused by the pancreatic head tumors, who were examined and treated at the Department of Surgery and Transplantology of I. Mechnikov Regional Hospital in the period from 2008 to 2018. A correlation analysis was performed to determine the relationship between the incoming values of bilirubin level in blood serum, the age of patients and subsequent increase in the rate of its growing. The patients with secondary illnesses could affect the rate of bilirubin growth (diabetes mellitus, hepatitis, urinary tract disease, etc.) were excluded from the study. Measures of bilirubin level were carried out daily before drainage of biliary tract or operations. The rate of bilirubin increase was calculated for each patient and compared with resectable and non-resectable cases using the Student's t-test.

The study included 159 patients with the malignant tumors of the pancreatic head, 84 women and 75 men, with an average age of ± 57.3 years. 3 groups were formed by the incoming bilirubin level: I - incoming bilirubin level is up to $100 \mu\text{mol/l}$ - 44 patients (50.3%); II - $100\text{-}200 \mu\text{mol/l}$ - 59 patients (18.2%); III - more than $200 \mu\text{mol/l}$ - 56 patients (24.5%). Each group is divided into the subgroups by age. The WHO classification-2014 was used in the work: "a" subgroup – 44-60 years old (middle age); "b" – 60-75 years old (late maturity age). The majority were the patients with late maturity age – 87 patients (54.7%). The rate of bilirubin growing in each subgroup was calculated using the method of the dynamic rows analysis.

The rate of increase in serum bilirubin calculated in the study can be used to predict the number of days required for bilirubin to rise from the initial value to any selected threshold. Thus, we hoped to determine the average length of time during which patients with a certain bilirubin level would be able to pass radical surgery without drainage of the bile ducts. All calculations were made using STATISTICA 6.1 software. StatSoftInc.

Results and discussion. The average level of bilirubin in blood serum at the first measurement was $163.5 \mu\text{mol/l}$, and the interquartile range (IQR) was $56\text{-}282 \mu\text{mol/l}$. In this case, the distribution of patients depending on the level of bilirubinemia at the first measurement had the following form (Table 1).

The presented data show that 64.8% of patients in our study with malignant tumors of the pancreaticoduodenal zone were hospitalized with the levels of bilirubin in serum $<200 \mu\text{mol/l}$. Only in 5.6% of cases the serum bilirubin level was $> 300 \mu\text{mol/l}$. Thus, most patients have jaundice, which does not necessarily include preoperative drainage of biliary tract. Therefore, there is a limited time for correct diagnosis, so radical surgery performed before the progressive jaundice will inevitably lead to the need of the biliary tract drainage.

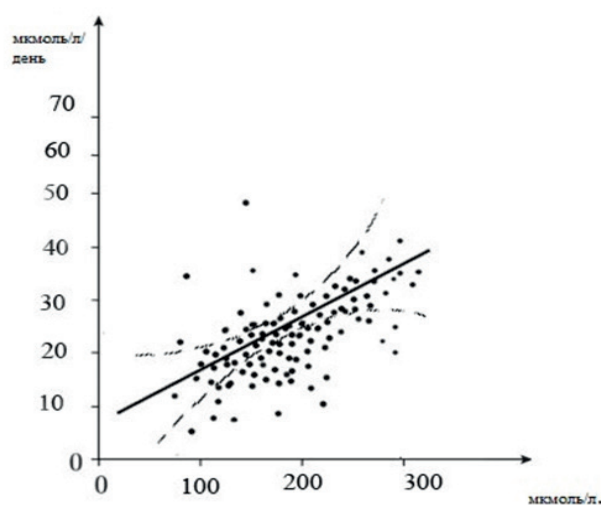
The average rate of bilirubin level increase during 3 days in hospital was $14.3 \mu\text{mol/l/day}$ (IQR $9.5\text{-}30.3$). Relationship between the incoming bilirubin level and the rate of its further growing was established by the help of correlation analysis (Chart 1).

Table 1

**Number of patients with different indicants of bilirubin in
blood serum at the first measurement**

Bilirubin in blood serum ($\mu\text{mol/l}$)	Number of patients	
	Abs.	%
≤ 50	23	14,5
51-100	21	13,2
101-150	38	23,9
151-200	21	13,2
201-250	25	15,7
251-300	22	13,8
> 300	9	5,6
Total	159	100,0

Chart 1. Relationship between the rate of bilirubin growing and the level of the incoming blood serum bilirubin.



The correlation coefficient is $+0.83$, $t=2.3$ at $p \leq 0.05$, it speaks of a direct and strong relationship.

Thus, the higher level of bilirubinemia caused an increase in the rate of its increasing during three days, that patients were in clinic.

Dependence of the serum bilirubin rates growing from the age of patients was established by the dynamic rows analysis (Table 2).

Table 2

The rate of serum bilirubin growing ($\mu\text{mol/l/day}$) depending on the age of patients with different indicants of bilirubinemia in blood serum at the first measurement

Subgroups of patients	Groups of patients		
	I	II	III
a (n = 72)	9.8 \pm 2.0	14.2 \pm 3.8	24.5 \pm 16.0
b (n = 87)	11.4 \pm 2.9	18.9 \pm 7.4	30.3 \pm 18.0

Increasing of the bilirubin level correlates with the age of patients and the incoming level of bilirubin (coefficient of correlation + 0.7 - +0.6, $t=1.9 - 1.7$ for $p \leq 0.05$) – direct strong interrelation.

Choosing a threshold for hyperbilirubinemia below which most surgeons would be able to avoid drainage of the bile ducts is difficult, as other factors, including comorbidities, must be considered for individual patients. Many studies mark the adverse effects of jaundice, but none have suggested a threshold below which surgery without billiary drainage for a non-septic patient could be accepted. For example, if a threshold of 300 $\mu\text{mol/l}$ is used, the average patient has about 1.5 weeks to reach this level. Even if you abandon the idea of having a fixed threshold for surgery without preoperative bile duct drainage, knowing that bilirubin increases by an average of about 100 $\mu\text{mol/l/week}$ and depends on the age of patients and the entry level of bilirubin, it can accelerate preoperative preparation for radical surgery.

We have demonstrated that there is considerable variability in the increase in serum bilirubin levels and that it doesn't depend on the potential operability of the tumor.

The estimated number of days for bilirubin to reach the threshold level has wide confidence intervals and therefore can only be used as a guide. However, it shows that rapid diagnosis and radical surgery are important, as this can avoid drainage of the bile ducts in as many cases as possible. The rapid examination and preparation of patients from admission to the hospital till final surgery is a serious problem that has major implications for resources in modern health care. However, it has the potential to reduce complications of bile duct drainage, shorten number of days in the hospital and improve patients' quality of life.

Conclusions. Thus, the obtained data demonstrate a high degree of dependence of the rate of bilirubinemia increase in the distal block of choledochus in connection with pancreatic tumors with the age of patients and the level of serum bilirubin at the primary study. However, the obtained results have wide confidence intervals and therefore do not allow to reliably guarantee the possibility of calculating the time for reaching the threshold value of bilirubinemia in each case of the disease. In this direction success is connected with additional researches, they will define the degree of dependence of speed of patient reaching the condition of severe obstructive jaundice from other factors.

References:

1. International Agency for Research on Cancer, World Health Organization. Global Cancer Observatory 2018; Available from: URL: <http://gco.iarc.fr/>
2. Ackerman J, Grove T, Wong G, et al. Mapping of metabolites in whole animals by ³¹P NMR using surface coils. *Nature* 1980;283:167–70. DOI: 10.1038/283167a0
3. Kryshen VP, Ryazanov DYU, Kudryavtseva VE. Ways of optimization of therapeutic and diagnostic tactics in patients with non-tumor obstructive jaundice. *Gastroenterologiya*. 2015;2:18–56. <https://cyberleninka.ru/article/n/puti-optimizatsii-lechebno-dagnosticheskoy-taktiki-u-bolnyh-s-neopuholevoy-obturatorionnoy-zheltyhoy>
4. Komura M, Chijiwa K, Naito T, et al. Sequential changes of energy charge, lipoperoxide level, and DNA synthesis rate of the liver following biliary obstruction in rats. *J Surg Res* 1996;61:503–8. <https://doi.org/10.1006/jsre.1996.0154>
5. Mekhanycheskaia zheltukha: sovremennye vzgledi na problemu dyahnostyky y khyrurhycheskoho lecheniya/ Yu.A. Parkhysenko, A.Y. Zhdanov, V.Iu. Parkhysenko, R.S. Kalashnyk // *Ukrainskyi zhurnal khirurhii* – 2013- №3. http://www.irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64
6. Novi pidkhody do otsinky stanu onkolohichnoi dopomohy naselenniu / Z. P. Fedorenko, L. O. Hulak, Ye. L. Horokh, A. Yu. Ryzhov, O. V. Sumkina, L. B. Kutsenko // *Klynycheskaia onkolohyia*. - 2015. - № 3. – S 36. http://nbuv.gov.ua/UJRN/klinonk_2015_3_2
7. Singh A. et al. Diagnostic accuracy of MRCP as compared to ultra-sound/CT in patients with obstructive jaundice // *Journal of clinical and diagnostic research: JCDR*. – 2014. – T. 8. – №. 3. – S. 103. doi: 10.7860/JCDR/2014/8149.4120
8. Trauner M, Arrese M, Soroka C, et al. The rat canalicular conjugate export pump (Mrp2) is down-regulated in intrahepatic and obstructive cholestasis. *Gastroenterology* 1997;113:255–64. [https://doi.org/10.1016/S0016-5085\(97\)70103-3](https://doi.org/10.1016/S0016-5085(97)70103-3)
9. Tsubono T, Tsukada K, Hatakeyama K. Hepatic functional reserve in patients with obstructive jaundice: an assessment by the redox tolerance test. *Am J Surg* 1995;169:300–3. [https://doi.org/10.1016/S0002-9610\(99\)80162-77.6](https://doi.org/10.1016/S0002-9610(99)80162-77.6).

INSTITUTIONAL PROVIDING OF PROFESSIONAL DEVELOPMENT OF PUBLIC SERVICE IN UKRAINE

Yana Kachan,

*Associate Professor of Public Administration and Management Department,
Ukrainian State Employment Service Training Institute*

Annotation. *The essence of the concept of professional training of civil servants is revealed in the article. The main task of the institutions engaged in the training of civil servants is determined. The institutional structure of professional development of public servants in Ukraine is presented. The main provisions of the activity of the main institutions, which are engaged in improving the professional development of civil servants are considered.*

Key words: *professional development, public service, institutional support, institute, learning, training, retraining and advanced training of civil servants.*

At this time Ukraine is at a rather difficult stage of development. The financial, economic and military-political crisis that has developed under domestic conditions necessitates the implementation of vital reforms, in particular in the field of public administration and local self-government. At present, Ukraine is dynamically moving to a new socio-economic development built on politically responsible civil society institutions, as political participation of the society, the level of security of fundamental rights and freedoms increases, etc. This transition has considerable not only international but also internal support from civil society. However, the reform process is slowing down and, in some cases, discarded redundant structures, corruption schemes, and authoritarian governance methods are being returned to society. The main reason for this phenomenon is the lack of new generation of public servants. As a result, there is a need to research the institutional support for the professional development of public service in Ukraine.

At the present stage of European integration processes in Ukraine, an important role is played by the introduction of reform of the public administration system, a necessary prerequisite of which is a proper professional level of civil servants. They must have the skills in economic, social, legal and other fields, acquire managerial and communication skills, and strive to systematically improve and improve their professional level.

The Law of Ukraine "On Professional Development of Workers" defines the professional training of employees as a process of purposeful formation of their special knowledge, development of necessary skills and abilities that allow to increase labor productivity, to perform qualitatively as much as possible functional duties, to acquire new types of professional activity, including primary vocational training, retraining and advanced training of employees in accordance with production needs [8].

Professional training of civil servants is carried out at the expense of the state budget and other sources not prohibited by the legislation, through the system of training, retraining, specialization and advanced training, in particular in the field of knowledge

"Public administration and administration", in accordance with the procedure established by law in educational institutions, organizations, regardless of ownership, who have the right to provide educational services, including abroad.

The effectiveness of the professional development of civil servants, the quality of the needs study and the development of the content of the programs depend on the level of cooperation of public authorities, local authorities with educational institutions and the desire of the civil servants themselves to improve their professional skills.

The system of vocational training includes educational institutions that carry out educational and vocational training programs, retraining and professional training programs for civil servants and officials of local self-government, specialization programs in the field of training "Public Administration", and bodies responsible for the management of learning, retraining and training, improving the qualification of civil servants and local government officials.

Today, the network of institutions of vocational training of civil servants includes:

- the National Academy of Public Administration under the President of Ukraine, its 4 regional institutes in the cities of Dnipro, Lviv, Odessa, Kharkiv;
- 32 higher education institutions licensed and accredited for the preparation of masters in the specialties of the field of knowledge "Public Administration";
- 27 regional centers of retraining and advanced training of employees of state authorities, local self-government bodies, state-owned enterprises, institutions and organizations;
- 23 branch institutions of postgraduate education [9, p. 38].

The main task of institutions engaged in the training of civil servants is to review existing forms of submission of material, comparative analysis of best domestic and foreign practices and methods, implementation of innovative forms that would meet the European standards of integration and priorities for modernization and reform of Ukraine [civil service, 1, 985].

The institutional structure of professional development of public servants in Ukraine is shown in figure 1.

The regulation on the system of training, retraining, specialization and qualification improvement of civil servants is approved by the Cabinet of Ministers of Ukraine upon the submission of the central executive body, which ensures the formation and implementation of state policy in the sphere of civil service (NADS). The National Agency of Ukraine for Civil Service, together with the bodies to which the Law of Ukraine "On Civil Service" applies, and "On Service in Local Self-Government Bodies" and to which the respective educational institutions belong. Within the limits of their powers, they manage the whole system.

Scientific and methodological support of the system of training, retraining, specialization and advanced training of civil servants is carried out by the National Academy of Public Administration under the President of Ukraine - a higher educational institution with special training conditions, which is determined by the Cabinet of Ministers of Ukraine.

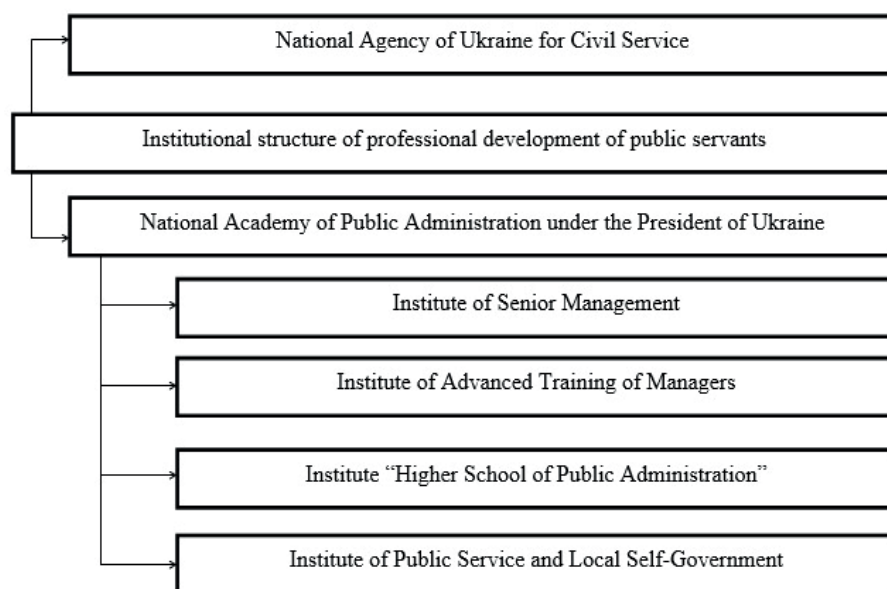


Fig. 1. Institutional structure of professional development of public servants in Ukraine

The mission of the National Academy is to form a professional democratic governing elite of Ukrainian society on the basis of modern scientific achievements and technologies of knowledge transfer in the implementation of effective public administration. An important area of activity of the National Academy is its scientific component, which is focused on:

- development of the branch of science "Public Administration";
- conducting basic and applied research on problems of public administration and local self-government;
- scientific support of the educational process;
- providing expert-consulting, information-analytical, scientific-methodical services on the theory and practice of state-building;
- organization and development of international cooperation in scientific research in this field [7].

During the 20 years of its existence, the National Academy of Public Administration under the President of Ukraine and its regional institutes have trained about 25,000 masters, including over 17,000 people under the state order and with the agreement with the National Service. Most masters were trained in Kyiv – 7616 persons, of which 5283 – by state order, 2333 – under contracts. Studying at the National Academy is an important condition for the promotion of its graduates to senior positions of public service and service in local self-government bodies. Graduates today, in the difficult period of Ukraine's development as a sovereign, democratic, European state, occupy key political positions, head ministries, hold executive positions in other state authorities and

local self-government bodies, make effective use of the knowledge and skills acquired in the National Academy, for the speedy implementation of reforms, the country's exit from the systemic crisis [2, p. 35].

The modern development of the National Academy is aimed at strengthening its role in the system of training of professional managers of the new generation, capable of competently, qualitatively to perform their work to ensure the development of Ukraine as a democratic, legal, social state and its integration into the world community. The training of modern managers for public administration at the National Academy is accompanied by the introduction of a holistic, practice-oriented system of training of civil servants and officials of local self-government. Graduates of the National Academy present a new generation of public administration professionals. Modern knowledge and skills acquired during training are necessary to promote real democracy, social justice, human rights and freedoms, sustainable development on the basis of world and European standards [7].

According to the Decree of the President of Ukraine “On some issues of activity of the National Academy of Public Administration under the President of Ukraine” dated August 14, 2012 No. 471 the Institute of Senior Management is part of the National Academy. It is the main and elite scientific and methodological center for training of public administration bodies. Its mission is to train the national management elite, competent, innovative, creative, high-level initiative leaders, capable of implementing social reforms and furthering civil society. An important factor for successful professional training of the students of the Institute of senior management is to create the right conditions for their development, opportunities to exchange experience and expand knowledge, skills, understanding of values, according to the requirements of the time, because their managerial decisions depend on the future of our country. The educational process uses modern innovative forms, methods and technologies of interactive learning, in particular e-education. Ongoing work is being done to attract the best Ukrainian and foreign experts, leading state and political figures, well-known scientists and practitioners. Significant opportunities for the students of the Institute open the interconnectedness of the curriculum of the specialty with scientific specialties through postgraduate and doctoral studies of the National Academy [4].

The peculiarity of the civil servants' training in Ukraine is its obligation and periodicity in the profile institution – in the Institute of Advanced Training of Managers (hereinafter – the Institute) of the National Academy of Public Administration under the President of Ukraine. The Institute is a structural unit of the National Academy, whose activity is aimed at training, specialization and advanced training of civil servants, heads of local state administrations, their first deputies and deputies, officials of local self-government.

The main activities of the Institute are:

- providing quality educational services for the development of qualifications of civil servants and local government officials in the field of public administration and administration;

- participation in providing methodological, informational, advisory assistance to regional institutes of the National Academy, centers of retraining and advanced training of employees of state authorities, local self-government bodies, other educational institutions providing training of civil servants and officials of local self-government;
- introduction of common approaches to the formation of the content of advanced training;
- providing scientific and methodological, expert-analytical, informational-advisory assistance to regional and branch institutions of the system of advanced training;
- participation in monitoring the functioning of the advanced training system and submitting proposals on regulatory regulation of issues related to advanced training;
- participation in conducting applied scientific research on advanced training, studying, generalization and implementation of domestic and foreign experience [6].

The training at the Institute is carried out taking into account the priority directions of the state policy for the implementation of the Sustainable Development Strategy "Ukraine 2020". In order to provide quality educational services for advanced training and to ensure their innovative component, the Institute uses modern innovative technologies and models of knowledge transfer, interactive teaching methods and the latest forms of classes. The development of knowledge, skills and competences at the Institute is performed on a competent basis. In particular, skills are developed through the use of the latest interactive teaching technologies and forms of classes, including: thematic meetings, roundtables, lectures, interactive seminars, workshops, exchanges of experiences, trainings, discussions, workshops * and other forms of conducting classes. Knowledge development is ensured through training programs that promote the development of students' professional competence, in particular, the acquisition of information about changes in legislative, regulatory acts and ways of their implementation for the functioning and development of public administration and local self-government.

The Decree of the President of Ukraine "On some issues of activity of the National Academy of Public Administration under the President of Ukraine" of August 14, 2012 № 471/2012 established the Institute "Higher School of Public Administration" in the structure of the National Academy. The mission of the Higher School of Public Administration is to train highly professional management personnel for public authorities and local self-government bodies to fulfill the functions of the state in the field of public administration among graduates of higher education institutions and young civil servants. Each year, the Institute holds a set of 50 students for the prestigious Master of Public Administration (MPA) program. The MPA program is a standard developed by the National Academy of Public Administration under the President of Ukraine jointly with the Berlin School of Economics and Law with the support of the Government of the Federal Republic of Germany. The benefits of the program are interdisciplinary links, enabling you to study economics, law, statistics, political theory, strategic management, international relations, national security and several foreign languages. Students are trained in one of five specializations: democratic governance, European cooperation, regional development, strategic planning and implementation of national security policy,

management of targeted programs and projects. In the course of training, a mentor from the representatives of the senior civil service, Ukrainian politicum, scientific and pedagogical staff is assigned to each student [3].

For the past two years, the best students of the National Academy have been trained and trained at the National School of Public Administration (ENA, France) under special programs for young public servants, attended the Berlin Summer School of Law and Administrative Studies (FRG), where they have mastered the principles of government. The trainees with experience in public finance management were trained in the Supreme Chamber of Control of the Republic of Poland. During the existence of the Institute, 92 Masters in Public Administration were trained in the specialty "Public Administration". The graduates hold key positions in the state echelons of government, including: Administration of the President of Ukraine, National Agency of Ukraine for Civil Service, Ministry of Social Policy of Ukraine, Ministry of Regional Development, Construction and Housing and Communal Services of Ukraine, local executive bodies [2, p. 41].

Institute of Higher School of Public Administration gives new knowledge and skills of using breakthrough technologies in management activity, an opportunity to develop the personal potential of the organizer, leader and on this basis to become a recognized leader, to build a career. The activities of the staff of the Institute and scientific and pedagogical staff of the National Academy are united in order to introduce into the educational process the innovative ideas, technologies and skills necessary for the interaction of the authorities, business and society in their united desire to create a great state, in which a respectful attitude towards man is flourishing, , beauty, desire to preserve nature, traditions, millennial culture, raise the standard of living of citizens.

In 2012, in order to implement strategic legal acts aimed at further development of Ukraine, work on the modernization of the National Academy was started. A powerful impetus for the development of the National Academy was the creation of the Institute of Civil Service and Local Self-Government (hereinafter - the Institute), which is the main educational and scientific center for providing training for persons in positions of public service and service in local self-government bodies by master's educational qualification level in the specialties of the field of knowledge "Public administration"

The mission of the Institute is to train highly qualified specialists to work in state and local self-government bodies, capable of effectively implementing state policy in all spheres of public life. The Institute conducts thematic meetings of students with leading experts of public administration, local government, scientific and educational institutions of Ukraine, domestic and foreign scientists and practitioners of public administration. The Institute has a self-governing body of listeners - the Student Council, which is elected annually from the list of students at the general meeting. The Institute's students take an active part in the national academic activities and public life of the National Academy [5].

The peculiarity of the educational process at the Institute is the advanced nature of the content of education, taking into account the prospects of development of society and the state, improvement of the structure, tasks and functions of its bodies; to promote, within

the limits of its competence, the implementation of state policy on public administration and local self-government reform; introduction of positive foreign experience in the process of professional training for public administration and local self-government.

The main feature of the Institute of Civil Service and Local Self-Government of the National Academy lies not only in the uniqueness of specialties and academic disciplines, but also in the high level of mastery of the teaching staff of the educational institution: there are not only scientists-theoreticians, but specialists with practical experience in central and local authorities. These include civil servants, political experts and analysts, public policy and government, national security, education, health, parliament, e-government, local government and regional government. Leading academics and practitioners of public administration and local self-government are involved in the teaching of disciplines in order to provide hands-on learning. Defining a place in the process of training public administration specialists of the Institute of Civil Service and Local Self-Government of the National Academy - training in government bodies, both at local and central levels, as well as systematic participation of students of the National Academy in conferences, round tables and other public events initiated by the management of the educational institution [2, p. 45].

Thus, the implementation of democratic and professional principles in public administration and local self-government in Ukraine requires the formation of a modern system of training public servants who are able to carry out their activities on the principles of patriotism, integrity, openness in the public interest. It is not possible to solve this problem without improving the existing institutional support for the process of training, retraining and upgrading of public servants, which will allow for consistent and effective enhancement of public service personnel capacity.

References:

1. Yermolaeva G.A. Training of civil servants in the conditions of European integration in Ukraine / G.A. Yermolaeva, N.G. Lasna // Young scientist. - 2018. - No. 11 (63). - P. 983-986.
2. Institutional support of personnel policy in public administration: mission, role and place of the National Academy of Public Administration under the President of Ukraine: Sciences. ext. / ed. qty. : Yu. V. Kovbasyuk, A.I. Semenchenko, Yu. P. Surmin and others. ; for the total. ed. dr. Prof., prof. Yu. V. Kovbasyuk. - K.: NADU, 2015. - 160 p.
3. Official site of the Institute of Public Administration Higher School [Electronic resource]. - Access mode: <http://hspa.academy.gov.ua/>
4. Official site of the Institute of Senior Managers [Electronic resource]. - Access mode: <http://academy.gov.ua/?lang=en&tip=dop&tipn=Page&page=149>
5. Official site of the Institute of Civil Service and Local Self-Government [Electronic resource]. - Access mode: <http://academy.gov.ua/ipa/>
6. Official site of the Institute of Advanced Training of Management Personnel of the National Academy of Public Administration under the President of Ukraine [Electronic

resource]. - Access mode: <https://www.ipkkk.in.ua/>

7. Official site of the National Academy of Public Administration under the President of Ukraine [Electronic resource]. - Access mode: <http://academy.gov.ua/>

8. On Professional Development of Employees: Law of Ukraine of January 12, 2012 No. 4312-VI [Electronic resource]. - Access mode: <http://zakon1.rada.gov.ua>

9. Civil service reform in the context of administrative reform: a textbook / [incl. O.L. Leonov, I.L. Timoshenko, V.L. Savchenko]; Donetsk Regional State Administration, Donetsk Regional Center for Retraining and Advanced Training of Employees of State Bodies, Local Self-Government Bodies, State Enterprises, Institutions and Organizations. - Donetsk: DOPSPK, 2013. - 59 p.

EFFECT OF ACRYLIC REMOVABLE DENTURES ON EDENTULOUS PATIENTS' LOCAL IMMUNITY AND OXIDATIVE HOMEOSTASIS STATE

Oleksii Kryvchuk,

Department of Prosthetic Dentistry,

SI "Dnipropetrovs'k Medical Academy of the Ministry of Health"

Annotation. *The aim of the present research was to study the effect of the removable dentures, the bases of which are made of acrylic plastics, on local immunity and the state of oxidative homeostasis in edentulous patients. It was examined 100 patients before, in 1 week and in 1 month after complete removable prosthetics. The condition of the mucous membrane of the prosthetic bed was studied using the technique of macrohistochemical staining. In oral fluid the levels of S IgA, superoxide dismutase (SOD), catalase (CAT) and glutathione reduced (GR) were determined.*

In a week after prosthetics, the inflammation of the mucous membrane was determined in 100 % of patients, while, in a month, it was diagnosed in 28.0 % of cases according to visual manifestations and in 82.0 % – according to the data of the macrohistochemical staining. It was established that the use of dentures causes the growth of the level of S IgA and the activation of the enzymatic chain of oxidative homeostasis ($p < 0.05$).

Key words: *complete removable dentures, acrylic plastics, local immunity, oxidative homeostasis.*

Removable dentures with rigid bases made of acrylic plastics remain the most popular method of treatment for edentulous patients. Thus, among Ukrainian population aged 40 and over, the production of complete removable dentures requires about 15 %, and after 60 years – up to 25% [1]. Moreover, the need for prosthetics because of complete absence of teeth increases, which is due to the pronounced demographic shift causes the growth of the number of elderly people who don't have indications for dental implantation [2].

At the same time, it is noted about the aggressive influence of components of acrylic plastics, which are antigens, and affect both the organism as a whole and directly on the mucous membrane of the prosthetic bed. The residual monomer is a protoplasmic poison, extremely active in contact with tissues; it is also able to stimulate hydrolytic destructive processes, affects the functional state of neutrophils of the oral cavity and inhibits their activity [3].

In this regard, in our opinion, a certain scientific interest is in the study of the reaction of the mucous membrane of the prosthetic bed on acrylic plastics. In turn, immune metabolic indicators can be used as objective criteria for changes in its functional state, in particular, under the influence of the residual monomer [4, 5]. It's known, that oral fluid is a very indicative object for study, because its composition is influenced by various biochemical changes occurring in the oral cavity [6].

Thus, the aim of the present research was to study the effect of the removable

dentures, the bases of which are made of acrylic plastics, on local immunity and the state of oxidative homeostasis in edentulous patients.

Materials and methods of research. In the work, 100 edentulous patients, middle age and elderly (60-82 years), equal to men and women, were examined. The persons with severe forms of somatic and endocrine diseases, as well as cancer patients, were excluded from the study. Selected patients were made of complete removable dentures with rigid bases from the acrylic plastic "Ftorax" (Stoma, Ukraine) on both jaws according to the traditional technology.

Patient examination included complaints, anamnesis and clinical study that consists of examination and palpation of the organs and tissues of the oral cavity before prosthetics, in 1 week and in 1 month after. In addition, the condition of the mucous membrane of the prosthetic bed was determined using the method of macrohistochemical staining. For this purpose, the prosthetic bed was lubricated with a solution of Schiller-Pisaryev, then – with a 3% solution of toluidine blue. After 30-60 seconds, the intensity and the colour of staining according to the type of mucous membrane were evaluated. Planimetric mesh was used to determine the area of inflammation zones. The assessment was carried out according to the following criteria: no inflammation; the area of inflammation ≤ 1 cm²; the area of inflammation is more than 1 cm². In addition, the average total area of inflammation zones of the mucous membrane of the prosthetic bed was calculated [7].

The object of the biochemical study was the oral fluid of patients, which was collected on an empty stomach, before delivery of protective designs, then in 1 week and in 1 month. The level of secretory immunoglobulin A (S IgA) was determined using the standard method of immunoassay [8]. As indicators of oxidative homeostasis, the content of superoxide dismutase (SOD), catalase (CAT) and glutathione reduced (GR), which was established in spontaneous biochemical reactions, was studied [9].

Statistical processing of the data was performed using the Statistica 6.0 (Statsoft Inc., USA) package with the Student's t-criteria in normal data distribution and the non-parametric Mann-Whitney criteria – under abnormal distribution. The normal distribution was assessed using the Shapiro-Wilk test.

Results and discussion. A week after the delivery of complete removable dentures, the signs of inflammation of the mucous membrane were observed in 100 % of patients (Fig. 1). According to the clinical examination, the process was predominantly local (74.0 %) and most often coincided with areas of traumatic effect of the bases of dentures. In the examined patients, hyperemia prevailed, which was encountered in 82.0 % of observations, while the traumatic erosive-ulcerative mucosal lesions in the areas of transitional folds and the bottom of the oral cavity were detected in the remaining 18.0 %.

On the contrary, according to the results of macrohistochemical staining, inflammation occurred in 100% of cases. The process has a sharp, generalized nature. It characterized by a brownish coloration of the mucous membrane of the prosthetic bed of varying intensity (the most pronounced coloration coincided with the inflammatory foci found during visual examination). The distribution of patients for the prevalence of inflammatory process on the mucous membrane of the prosthetic bed is given in Fig. 2.

As can be seen from this figure, among the surveyed patients, those ones prevailed in whom the area of inflammatory changes in the mucous membrane as a result of colouring was more than 1 cm². The average value of the area of the inflammation of the mucous membrane of the prosthetic bed was 1.93 ± 0.25 cm².

It should be noted that during the first three weeks after the delivery of dentures, we corrected their bases in accordance with the determined traumatized areas of the mucous membrane.

Accordingly, after 1 month the number of cases of inflammation of mucous membrane of the oral cavity due to the use of dentures was reduced to 28.0 % (see Fig. 1). Among them 78.6 % had focal and diffuse hyperemia of the mucous membrane of the prosthetic bed, 10.7 % – petihia and 10.7 % – erosive-ulcer defeat.

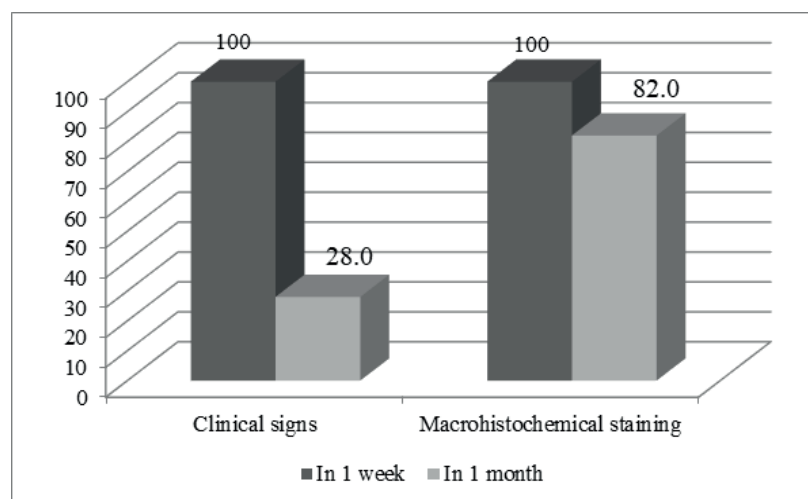


Fig. 1. The proportion of patients with inflammatory changes in the mucous membrane of the prosthetic bed in 1 week and in 1 month according to the clinical examination and the results of macrohistochemical staining (% , n=100)

However, based on the results of macrohistochemical staining, signs of inflammation were diagnosed in the vast majority of observations (82.0%). In these patients, due to macrohistochemical coloration, the mucous membrane at the I class by Soupplee acquired a blue colour, while in the second class – a blue one but less intensity. In hypertrophied mucous membrane (classes III and IV) its dark blue colouring was recorded. Among these cases, the part of acute inflammatory process, which was characterized by brownish coloration of different intensity, depending on the type of mucous membrane, was 19.5 %. In the remaining patients, the inflammation was of a chronic nature.

As it can be seen from Fig. 2, in the examined patients the generalized nature of inflammation, when the area of process exceeds 1 cm², prevailed. At the same time, the average value of the area of defeat was 1.37 ± 0.20 cm² and was significantly lower compared to the results obtained in 1 week after the beginning of using of the dentures

($p < 0.05$). Also, based on the results of studying the topography of the paint, it was found that the greatest traumatic effect created those areas of the denture which covered the alveolar processes of both jaws.

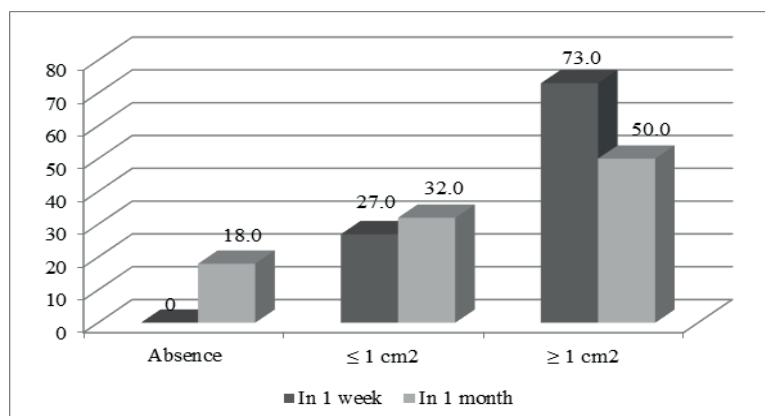


Fig. 2. Dynamics of the area of inflammation in the mucous membrane after prosthetics in 1 week and in 1 month (% , n=100)

According to the analysis of the nature and localization of the inflammatory process on the mucous membrane, after 1 week the inflammatory response from the mucous membrane was caused by both mechanical and toxic effects of the bases of dentures, whereas in 1 month, after the correction of their edges, inflammatory phenomena could be considered as a consequence of the negative effects of acrylic plastics, which were confirmed by the results of biochemical studies (Table 1).

Table 1

Dynamics of indicators of local immunity and oxidative homeostasis in the dynamics of use of complete removable dentures ($M \pm m$)

Term of observation	Indexes			
	S Ig A, mg/ml	GR, SU/min	SOD, SU/min	CAT, SU/min
Before (1)	0.74 ± 0.02	24.2 ± 0.8	1410.0 ± 37.0	4.2 ± 0.3
In 1 week (2)	0.82 ± 0.03	27.0 ± 1.0	1517.5 ± 40.2	6.0 ± 0.4
In 1 month (3)	0.80 ± 0.03	26.8 ± 1.0	1470.5 ± 41.1	5.2 ± 0.3
p 1-2	< 0.05	< 0.05	< 0.05	< 0.001
p 2-3	> 0.05	> 0.05	> 0.05	> 0.05
p 1-3	> 0.05	< 0.05	> 0.05	< 0.05

Before prosthetics, concentration of secretory immunoglobulin in the oral fluid was 0.74 ± 0.02 mg / ml (Fig. 3). Then, after 1 week of use of dentures, it increased to 0.82 ± 0.03 mg / ml ($p < 0.05$) and it was maintained at increased levels (0.80 ± 0.03

mg / ml) and later, after 1 month ($p < 0.05$).

The data of the evaluation of indicators that characterize the state of oxidative homeostasis proved an increase in their level in the contingent of the studied patients.

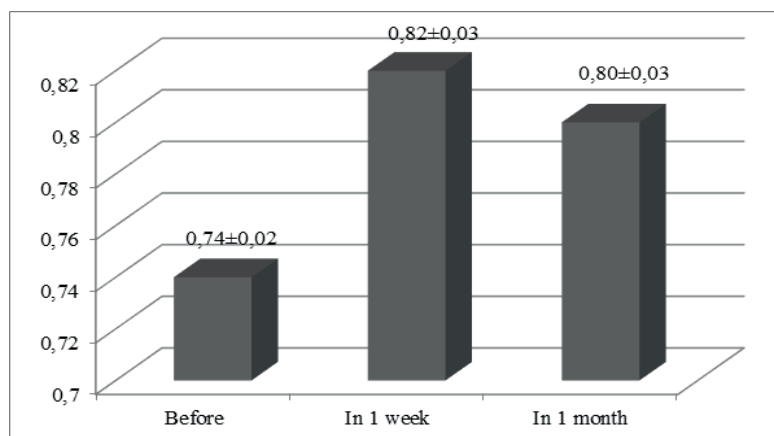


Fig. 3. Dynamics of concentration of secretory immunoglobulin in the oral fluid during observation (mg / ml, $M \pm m$, $n=100$)

Thus, the content of glutathione reduced (GR) in the oral fluid increased from 24.2 ± 0.8 SU/min before the use of dentures to 27.0 ± 1.0 SU/min in 1 week after and up to 26.8 ± 1.0 SU/min in 1 month after ($p < 0.05$) (Fig. 4). In turn, the content of superoxide dismutase (SOD) in the oral fluid also increased due to prosthetics. So, if the value of this indicator before the beginning of use of dentures was 1410.0 ± 37.0 SU/min, then in 1 week after they equalled 1517.5 ± 40.2 SU/min, somewhat decreasing in 1 month to 1470.5 ± 41.1 SU/min ($p < 0.05$) (Fig. 5).

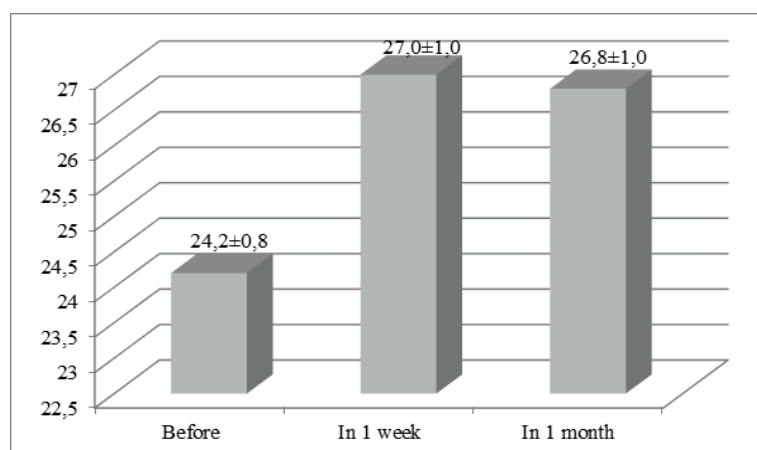


Fig. 4. Changes in the concentration of glutathione reduced (GR) in the oral fluid during observation (SU/min, $M \pm m$, $n=100$)

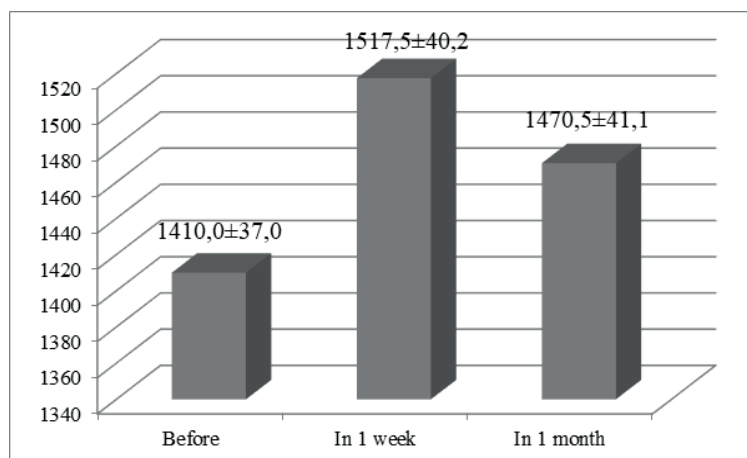


Fig. 5. Dynamics of the content of superoxide dismutase (SOD) in the oral fluid during observation (SU/min, $M \pm m$, $n=100$)

We also recorded a similar dynamics of catalase (CAT) content in the oral fluid (4.2 ± 0.3 SU/min before prosthetics and 6.0 ± 0.4 SU/min – in 1 week after ($p < 0.001$) and 5.2 ± 0.3 SU/min – in 1 month ($p < 0.05$) (Fig. 6). Obviously, the content of catalase in the oral fluid was the most informative marker of the reaction of oxidative homeostasis in the process of use of prostheses.

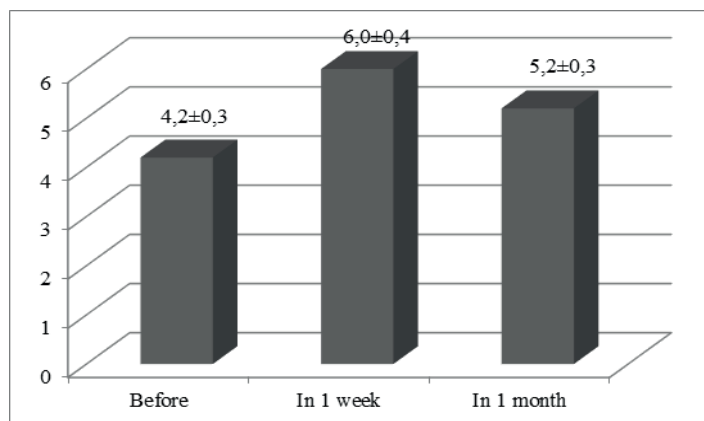


Fig. 6. Changes in the catalase (CAT) content in the oral fluid during observation (SU/min, $M \pm m$, $n=100$)

It should be noted that there are no reliable differences between male and female indicators ($p > 0.05$).

So, according to the results of the study of the level of secretory immunoglobulin A and the indicators, characterized the state of the enzymatic chain of oxidative homeostasis, it can be attributed to the expressed compensatory reaction from the oral

cavity mucosa to the use of removable dentures with acrylic bases.

At once, within 1 week after the delivery of the dentures, the levels of the studied indices are significantly increased ($p < 0.05$), while in 1 month there is a tendency towards their decrease ($p < 0.05$). The inserted dynamics of biochemical markers proved the lack of compensatory possibilities of the oral mucous membrane in normalizing the immune-metabolic status.

Conclusions. 1. The use of complete removable dentures with acrylic bases in the immediate period of observation leads to the development of inflammatory processes in the mucous membrane of the prosthetic bed. If the mechanical factor can be eliminated by correction of the bases, then the influence of the toxic factor continues and causes a predominantly chronic inflammation in 82.0% of cases.

2. Compared to baseline, after 1 week of the use of acrylic dentures has a rise in the content of indicators that characterize the activation of the enzymatic chain of oxidative homeostasis of the mucous membrane, as well as the local immunity.

3. The most informative is the increase in the content of catalase in the oral fluid as a marker for functional rearrangement and activation of compensatory reactions ($p < 0.001$).

4. The mechanism of functional response of the mucous membrane of the prosthetic bed to the negative influence of acrylic bases can be characterized as a compensatory reaction, which is manifested by the restructuring of the enzymatic chain of oxidative homeostasis against the background of an increase in the level of secretory immunoglobulin A.

5. The obtained results point on the necessity of searching for methods of reducing the negative influence of the bases of complete removable dentures made of acrylic plastics on the mucous membrane of the prosthetic bed.

References:

1. Nespriadko V. P., Baranovskyi O. V., Tykhonov D. O. Peculiarities of prosthetic treatment of patients with a combination of complete and partial adentia. // *Visnyk problem biologii i medytsyny*. 2013; 1(98): 173-176.
2. Vatamanjuk M. M., Bjelikov O. B., Maksymiv O. O., Maniyh H. Yu. Complete loss of teeth. Prevalence. Need for prosthetic treatment. // *Bukovyns'kyj medychnyj visnyk*. 2012; 16 (4): 191-195.
3. Kuz V. S., Dvornyk V. M., Kuz H. M. Characteristics of modern basic dental materials and their influence on oral cavity tissues.// *Aktualni problemy suchasnoi medytsyny: Visnyk ukraïnskoi medychnoi stomatolohichnoi akademii*. 2014; 2 (46): 179-183.
4. Yaryna I. M. Investigation of the effect of non-removable orthopedic structures on the patients' immune-metabolism profile.// *Visnyk problem biologii i medytsyny*. 2018; 4 (147): 368-372.
5. Yanishen I. V. Evaluation of the effect of the level of residual monomer reduction

in fixed prostheses made of acrylic plastics on the immunometabolic profile of patients. // Nauka i zdravookhraneniye. 2016; 1: 77-88.

6. Gil'miyarova F. N. Analiticheskiye podkhody k izucheniyu pokazateley metabolizma v rotovoy zhidkosti [Analytical approaches to the study of metabolism in the oral fluid]. Moscow, Izvestiya, 2016: 312.

7. Lesnyih N. I. Snizhenie atroficheskikh protsessov pri polzovanii s'jomnymi protezami na bezzubyh chelyustyah: avtoref. dis. kand. med. nauk: spets. 14.00.21 «Stomatologiya» [Decrease of atrophic processes with use of removable dentures on edentulous jaws: author's abstract. dis. candidate degree: speciality 14.00.21 "Dentistry"]. Moscow, 1990: 20.

8. Koval'chuk L. V., Ignat'yeva G. A., Gankovska L. V. Immunologiya. Praktikum: uchebnoye posobiye [Immunology. Workshop: study guide]. Moscow, GEOTAR-Media, 2010: 176.

9. Sherban' N.G., Gorbach T. I., Guseva N. R. Laboratornyye metodiki dlya izucheniya sostoyaniya antioksidantnoy sistemy organizma i urovnya perekisnogo okisleniya lipidov [Laboratory techniques to study the state of the antioxidant systems of the organism and the level of lipid peroxidation]. Char'kov: HGMU, 2004: 36.

IN VITRO TEST-RESEARCH OF THE INDIGENOUS INTESTINAL MICROFLORA OF THE PATIENTS WITH ALZHEIMER'S DISEASE

Tetyana Ivakhniuk,

Yurii Ivakhniuk,

Sumy State University,

Olha Molozhava,

Taras Shevchenko National University of Kyiv,

Oleksandr Makarenko,

Interregional Academy of Personnel Management,

Roman Dovgan,

Bogomolets National Medical University

Annotation. *At the present stage of development the priority direction of prevention and treatment of dysbiotic disorders of the intestines, especially for the patients with Alzheimer's disease (AD), in our opinion, remains the personalized therapy on the basis of one's own indigenous microflora. Studying of the adhesive properties of the representatives of the indigenous microflora (Lactobacillus spp. and Bifidumbacterium spp.) of the intestines of the patients with AD became the objective of our study. During the microbiological inspection of 21 patients with AD it had been found out that at 100% of the examined patients showed the qualitative and quantitative dysbiotic changes of the intestines of different extents and symptoms: in $38.1 \pm 0.04\%$ of cases dysbacteriosis of the I degree was registered; in $28.6 \pm 0.03\%$ – the II degree and in $33.3 \pm 0.03\%$ – III degree. After cultivation of the “intestinal” strains of the indigenous microflora on skim milk within 48 hours a reliable increase in the adhesive activity of the all studied bacteria in comparison with the control has been revealed ($p < 0.05$).*

Key words: *adhesive activity, Alzheimer's disease, Bifidumbacterium, dysbiosis, gastrointestinal tract, Lactobacillus.*

Introduction. The gut microbiota is a “blackbox”, drawing attention of the researchers for “interpretation” and understanding of the pathogenesis of many human diseases today. More than 70% of species of microorganisms resist microbiological cultivation, i.e. they cannot be isolated in a pure culture in artificial nutrient media and are identified by means of classical methods of microbiology. The technological breakthrough allowed taking a new step from a simple detection of microorganisms to understanding of their functions and a role in organism homeostasis. New methodological approaches allow analyzing all the set of the composite processes, happening at the cellular level or in the whole live organism – genomics, transcriptomics, metagenomic sequencing, proteomics and metabolomics, which completely transformed our ideas of the structure and function of the “invisible body” [1].

The gut microbiota actively affects the transformation processes of the molecules of proteins, fats and carbohydrates, synthesis of vitamins in the GIT, intestinal peristalsis regulation, takes part in the processes of detoxication and regulates permeability of

some substances through the mucous membrane of the gut. Studying of the interrelation between the gut and the brain, that is the so-called gastrobrain axis (gut-brain-axis), by means of which the brain has an impact of the function of the gastrointestinal tract and the last one – vice-versa, is modern and relevant [2, 3]. At the same time, the main basic components of the microbiota-gut-brain axis is the central nervous system, neuroendocrinal and the neuroimmune systems, the autonomic nervous system, and the system of the nerve ganglia of the intestines and the gut microbiota. These components form a complex multiple-factor network, by means of which the signals from the brain can affect not only the motor, sensory and secretory activity of the intestines, but also its microbiota. And on the contrary, visceral signals from the microbiota-mediated area of intestines, significantly influence brain functions [4].

It is important to emphasize that the probiotics bacteria, applied at certain human diseases and morbid conditions colonize the intestines, can affect the central nervous system through the products of a number of neurotransmitters and biological substances: serotonin, melatonin, gamma-aminobutyric acid (GABA), catecholamines, histamine and acetylcholine. A part of these substances is capable to take effect not only on the mesenterial, but, first of all, on central nervous system [5].

Today more than 60% of the functional foodstuffs are used for the purpose of the influence on the digestive system. Prebiotics and probiotics are the drugs, widely used in the world [6].

Despite various formulations of the concept of “probiotics”, most of researchers call them the medicines containing certain strains of microflora of a healthy human body in a quality of the active ingredient. It is known that normally bacteria, living in the mucous membrane have their antagonistic effect, concerning the pathogenic and opportunistic microflora and provide a vitamin-providing and enzymatic function [7].

When making pro-biotic drugs the strains of microorganisms, which fulfill certain requirements, have to be chosen. They are as follows: 1) safety of the strains, intended for their introduction to the structure of probiotics; 2) the existence of antagonistic properties to the pathogenic and opportunistic microflora; 3) stability to lytic enzymes of saliva (lysozyme), digestive enzymes (pepsin, lipase) and to bile 4) resistance to the action of gastric juice 5) the adhesive activity and colonial resistance; 6) resistance to antibiotics; 7) the higher specific growth rate of pro-biotic cultures in comparison with a comensalna microflora that allows them to master nutritious substrate faster and consequently, to increase the productivity of cells of pro-biotic strains; 8) the strain has to be technological by production (stable during cultivation and other stages of the technology process); 9) immune and modulatory and imunogenous probiotic action [7].

That is, probiotic strains of microorganisms have to be resistant to antibiotics, due to the synthesis of antibiotic-like substances as well, so a probiotic and an antibiotic have to work in common, that is the additive effect has to be implemented.

However, the widespread introduction of gene-modified strains of microorganisms in the medical practice is limited to a potential unpredictable impact of such microorganisms on the host's organism (a person or an animal) and also on ecosystems.

Some researchers consider that it can be connected with the emergence of the new properties in introduced species, enhancing their competitiveness and also disturbance of the balance of ecosystems. Besides, the possibility of uncontrollable transferring of a recombinant DNA to new hosts is actively discussed. At the same time many researchers experimentally confirmed the environmental safety of the recombinant microorganisms used as the effective bacteriotherapeutic drugs [8]. There are still a lot of tasks to be solved.

Proceeding from the stated above, at the present stage of development the priority direction of prevention and treatment of dysbiotic disorders of the intestines, especially for the patients with Alzheimer's disease, in our opinion, remains the personalized therapy on the basis of one's own indigenous microflora.

Studying of the adhesive properties of the representatives of the indigenous microflora (*Lactobacillus* spp. and *Bifidumbacterium* spp.) of the intestines of the patients with AD became the objective of our study.

Materials and methods. During the research the condition of the gut microflora was specified according to the methodical instructions [9]. For the purpose of obtaining of *Lactobacillus* spp. and *Bifidumbacterium* spp. isolates we have conducted a microbiological research of the gut microflora of the patients with Alzheimer's disease (AD) ($n = 21$). Studying of the adhesive activity of *Lactobacillus* spp. and *Bifidumbacterium* spp. isolates was carried out according to the technique of V.I. Brilis and coauthors. [10].

The statistical processing of the obtained results was carried out by means of the Statistica 6.1 software package with the use of the parametrical Student's t-test.

Results and their discussion. Analyzing the results of the microbiological research of the excrements of the patients with AD we had found out that 100% of the examined patients showed the qualitative and quantitative dysbiotic changes of the intestines of different extents of manifestations: I dysbacteriosis degree was registered in $38.1 \pm 0.04\%$ % of cases; II degree – in $28.6 \pm 0.03\%$; III degree – in $33.3 \pm 0.03\%$.

Analyzing the qualitative and quantitative structure of the indigenous microbiota of the patients with AD, it had been established that the most evident qualitative and quantitative disturbances of the content of *Lactobacillus* spp. and *Bifidumbacterium* spp. were revealed in the patients with the II and III degree of gut dysbiosis. The quantity of the indigenous microflora authentically decreased ($p < 0,05$) in comparison with the indices of the patients with dysbiosis degree I; critically low quantitative indices of *Lactobacillus* spp. were registered in the patients with AD and the dysbiosis degree III ($\lg 4.48 \pm 0.15$ CFU), and *Bifidumbacterium* spp. – the patients with dysbiosis degree II ($\lg 3.7 \pm 0.2$ CFU).

Such qualitative and quantitative changes in the gut microflora of the patients with AD reduce colonial resistance and can be connected also with a decrease in the adhesive potential of the representatives of the indigenous microflora.

The value of the adhesive characteristics of the bacteria for a macroorganism can be considered from two aspects. On the one hand, the adhesive potential of the indigenous

microflora is one of the factors of realization of colonial resistance of the mucous membrane of the intestines and an obstacle of joining to the receptors of the mucous membrane of the pathogenic microorganisms. On the other hand, in case of development of dysbiotic disorders the adhesive properties of the opportunistic microflora are considered as a pathogenicity factor as they allow microbes to be fixed on the surface of the skin, mucous membrane and to colonize this biotope, reaching a certain population level [11-12].

In the course of studying of the indicators of *Lactobacillus* spp. ($n = 41$) and *Bifidumbacterium* spp. ($n = 33$) adhesion to erythrocytes of blood 0 (1) of the blood type we have determined that among the isolated strains from the patients with AD there was no one with a high adhesion degree (fig. 1).

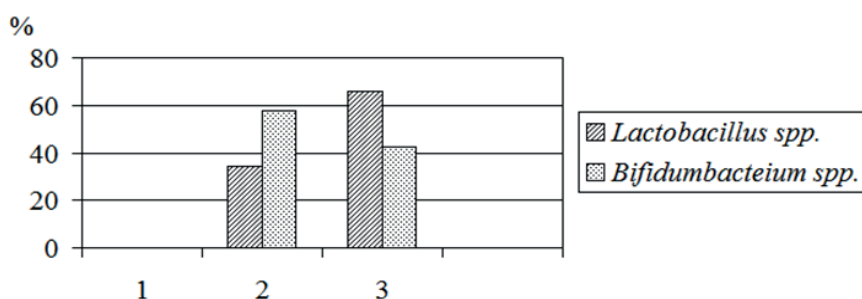


Fig. 1. The quantity of the lactobacteria and bifidobacteria, isolated from the intestines of the patients with AD on the adhesion index (1 – the high AI, 2 – the medium AI, 3 – the low AI).

In the analysis of the indicators of the adhesion index of microorganisms (AIM) we have established the distinctions: among the “intestinal” *Lactobacillus* spp. isolates, obtained from the patients with Alzheimer’s disease, the average degree of adhesion (the total value of AIM 3.61 ± 0.05 bact. cell /er.) showed the strains, isolated from the patients with I and II degree the dysbiotic changes of the intestines. All the patients with the III intestinal dysbiosis degree *Lactobacillus* spp. isolates had their low adhesive activity (the total value of AIM 1.93 ± 0.03 bact. cell / er.).

According to the obtained results on studying of the adhesive properties of *Bifidumbacterium* spp. isolates it has been determined that according to AIM these strains were characterized as low (42.4%) and medium (65.9%) on the level of adhesion (fig. 1), and all clinical *Bifidumbacterium* spp. isolates, which had their low adhesive activity (AIM values = 2.12 ± 0.03 bact. /red cell), were isolated from the patients with the I and II degree of dysbiotic intestine changes.

In the second series of the experiment with the isolates of indigenous intestinal microflora, we carried out cultivation of the clinical strains of *Lactobacillus* spp. and *Bifidumbacterium* spp., obtained from the patients with AD on skim milk within 48 hours: 1 ml of *Lactobacillus* spp. suspension or *Bifidumbacterium* spp. in the number of

0.5 units, according to the McFarland standard were added to 10 ml of sterile skim milk. After cultivation of these strains their adhesive activity were studied.

As a result of the analysis of the obtained results an increase in the adhesive activity of the all studied bacteria in comparison with control is considered to be reliable ($p < 0.05$) (the first series of the experiment – primary isolation from the patients): *Lactobacillus* spp. and *Bifidumbacterium* spp. were characterized by their medium adhesion activity. So, the AIM of *Lactobacillus* spp. ($n = 41$) in the sampling made 3, 86 ± 0.07 bact. /red cell (from 2.91 to 6.9 bact. /red cell.): 12.2% of lactobacteria had the high adhesive activity, 24.4% – the low adhesive activity and 63.4% – the medium adhesive activity.

Among bifidobacteria isolates ($n = 33$) after cultivation in the sterile skim milk the AIM of *Bifidumbacterium* spp. in the sampling made 3, 86 ± 0.07 bact./red cell. (The AIM indices fluctuated from 2.91 to 6.9 bact./red cell.): 21.1% were considered as high-adhesive strains, whereas most of them showed the medium (66.7%) adhesion ability and only 12.2% of bifidobacteria strains had their low adhesive potential.

When studying the sensitivity of the isolated microorganisms (*Lactobacillus* spp. or *Bifidumbacterium* spp.), which was carried out by disco-diffusion method with the use of paper disks by LLC Pharmaktiv production (Kiev, Ukraine.) and Himedia (India), it has been established that 29.27% of *Lactobacillus* spp. strains showed their resistance to gentamycin; 24.39% – to chloramphenicol and 9.75% p – to erythromycin. When studying the results of the antibiotic record of *Bifidumbacterium* spp. it has been revealed that the greatest number of strains (24.24%) was resistant to erythromycin.

It has been considered that antibiotic-resistance is a useful property of pro-biotic strains of *Bifidobacterium* and *Lactobacillus* bacteria that provides the high performance of probiotics for the complex therapy of infectious diseases (joint reception of probiotics and antibiotics). However, in recent years the situation cardinally changed, it is connected, first of all, with the global distribution among antibiotic-resistance phenomenon microorganisms that can lead to a number of consequences, adverse for the person. It is connected with the fact that such strains of pro-biotic bacteria can bear the “silent” genes of antibiotic resistance or have their own mechanisms of resistance to antibacterial drugs.

For this reason, creation of the personalized bank of indigenous intestinal microflora (bacteria of *Bifidobacterium* and *Lactobacillus* type) which can form the further basis for creation of autoprobiotics for prevention and treatment of intestinal dysbiotic disorders is relevant and perspective direction for the future of the population.

Conclusions. During the microbiological inspection of 21 patients with AD it had been found out that at 100% of the examined patients showed the qualitative and quantitative dysbiotic changes of the intestines of different extents and symptoms: in $38.1 \pm 0.04\%$ of cases dysbacteriosis of the I degree was registered; in $28.6 \pm 0.03\%$ – the II degree and in $33.3 \pm 0.03\%$ – III degree. The critically low ($p < 0.05$) quantitative indices of *Lactobacillus* spp. were registered in the patients with AD and the III degree of dysbiosis ($\lg 4.48 \pm 0.15$ CFU), and *Bifidumbacterium* spp. – the patients with the II degree have dysbiosis ($\lg 3.7 \pm 0.2$ CFU).

34.1% of strains of *Lactobacillus* spp. obtained from the patients with AD showed the medium adhesion degree (AIM values = 3.61 ± 0.05 bact. /red cell), obtained from the patients with I and II degree of dysbiotic changes of intestines; in 33.3% of the patients with the III degree of the intestine dysbiosis *Lactobacteria* spp. isolates had their low adhesive activity (AIM values = 1.93 ± 0.03 bact. / red cell).

Bifidumbacterium spp. isolates were characterized by the low (42.4%) and medium (65.9%) adhesion level, and all the clinical isolates, which had their low adhesive activity (AIM values = 2.12 ± 0.03 bact. /red cell.), were isolated from the patients with I and II extent of dysbiotic changes of intestines.

After cultivation of the “intestinal” strains of the indigenous microflora on skim milk within 48 hours a reliable increase in the adhesive activity of the all studied bacteria in comparison with the control has been revealed ($p < 0.05$) (the first series of the experiment – primary isolation from the patients): *Lactobacillus* spp. and *Bifidumbacterium* spp., were characterized by the medium adhesion activity.

The prospects of further researches in this direction. It is expedient to carry out restoration of the colonial resistance of the intestines in the patients with Alzheimer’s disease on the basis of using of high-adhesive strains of bifidobacteria and lactobacilli. One of the ways of the long-time storage of microorganisms is drying that allows keeping their main properties. However, it is reached not in case of all the ways of drying therefore studying of the various ways of freeze drying of *Lactobacillus* spp. and *Bifidumbacterium* spp. will be the following step of our researches that will allow keeping their main biological properties (adhesive properties and the antagonistic activity, concerning the opportunistic intestinal microflora).

References:

1. Chernevskaya E. A. Mikrobiota kishchnika pri kriticheskikh sostoyaniyakh (obzor) / E. A. Chernevskaya, N. V. Beloborodova // General reanimatology. – № 14 (5). – 2018. – . 96 – 118. (In Russian)
2. Bondarenko V.M. Znachenie nervnoy sistemy pri vospalitelnykh zabolevaniyakh kishchnika / V.M. Bondarenko, E.V. Ryabichenko // Zhurn. mikrobiol. – 2011. - № 1. – P. 92 – 100. (In Russian)
3. Parfenov A.I. Chto nam dal vekovoy opyt poznaniya simbiot- noy kishchnoy mikroflory / A.I. Parfenov, V.M. Bondarenko // Arhiv patologii. – 2012. – № 2. – P. 21 – 25. (In Russian)
4. O’Mahony S.M. Maternal separation as a mode of brain- gut axis dysfunction / S.M. O’Mahony, N.P. Hyland, T.G. Dinan [et al.] // Psychopharmacology (Berl.). – 2011. – Vol. 214. – P. 71 – 88.
5. Clarke M.B. The QseC sensor kinase: a bacterial adrenergic receptor / M.B. Clarke, D.T. Hughes, C. Zhu [et al.] // Proceedings of the National Academy of Sciences of the United States of America. – 2006. – Vol. 103. – P. 10420 – 10425.
6. Probiotiki, prebiotiki i kishchnaya mikroflora: sovremennyiy vzglyad // Cuchasna

gastroenterologiya. – № 5 (79). – 2014. – P. 111 – 118. (In Russian)

7. Krisenko O.V. Mikrobiologichni aspekty probiotichnyh preparativ / O. V. Krisenko, T. V. Sklyar, A. I. Vinnikov, A. V. Slipetska, S. S. Kudenko // Visnyk Dnipropetrovskogo universitetu. Biologiya. Ekologiya. – 2010. – Vip. 18, v. 2. – P. 19 – 24. (In Ukrainian)

8. Starovoytova S.A. Probiotiki na osnovе transgennyih transgennyih mikroorganizmov / S. A. Starovoytova, O. I. Skrotskaya // biotechnologia acta. – Vol. 6. – № 1. – 2013. – P. 34 – 45. (In Russian)

9. Metodicheskie rekomendatsii “Mikrobiologicheskaya diagnostika disbakterioza kishchnika”. – M., 2007. – 74 P. (In Russian)

10. Metodika izucheniya adgezivnogo protsessu mikroorganizmov / Brilis V.I., Brilene T.A., Lentsner H.P i dr. // Laboratornoe delo. – 1986. – № 4. – P. 210 – 212. (In Russian)

11. Bondarenko V.M. Rol disfunktsii kishchnogo barera v podderzhanii hronicheskogo vospalitelnogo protsessu razlichnoy lokalizatsii / V.M. Bondarenko, E.V. Ryabichenko // Zhurn. mikrobiologii, epidemiologii i immunobiologii. – 2010. – № 1. – P. 92 – 100. (In Russian)

12. Ivakhniuk T., Molozhava O, Ivakhniuk Yu., Dovgan R., Makarenko O. Adhesive properties of lactobacillus spp. And bifidobacterium spp. Isolated from the intestines of the patients with alzheimer’s disease // Modern Science. Moderní věda. – 2019. – №1. – P.139-146

LABORATORY INVESTIGATION OF THE REINFORCED PHOTO COMPOSITION MATERIAL BENDING STRENGTH

Alexander Udod,
Doctor of Medicine, Professor;
Alexander Pompey,
Donetsk National Medical University,
Nikolai Shidlovsky,

Candidate of Technical Sciences,
National Technical University of Ukraine "I.Sikorsky Kyiv Polytechnic Institute"

Annotation. *Common method of bounded edentulous teeth (BET) is the use of resin-bonded bridges (RBB). Their manufacture prostheses involves reinforcement. For this metal and non-metal elements, different in shape and physical-mechanical properties are used.*

For laboratory assessment, 30 specimens of FiltekUltimate, 3MESPE nanophotocomposite material, reinforced with various fiber-optic elements, were fabricated. Three-point bending method was used. During the study the load which led to the destruction of the photocomposite material, the maximum destructive load at which the frame fracture occurred, and the degree of deformation experienced by the specimens, were recorded. Based on the data obtained, the indexes of bending strength, modulus of elasticity and bending strength of the specimens were calculated.

Laboratory assessment revealed that the highest strength characteristics studied by the three-point bending method had samples of photocomposite material, reinforced with fiber-optic tape and a beam with the latter horizontal location above the tape.

Key words: *resin-bonded bridge, frame-mounted, bending strength, destructive load.*

The work presented is a fragment of a research project of the department of stomatology №1 of Donetsk National Medical University «Clinical and Laboratory Substantiation of Diagnostics, Treatment, Prognosis and Prevention of Dental Diseases Technologies and their Perfection», state registration number 0119 U 001447.

Common method of bounded edentulous teeth (BET) is the use of resin-bonded bridges (RBB). Such prostheses have a gentle attitude to the hard tissues of the supporting teeth, overstability, biocompatibility and aesthetics [1,2]. The manufacture of these prostheses involves their reinforcing. For this metal and non-metal elements, different in shape and physical-mechanical properties are used. Metal reinforced elements are known to be stronger than those made of other materials, but the lack of adhesive bonding with the restoring materials and lack of aesthetics limit the use of metal frames. For this reason, non-metallic reinforced elements, such as fiberglass, aramid, polyethylene, silk, and carbon, are more widely used today [3].

RBB frames manufactured on the base of fiberglass are considered to be the most promising because they are bioinert, form chemical bond with photocomposite materials, have high strength, low water absorption and good optical properties. Fiberglass frame-mounting elements differ in size and shape (beams, tapes, cords), impregnation of fibers

(over-impregnated and non-impregnated), necessity of additional accessories when using them [3].

Leading of reinforcing elements in the thickness of the restoring material from which RBB is made, can significantly increase the rigidity of the structure and increase its durability to the effect of chewing load. It is established that the effectiveness of reinforcement depends on the ratio between fibers volume and that of photocomposite, location, shape, size, type and fibers' impregnation [4]. Some researches believe that reinforcing optimum effect can be obtained if the volume of fiberglass is 16% of the volume of artificial tooth, reinforcing element locates in the lower part of the artificial tooth on the lower jaw, and on the upper jaw, on the contrary, the length of reinforcement is to be equal to the distance between the proximal walls of the supporting cavities [5]. At the same time, laboratory assessment of photocomposite material specimen with reinforcement by various fiberglass elements showed that higher indices of resistance to the action of chewing load were obtained in specimens with the largest cross-sectional area of elements and connection with the photo composite [6]. Instead, it is known that photo composite material thickness reducing on the chewing surfaces of artificial and abutment teeth up to 1 mm significantly degrades the mechanical properties of the structure and leads to its rapid destruction [7].

A possible way to improve RBB design is to increase the specific volume of the reinforcing frame while maintaining the minimum allowable thickness of the composite material on the chewing surfaces of the artificial and supporting teeth.

The objective: at laboratory assessment to determine the optimal bending strength characteristics of reinforced photocomposite specimens using different combinations of fiberglass reinforcing elements.

Materials and methods. For the laboratory assessment 30 samples of nanophotocomposite material FiltekUltimate, 3MESPE, reinforced with various fiberglass elements of 25.0 x 5.0 x 5.0 mm in size were made. A metal form filled with photocomposite material with reinforced elements in its depth was used. The metal form was covered with glass plates and the samples were irradiated on both sides by the luminous flux of dental LED curing light. The samples were divided into three groups, 10 samples in each.

Group I included nanophotocomposite specimens, reinforced by two pre-impregnated fiberglass tapes Interlig, Angelus, with transverse dimensions of 0.2x2.0 mm. The tapes in the specimens were arranged horizontally, one above the other in parallel.

Samples of group II were reinforced with two fiberglass beams JenFiberBulk No. 3, Jendental, 1.8 mm in diameter, also located one above the other.

In the samples of the third group reinforcement was made by pre-impregnated glass fiber tape Interlig, Angelus, and beam Jen-FiberBulk No. 3, Jendental, with appropriate parameters, with the beam was installed over the tape [8]. Before the study, the samples were measured with micrometer to within 0.01 mm.

Three-point bending of the specimens was performed using the universal test machine TIRATEST-2151. During the study, the load, which led to the destruction of

the photocomposite material, maximum destructive load, during which the fracture of the frame took place, and degree of samples deformation was measured [9]. The test was done according to State Standard 31574-2012 (GOST 31574-2012). The test machine was equipped with a device consisting of two parallel rods, 2 mm in diameter, located at a distance of 20 mm from each other, a movable third rod with a diameter of 2 mm was installed on the machine beam parallel to the first two and in the middle between them. The speed of movement of the cross-beam of the test machine was 0.75 ± 0.25 mm / min. The load at which the samples were destroyed was measured using a dynamometer mounted on the test machine to within 0.01 N. Based on the data obtained, the indexes of bending strength, modulus of elasticity and that at the samples bending were calculated according to appropriate formulas [9]. Statistical processing was performed using the software STATISTIKA 11.0, the results were given in the form of $M \pm m$.

Results. At laboratory assessment of the samples by the method of three-point bending, it was found that the indices of destructive and maximum destructive load, degree of deformation, bending strength, modulus of elasticity and elasticity at bending of different group samples were significantly different ($p < 0.01$) Table 1.

Table 1

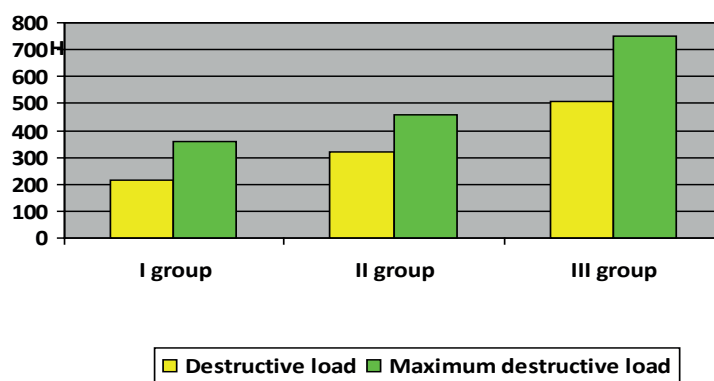
The average values of the flexural strength of the specimens of the reinforced photocomposite material

Indicator	I group	II group	III group
Destructive load, H	216,5+20,2	319,5+9,6	509,6+26,0
Maximum destructive load, H	357,7+24,6	459,2+36,5	753,0+19,3
Deformation, mm	0,375+0,012	0,207+0,014	0,296+0,003
The flexural strength after the destruction of the photocomposite, MPa	51,9+4,9	76,7+2,3	122,3+6,2
Bending strength after complete destruction of specimens, MPa	86,3+5,9	110,0+8,8	180,7+4,7
Modulus of elasticity, MPa	3048,8+62,4	7110,4+90,0	8149,0+112,1
Bending elasticity, MPa	47,6	57,7	60,4

Indexes of photocomposite destructive loading in group I were recorded in the range of 183.0 N to 241.0 N, average 216.5 ± 20.2 N. The same indexes for group II samples were reliably ($p < 0.01$) higher, and ranged from 303.5 N to 336.3 N with 319.5 ± 9.6 N average. The destructive load in the samples of group III was significantly ($p < 0.01$) the highest, the indicators were determined in the range from 459.0 N to 551.0 N, which averaged 509.6 ± 26.0 N.

With the complete destruction of the samples of the reinforced photocomposite, the maximum destructive load was registered, which in the samples of group I ranged from 332.0 N to 404.7 N, making, on average, 357.7 ± 24.6 N. In the samples of group II, the

index of maximum destructive load was almost 100 N ($p < 0.01$) higher than in Group I specimens — 459.2 ± 36.5 N, ranging from 395.0 N to 512.3 N. Corresponding indexes for maximum destructive load, defined in the samples of group III, ranged from 718.0 N to 788.0 N with an average value of 753.0 ± 19.3 N. Thus, the greatest resistance to the impact of the breaking load was shown by photocomposite samples of group III with glass fiber reinforced with tape Interlig, Angelus, and the fiberglass beam JenFiberBulk No. 3, Jendental located above it. Their indexes were 2 and 1.5 times higher than the corresponding samples of I and II groups (Pic. 1).



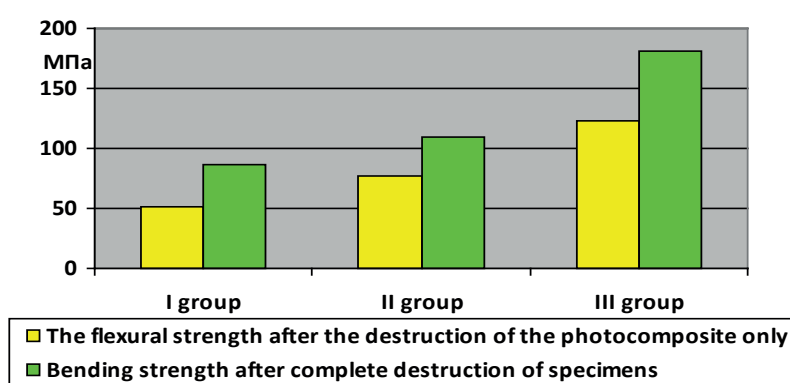
Pic. 1. Average breaking load and maximum breaking load for samples of different groups.

The deformation rates recorded at the time of complete destruction of the samples of reinforced photocomposite material differed significantly ($p < 0.01$) between the groups. The deformation in the samples of group I was fixed in the range from 0.360 mm to 0.414 mm with an average value of 0.375 ± 0.012 mm. The deformation in the samples of group II was much lower, it was equal to 0.207 ± 0.014 mm, varying in different samples from 0.180 mm to 0.224 mm. The average deformation index of the photocomposite samples of group III was 0.296 ± 0.003 mm with values ranging from 0.289 mm to 0.303 mm.

Separately, strenght after fracture in the specimens of the photocomposite material alone and after the complete destruction of the specimens including the reinforced frame was calculated. Significantly ($p < 0.01$), the lowest strenght at failure of photocomposite alone was determined in Group I samples, where two fiberglass tapes were used for reinforcement. The data obtained ranged from 43.9 MPa to 57.8 MPa, averaging 51.9 ± 4.9 MPa. 50% higher ($p < 0.01$) were indices of group II samples, their reinforcement was performed by two fiberglass beams, and their bending strenght was in the range from 72.8 MPa to 80.7 MPa with an average value of 76.7 ± 2.3 MPa. The highest strenght indexes ($p < 0.01$) were among group III samples with photocomposite reinforced with tape and beam. In particular, they ranged from 110.2 MPa to 132.2 MPa, with an average

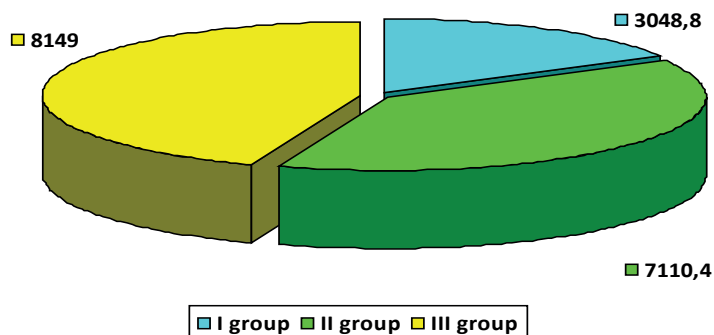
value of 122.3 ± 6.2 MPa, exceeding by 2.4 times the result of group I samples and 1.6 times the index of group II samples.

After complete destruction, the lowest strenght indexes were in Group I specimens, ranging from 79.7 MPa to 97.1 MPa, average 86.3 ± 5.9 MPa. Indexes of group II samples ranged from 94.8 MPa to 123.0 MPa with an average of 110.0 ± 8.8 MPa, which was significantly ($p < 0.01$) higher than that of group I samples. Strenght of group III specimens ranged from 172.0 to 189.1 MPa and was even higher, in particular, the mean of 180.7 ± 4.7 MPa. This value was significantly ($p < 0.01$) almost twice as high as group I samples and 1.6 times higher than group II samples. (Pic. 2)



Pic. 2. Average flexural strength after destruction of only composite material and after complete destruction of samples of different groups.

The calculated modulus of elasticity for group I samples ranged from 2954.2 MPa to 3127.3 MPa with an average of 3048.8 ± 62.4 MPa, which was 2.3 times lower ($p < 0.01$) than the average of group II samples which was 7110.4 ± 90.0 MPa with a range of 7019.4 MPa to 7317.2 MPa. Significantly ($p < 0.01$), the highest modulus was calculated relative to group III samples. This module averaged 8149.0 ± 112.1 MPa, ranging from 7953.0 MPa to 8318.1 MPa. Thus, the average modulus of group III samples is 5000 MPa higher than that of group I samples and only 1000 MPa higher than group II sample index. (Pic. 3)



Pic. 3. Average modulus of elasticity for samples of different groups.

The bending elasticity of group I specimens was 47.6 MPa, group II samples - 57.7 MPa, group III samples - 60.4 MPa, i. e., these values were lower than the bending strength of reinforced photo composite specimens, which meet the requirements of State Standard 31574 2012, nominated for photo composite materials [9].

In the samples of all groups, the layer of photo composite material was first destroyed, and then the fiberglass reinforcing elements. Strength indexes determined in group III samples significantly exceeded those of group I and II samples. The results obtained can be explained by the favorable ratio of the specific volumes of reinforcing elements and cover photo composite in the samples of group III. If we consider these samples reinforcing results, bearing in mind the future design of RBB, then placed in the lower part of fiberglass tape 0.2 mm thick, allows the prosthesis to partially level the tensile stresses, which are known to localize in the definite finish line, and, thus, it creates the ability to withstand the chewing load for a long time. At the same time, mounting over a tape of fiber-glass beam with a diameter of 1.8 mm counteracts the forces that arise during mandible transverse movements and applied at an angle to the longitudinal axis of the artificial tooth. In addition, the insignificant thickness of the tape leaves room for a minimal layer of photo composite material required to model the occlusal surfaces of the artificial and supporting teeth, capable to withstand permanently high chewing load.

Conclusions. In laboratory assessments it has been established that the highest strength characteristics studied by the three-point bending method, had the samples of photo composite material, reinforced with fiberglass tape and a beam with the latter positioned horizontally above the tape. Applying these results in manufacturing resin-bonded bridges, it is arguable that the use of structures with the proposed method of laying precisely such reinforcing elements in the specified combination will significantly improve the prognosis for the duration of their operation in prosthetics patients with short bounded edentulous teeth.

Prospects for further research. Further studies will evaluate the clinical effectiveness of prosthetics of short bounded edentulous teeth with resin-bonded bridges made with the use of different reinforcing elements and optimal terms of their use under different

clinical situations.

References:

1. Alraheam IA, Ngoc CN, Wiesen CA, Donovan TE. Five-year success rate of resin-bonded fixed partial dentures: A systematic review. *Journal of Esthetic and Restorative Dentistry*. 2019 Jan; 31(1):40-50.
2. Tacir IH, Dirihan RS, Polat ZS, Salman GO, Valittu P, Lassila L, Ayne E. Comparison of Load-Bearing Capacities of 3-Unit Fiber-Reinforced Composite Adhesive Bridges with Different Framework Designs. *Medical Science Monitor*. 2018; 24:4440-8.
3. Kazeko LA, Boriseeva OA, Baranovskaya MS. *Volokonnyie sistemyi v terapevticheskoy stomatologii: uchebno-metod. posobie*. Minsk: BGMU; 2010. 24 c.
4. Baran I, Arslan M, Gungor H. Effect of different framework materials of resin-bonded bridges on load to fracture values and stress distribution. *Nigerian Journal of Clinical Practice*. 2018 Dec; 21(12):1585-9.
5. Ootaki M, Shin-Ya Ak, Gomi H, Shin-Ya A. Optimum design for fixed partial denture made of hybrid resin with glass fiber reinforcement by finite element analysis: effect of vertical reinforced thickness on fiber frame. *Dental materials journal*. 2007;26(2):280-9
6. Udod AA, Dramaretskaya SI. Klinicheskoe obosnovanie optimalnoy konstruktsii adgezivnyih mostovidnyih protezov. Aktualni problemy suchasnoi medytsyny: Visnyk Ukrainskoi medychnoi stomatolohichnoi akademii. 2016;16(1):47-52.
7. Ponomarenko O. Adgezivnyie mostovidnyie konstruktsii bokovyih zubov. Chast II. *DentArt*. 2012;3:10-21.
8. Udod OA, Pompiy OO, vynahidnyky; Donetskyy natsionalniy medychniy universitet, patentovlasnyk. Sposib pryamogo vygotovlennya adhesivnyh mostopodibnykh proteziv. Patent Ukrainy № 130904. 2018 grud. 26.
9. Standartinform. Materialy stomatologicheskije polimernije vosstanovitelnyie. Tehnicheskie trebovaniya. Metodyi ispytaniy. Mezhgosudarstvennyiy standart (ISO 11405:1994, NEQ): GOST 31574-2012. 2013:34-39.

PHILOLOGY AND LINGUISTICS

ON THE ISSUE OF METHODOLOGY OF POETIC TEXT CONCEPTUAL ANALYSIS

Liudmyla Petrenko,

*Post-graduate student of the Department of Ukrainian Language,
V. N. Karazin Kharkiv National University*

Annotation. The article deals with the methodology of conceptual analysis at the current stage of the linguistic science development. Some views on the definition and features of the structure of a concept are presented. An attempt was made to make the methodology for conceptual analysis of poetic text more accurate.

Key words: cognitive linguistics, concept, structure of concept, methodology for conceptual analysis.

Problem statement. Cognitive linguistics is one of the new and most popular linguistic areas currently, since it is an interdisciplinary area of study comprising various sciences and is a sphere of their interaction, characterized by anthropocentrism, functionalism and explanatoriness [3]. Studying of different aspects of concepts intended to determine their nature and peculiarities of objectivation in various discourses has become the most widespread nowadays. Cognitive linguistics explores the mental processes that occur in the perception, cognition of reality by consciousness, the types and forms of their mental representations.

Language is the material of linguistic-cognitive analysis, and research objectives in specific areas of cognitive linguistics may differ. This can be either an in-depth study of the language with the help of a cognitive categorical-terminological apparatus, or a specific modeling of the content and structure of individual concepts. According to O. Selivanova, a characteristic feature of linguoculture is the emergence of research interests outside the culture of the ethnic group, the concentration of intelligence on the reflection of world culture in the language and texts [11].

From the point of view of linguistic and cognitive science, the basis of knowledge about the world is a concept — a unit of mental information that provides a link with the conceptual sphere of society.

Analysis of recent research and publications. There exist numerous approaches to interpreting a concept, suggested in the works by A. Wierzbicka, O. Zadorozhna, I. Kazymyr, V. Karasyk, V. Kononenko, V. Maslova, S. Pasechnyk, N. Plotnikova, A. Pryhodko, O. Selivanova, etc. Their studies cover certain aspects of the issue, but do not settle it, which determines the topicality of the article.

The purpose of the article is to generalize modern linguistic methods of conceptual analysis. The purpose of the article implies solution of the following tasks: to consider definitions of such terms as concept, conceptual analysis; to review various approaches

to interpretation of the structure of concept; to identify the basic techniques and methods of conceptual analysis.

Presentation of the main material. Cognitive linguistics studies language in connection with a human being and the peculiarities of cognitive activity of a human. Researchers, in particular S. Pasechnyk, mention that there is a traditional differentiation between two approaches to the conceptual analysis: cognitive and cultural ones. The first is based on the data of formal logic, psycholinguistics, and brain physiology regarding the study of linguistic material. The second implies considering extralinguistic information from such spheres as culture, history, sociology, anthropology, etc. [7]. The linguistic-cultural approach is based on the view that the concept is the basic unit of culture, which requires consideration of its figurative, conceptual and value components. However, researchers tend to use both approaches in their interaction.

Considerable attention to the category of concept causes certain inaccuracies in its interpretation, for example erroneous identification of concept with notion or meaning. O. Selivanova believes that it is one of the problematic issues of modern cognitive science: “Linguists and cognitive scientists consider their absolute identity within one sign, the relations of intersection of meaning and concept or the inclusion of the former in the latter, or meaning activation in the conceptual structure depending on the context and the situation (...). Hence, it causes a contradiction between the extent of the unit meanings in language and in speech: in language the meaning is identical to the concept, in speech it is represented only by the actual fragment of the concept, provided that obsolete one is becoming extinct” [10, p. 2]. A. Wierzbicka studies a concept-minimum, a concept-maximum, and an encyclopedic appendix (supplement). The concept-minimum is partial knowledge of the word content (when the speaker knows about the existence of a certain phenomenon including encyclopedic information) [15].

A. Pryhodko considers the concept in a narrow and broad sense. Thus, in case of the former, the concept is considered as a phenomenon of “a philosophy of life as an everyday equivalent of the worldview notions embodied in lexical units” [9, p. 20]. In a broad interpretation it is perceived as “expansion in the number of connotations of the word meaning” [9, p. 20]. O. Selivanova notes that not all scholars take the view that the concept has a connotative component [10]. A. Pryhodko does not tend to identify meaning and concept, characterizing the latter as “a phenomenon with a complex structure, the conceptual nature of which, passing through the sieve of ethnopsychological assessment, is organically combined with linguistic-cultural one” [9, p. 21].

We agree with O. Selivanova defining the term concept as an information cognitive structure of consciousness, which is organized in a particular way and built into a collective or individual system of concepts, since it most fully reveals the properties of the category in question.

It should be noted that the poetic text has its own specific; therefore one can say about the existence of a special kind of concept – poetic one, which is peculiar to a text of this type. V. Maslova distinguishes the following features of the concept assigned to this category: associative basis, the focus on revealing images and the presence of emotional

senses; inclination towards images and their embodiment. The researcher regards them as individual, blurred and more complex in terms of psychology; “it is a complex of notions, ideas, feelings, emotions, and sometimes even volitional manifestations, which arises on the basis of artistic associative thinking” [6, pp. 34–35].

The concept possesses a complex structure, since it is formed at different levels of human consciousness; therefore, it can be most thoroughly studied with the help of linguistic means only. Scientists admit that the concept is a multilayered item, but there is no unanimous opinion as to its structure. Most researchers tend to single out the core and periphery [4, 13]. The structure of a concept, according to A. Pryhodko, whose theory rests on differentiation between concept and notion, includes the following components: the basis (substrate), superstructure-1 (adstrate) i superstructure-2 (epistrate) [9, p. 21]. In the author’s opinion, the notion is a rational-logical phenomenon of universal significance, and the concept is associative one, reflecting, therefore, the specific character of ethnocultural understanding of a certain fragment of the world. In other words, the concept possesses a more branched structure as compared with the denotative structure of the word, which is based on a field principle (core, periphery, interpretative area) [9, p. 22].

J. Sternin singles out single-layer concepts, multilayer concepts with several cognitive layers that differ in their level of abstraction, and segmented ones that represent the base sensual layer and have several segments possessing equal level of abstraction [13].

As M. Kolodii claims, the complexity and multilayered nature of the concept is determined by the presence of the rational and emotional elements of reality perception. As a unit of structured knowledge, it has rather flexible organization, since “it undergoes constant changed accompanied by activation of its different components” [4, p. 393].

For the purpose of studying the concept, the conceptual analysis is used, which, according to O. Selivanova, is based on “the methodology of rationalism and functionalism, the general scientific procedures of formalization, idealization, and modeling” [10, p. 1]. M. Kocherhan believes that “concepts are investigated on the basis of combinability, mainly predicative, less often attributive and complementary, and sometimes various wide linguistic contexts are taken into consideration (folklore, artistic, journalistic and other works)” [3, p. 153].

Conceptual analysis is one of the techniques for “reconstructing the linguistic worldview that includes analysis of metaphoric combinability of the words of abstract semantics and reveals the “specific”, that which is “sensually perceived”, image, which in the naive worldview is compared with this “abstract” notion” [12, p. 1].

The linguistic worldview denotes the world through the language. It is based on a conceptual worldview, universal and common to people with the same knowledge about the world. Simulation of the conceptual worldview in the linguistic consciousness occurs as a result of comprehension of images of the world associated with the practical activity of human. The conceptual worldview is a dynamic entity, because it has the ability to accumulate and process information about the world obtained verbally and non-verbal ways [11, p. 54]. It can be represented by temporal, spatial, ethical and other parameters.

The language reflects the experience of each people and represents not only common knowledge, but also the peculiarity of the vision of the world. O. Selivanova offers the definition of the term the linguistic worldview — “the representation of objects, phenomena, facts, situations of reality, value orientations, life strategies and scenarios of behavior in the language signs, categories, speech phenomena, which is the semiotic result of the conceptual representation of reality in the ethnic consciousness” [11, p. 365]. The researcher deduces a definition beyond purely linguistic concepts and adds, in addition to the cognitive aspect, an axiological one. V. Teliya examines the notion linguistic worldview on the lexical-semantic, morphological and syntactic level and believes that syntactic constructions, which represent the relationship between elements of reality, represented by tokens, play an important role in its creation [14, p. 178]. According to I. Zaremska, the linguistic worldview is “a system of ideas about the world that, passing through human knowledge, become mental structures that are reflected at all levels of the language system and can be passed on to other members of the community through means of the national language” [15, p. 398]. It should be noted that this definition of the term is rather exhaustive, because attention is drawn here to different levels of language, that is, the cognitive aspect and the linguistic system as a whole are taken into account.

The linguistic worldview of a certain nation is the result of reflection of the collective consciousness of the external environment during the historical development simultaneously with the knowledge of this world. The outside world and consciousness are those factors that shape the worldview of any national language.

Lexical, phraseological units, and proverbs can be the means of verbalization of the concept at the linguistic level, therefore, the conceptual analysis involves fixation and interpretation of these units sense, which makes it similar to semantic analysis. However, according to V. Kononenko, there exist differences between conceptual and semantic analysis. In particular, the aim of semantic analysis is to list the meanings of a certain word in interaction with other words, and conceptual one is intended to determine the meaning around which words, categories or, in a broad sense, knowledge are grouped. [5, p. 6]. The purpose of the conceptual analysis, according to N. Arutyunova, is to model the concept and establish its connection with other concepts, which is not limited only to the description of the meanings of individual words, but is supplemented by identification of the specific features of conceptual field and the logic relations between its components [1].

The main methods of conceptual analysis include the theory of frames, metaphors, cultural linguistics theories by V. Karasyk and S. Vorkachov, etc. Despite certain differences, the approaches are based on the same research procedures, the most common of which are etymological, component, contextual analysis and interviewing. An integrative approach to the analysis of concepts covered in the works by V. Karasyk and N. Plotnikova is important as well. As scientist point out, one can get an understanding of the concept only by reference to the findings of other spheres of knowledge, i. e. by their integration. Proponents of this approach pay special attention to the cultural component of the concept.

Z. Popova and J. Sternin says: “Important for linguistic cognitive research is a typology of concepts by the nature of their objectivity for a person” [13, p 84]. Emphasize verbalized (which are regularly reproduced through constant linguistic means) and nonverbalized, embodied indirectly. By belonging to a group of carriers, concepts are universal (water, sun, earth, etc.), national, group and individual. An important feature of them is concreteness / abstraction [13].

The method of conceptual analysis of poetic text has certain peculiarities due to the object under study. The artistic worldview, as well as the language, is secondary. It occurs in the consciousness of the individual during the perception of artistic text. The artistic worldview is formed by language means. It can reflect the peculiarities of the national worldview and the individual concepts of the writer [13]. Many methods for the concept analysis are offered in modern scientific papers. In particular, Z. Popova and J. Sternin distinguish the following stages of analysis of the concept of the concept of artwork:

- 1) construction of the concept nominative field;
- 2) analysis and description of the semantics of linguistic means;
- 3) cognitive interpretation of the results of the description of linguistic means semantics;
- 4) verification of the cognitive description;
- 5) description of content of the concept as a list of cognitive features.

N. Plotnikova, in particular, proposes a three-stage algorithm for analysis of linguistic-cultural concept [8]. We consider the suggested structure to be appropriate; therefore we assume it as a basis and supplement it taking into account the object of analysis, namely a poetic concept. Determining the nominative field of the concept at the first stage, the researcher proposes to establish its exact numeric equivalent. In the corrected methodology we simplify the procedure and use the terms suggested by Z. Popova and J. Sternin, namely high and low nominative density, and adverbs of frequency. Taking into account the peculiarities of an artistic concept, we consider that it is appropriate to ascertain non-lexicalized semantic nuances of lexical units at the second stage, and to introduce the fourth stage that reflects the peculiarities of contextual combinability. Thus, the elaborated structure is as follows:

1. Determination of the concept nominative field and establishment of its nominative density. The fact that there exists a considerable quantity of the concept nominations demonstrates its high nominative density. It can be verbalized in various ways (with the help of lexical, phraseological, and syntactic means), systematization and semantic description of which enable to single out cognitive criteria and classifiers for the concept modeling. The nominative field of the concept is of complex nature, combines lexical-semantic and lexical-phraseological fields, synonymic rows, etc., and is an orderly aggregate of nominative units. It is built on the basis of a continuous sampling of the concept representatives. Nominative density reflects the importance of a certain fragment of reality in the mind of the speaker. We measure it according to the frequency of the occurrence of concept verbalization means, operating with the notions often, rarely,

sometimes, etc., which reflect high or low density.

2. Identification of the features of the concept structure and their description.

At this stage, we explore cultural and conceptual components.

2.1. Identification of a cultural component involves an analysis of the linguistic form of a concept with consideration of the semantic and paradigmatic aspects:

- identify primary name by constructing synonymic rows: the keyword is lexical the unit that most accurately transmits the meaning of the concept; it is the most general in semantics and stylistically neutral [13];
- consider cognate words to identify the morphological peculiarities of lexical representatives.

2.2. Conceptual component of the concept is determined on the basis of the analysis of lexical units meaning. To do this, we use the component analysis to single out semes in the word meaning on the basis of the definitions contained in lexicographic sources. The next step is to find out the non-lexicalized meanings manifesting the specific character of the author's individual linguistic thinking.

3. Modeling of the concept field structure. A compulsory stage is a cognitive interpretation reflecting mental generalization of the findings obtained as a result of the description of meanings of the linguistic units denominating the concept for the purpose of ascertaining cognitive criteria, embodied in certain meanings, and its content modeling.

Cognitive interpretation is performed by means of identifying cognitive criteria, which is a description of the concept nominative field units; cognitive interpretation of semes and metaphors. Eventually, verbal or graphic representation of the concept content is given in the form of a field structure.

4. Peculiarities of a context-based collocation. As already noted, M. Kocherhan believes that the primary intent of the conceptual analysis is to consider the predicative and attributive combinability of the means of concept verbalization. Accordingly, the fourth stage is intended to determine the peculiarities of their interaction and to establish the principles of combining the concept representatives.

Conclusions. Hence, the popularity of the conceptual analysis at the present stage of the development of linguistics brings about controversial issues, including the problem of its universal methodology. The basic techniques consist of at least three main stages: determining of nominative density, description of the concept structure and its field structure modeling. The conceptual analysis of a poetic concept should involve discovering new meanings of the means of its verbalization, originated as a result of the author's idea, and the peculiarities of the context-dependent combinability of the respective linguistic unites in the fiction text. The fact that currently there are issues related to the conceptual analysis that have not been resolved yet, offers the prospects for further research.

References:

1. Arutyunova, N. (1999). Language and human world. Moscow, 896 p. [in Russian].
2. Bilodid, I. K. (ed.) et al. (1970). Dictionary of the Ukrainian language. vol. 1–11. URL: <http://sum.in.ua/> (Reference date: 08.07.2019) [in Ukrainian].
3. Kocherhan, M. (2010). General linguistics. URL: <http://litmisto.org.ua/?-p=15073> (Reference date: 08.07.2019) [in Ukrainian].
4. Kolodii, M. (2013). The problems of studying concepts in modern cognitive science. Education in the Humanities in Technical Higher Education Institutions, Kyiiv, no. 27, pp. 391–398 [in Ukrainian].
5. Kononenko, V. (2004). The concepts of Ukrainian discourse: Monography. Kyiiv; Ivano-Frankivsk: Plai, 248 p. [in Ukrainian].
6. Maslova, V. (2004). Poet and culture: Sphere of concepts of Marina Tsvetayeva: Manual for students. Moscow: Flinta, 256 p. [in Russian].
7. Pasechnyk, S. (2007). Method of conceptual analysis in modern domestic linguistic studies. URL: http://movoznavstvo.com.ua/download/pdf/-2007_2/32.pdf (Reference date: 08.07.2019) [in Ukrainian].
8. Plotnikova, N. (2013). Algorithm for analyzing linguistic-cultural concept. Studia Ukrainica Posnaniensia, vol. I , pp. 165–170. Adam Mickiewicz University Press, Poznan [in Ukrainian].
9. Prihodko, A. (2013). Concepts and systems of concepts. Dnepropetrovsk: Belaia E. A., 307 p. [in Russian].
10. Selivanova, O. (2006). Conceptual analysis: problems and principles. URL: http://linguistics.kspu.edu/webfm_send/810 (Reference date: 08.07.2019) [in Ukrainian].
11. Selivanova, O. (2012). The world of consciousness in language: [monographic edition]. Cherkasy: Yu. Chabanenko, 488 p. [in Ukrainian].
12. Skab, M. (2006). Methodology of conceptual analysis: problems and solutions. URL: http://linguistics.kspu.edu/webfm_send/1542 (Reference date: 08.07.2019) [in Ukrainian].
13. Sternin, J. (2001). Method of studying the structure of concept. Methodological Problems of Cognitive Linguistics. Voronezh State University, pp. 58–71 [in Russian].
14. Teliya, V. (1988) Metaphorization and its role in creating a linguistic worldview. The role of the human factor in the language: Language and worldview. Moscow: Nauka, pp. 173–204 [in Russian].
15. Wierzbicka, A. (1985). Lexicography and Conceptual Analysis. Ann Arbor: Karoma Publishers Inc., 368 p. [in English].
16. Zaremska, I. (2011). URL: Linguistic worldview as an object of linguistic studies (Reference date: 08.07.2019) [in Ukrainian].

Modern Science — Moderní věda
№ 4 — 2019

scientific journal / vědecký časopis

The authors are responsible for exactness of the facts, quotations, scientific terms, names of owns, statistics and of other information.

Autoři publikací jsou odpovědní za správné udání faktů, citát, vědeckých pojmů, jmen, statistických údajů.

The publication or its part cannot be reproduced without the consent of the administration of the journal or authors of the publications. The editors may not share opinions and ideas of the authors, which contained in the publications.

Publikace nebo jakákoli část této publikace nesmí být reprodukována bez souhlasu redakční rady nebo autorů publikace. Redakce a redakční rada mají právo nesdílet názory a myšlenky, které jsou obsaženy v publikacích.

Východoevropské centrum základního výzkumu oznamuje možnost publikování v českém vědeckém časopise «Modern Science — Moderní věda» vědeckých článků (výsledků vědeckého výzkumu). Časopis má oficiální potvrzení o evidenci periodického tisku v České republice, evidenční číslo MK ČR E 21453. Časopis je na seznamu Východoevropského centra základního výzkumu EECFR jako vědecký časopis. Časopisy se rozesílají základním evropským univerzitám a výzkumným institucím a do Nobelové nadace (Švédsko).

Časopis je vytvořen pro zveřejnění vědeckých děl, provedených vědci ze střední a východní Evropy. Publikace vědeckých článků je v angličtině, češtině a ruštině.

Zakladatelé časopisu: Východoevropské centrum základního výzkumu (Praha, Česká republika), Inovační park — společnost «Nemoros» (Praha, Česká republika). Oficiální zástupce časopisu v Ukrajině je Výzkumný ústav sociálně-ekonomického rozvoje (web-stránka: <http://sried.in.ua>).

Prioritní témata časopisu:

1. Výsledky základního výzkumu.
2. Stabílí rozvoj, moderní technologie a ekologie.
3. Průmyslové a manažerské inovace.
4. Ekonomie, sociologie, politologie, veřejná komunikace.
5. Mezinárodní vztahy, státní správa a právo.
6. Filozofie, historie, psychologie, pedagogika, lingvistika.
7. Design, umění a architektury.
8. Fyzika, astronomie, matematika, informatika.
9. Chemie, biologie, fyziologie, medicína, zemědělství.
10. Doprava, spoje, stavebnictví, komunální služby.

edice 350 kopií
