ISSN: 2613-5817; E-ISSN:2613-5825, DOI PREFIX: 10.36962/PIRETC
VOLUME 08 ISSUE 01 2020

PIRETC

MULTIDISCIPLINARY JOURNAL
REFEREED & REVIEWED JOURNAL

PSYCHOLOGY, SOCIOLOGY, ANTHROPOLOGY, AND PHILOSOPHY SCIENCES

ECONOMIC, MANAGEMENT & MARKETING SCIENCES

AGRICULTURAL, ENVIRONMENTAL & NATURAL SCIENCES

LEGAL, LEGISLATION AND POLITICAL SCIENCES

http://sc-media.org/piretc/

I never think of the future - it comes soon enough. Albert Einstein

ISSN: 2613-5817; E-ISSN:2613-5825, DOI PREFIX: 10.36962/PIRETC

VOLUME 08 ISSUE 01 2020

PIRETC

MULTIDISCIPLINARY JOURNAL
REFEREED & REVIEWED JOURNAL

JOURNAL INDEXING

TALLINN, EESTI 2020

ISSN: 2613-5817, E – ISSN: 2613-5825; DOI PREFIX: 10.36962
MULTIDISCIPLINARY JOURNAL
REFEREED & REVIEWED

EDITORIAL BOARD LIST SEE PAGE 64

ISSN: 2613-5817; E-ISSN: 2613 – 5825.
©Publisher: NGO International Research, Education & Training Center.
Deputy and founder of organization: Seyfulla Isayev. Azerbaijan Marine Academy. Student.
©Editorial office: Narva mnt 5, 10117 Tallinn, Estonia.
©Typography: NGO International Research, Education & Training Center. The Baltic Scientific Journals.
Registered address: Narva mnt 5, 10117 Tallinn, Estonia.
Tel: +994 55 241 70 12; +994518648894; +994 55 241 70 09;;
E-mail: gulustanbssjar@gmaill.com, sc.mediagroup2017@gmail.com, caucasusblacksea@gmail.com
Website: http://sc-media.org/

TABLE OF CONTENTS

© THE BALTIC SCIENTIFIC JOURNALS
PIRETC
PROCEEDING OF THE INTERNATIONAL RESEARCH EDUCATION & TRAINING CENTER

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

BENCHMARKING PUBLIC PROCUREMENT AS AN INTERNATIONAL RATING SYSTEM FOR EVALUATION THE EFFECTIVENESS OF PUBLIC PROCUREMENT SYSTEM OF THE COUNTRIES

[1]Shalimova Nataliia, [2]Kuzmenko Halyna

[1]Doctor of Economics, Professor, Dean of Accounting and Finance Faculty, Central Ukrainian National Technical University (Ukraine)

[2]PhD of Economics, Associate Professor, Associate Professor at the Department of Audit and Taxation, Honored Economist of Ukraine, Central Ukrainian National Technical University (Ukraine)

E-mail: [1]nataliia.shalimova@gmail.com; [2]galina.leda@gmail.com

The purpose of the article is to study the methodology of assessing the effectiveness of the public procurement system by World Bank, to conduct a comparative analysis of Ukraine's place among other countries in the world. Taking into account the globalization of the economy and the intensification of European integration processes, it has been proved that an important part of evaluating the effectiveness of public procurement should be a comparative analysis of the implementation procedures with the relevant systems of other countries of the world.
The methodologies of the World Bank's Benchmarking Public Procurement system are investigated. A comparative analysis of the Ukraine's place among other countries of the world, in particular among the group of countries of Europe and Central Asia, as well as with some OECD countries, which are considered as a group of high-income countries, has been conducted. Taking into account that the World Bank reports do not have a final score and a final rating, it has been justified the feasibility of comparing by the general amount of points.
It is substantiated that the results of such comparative analysis will allow identifying risk areas, and relevant information can be used in developing of recommendations and proposals for improving the effectiveness of the public procurement system, especially in the context of reforming the law on public procurement and the introduction of the new system "Prozorro". As a prospects for further researches the study of second-tier indicators and the methodology of evaluating the public procurement systems by the World Bank, taking into account its relatively short setbacks compared to other ratings, have been identified.
Keywords: public procurement, public procurement system, international ratings, Benchmarking Public Procurement, efficiency, assessment, evaluation

INTRODUCTION

Effective spending of public funds is an urgent task for all countries, so optimization of the process of public procurement is one of the priorities in the list of directions of its solution. Public procurement is not only a process of ordering products (goods, works, services), their production and supply (provision, performance), but also an instrument of performance by state government of functions in the field of national security and its components (economic, food, social, environmental, etc.), solving problems such as developing the market and maintaining a competitive environment, supporting certain regions and populations, developing specific industries and market actors, and more. But while public procurement can be an incentive for development, it can also be the basis for corruption and fraud. Considering problems of the governance and corruption, Daniel Kauffman distinguishes procurement, tax, customs, or the judiciary as highly vulnerable institutions [2]. This is why public procurement requires constant monitoring, collection and analysis of a wide range of data, including international comparisons and evaluations.

Literature review. Among foreign scholars, Daniel Kauffman pays considerable attention to the problems of public procurement [5; 2]. Scientists, experts and experts highlight the problematic aspects of forming a mechanism for managing the public procurement system in Ukraine [29], professionalization of public services, provision and receipt of educational services in the field of public procurement [24], the legal characteristics of public procurement [10], peculiarities of public procurement as an object of state regulation of the economy in the context of considering them as an element of the public services market, which, according to the author's interpretation, cover public and social goods supplied by the state [16], efficiency of public procurement [25; 12; 15; 17], including their legal support in the context of European integration [19], harmonization of Ukraine's public procurement system with EU standards [20], opportunities to apply a procurement mechanism to activate key segments of the economy through the prism of the WTO Agreement on Public Procurement and the EU-Ukraine Association Agreement [18].
Some aspects of the multifaceted problem of control (audit, monitoring, auditing) of public (public) procurement (as an independent form of state financial control in accordance with the Law of Ukraine "On the basic principles of the implementation of state financial control in Ukraine" [14] and an important element in the implementation of public procurement policy in accordance with the Law of Ukraine "On Public Procurement" [13]) considered in their works

Ukrainian scientists [1; 8; 9; 10; 11; 21]. Researches on public procurement monitoring by representatives of civil society organizations at the local level in Ukraine [22; 23], public control of public procurement [22], corruption risks and the reliability of the public procurement logistics system [25] are presented in the scientific literature.
Important information on the effectiveness of the public procurement system is represented by an international rating prepared by the World Bank Working Group. But despite the fact that the methods of calculating international ratings and the directions of their use are quite widely represented in the economic literature, the rating of the efficiency of the public procurement system remains unaddressed. It is extremely important to study Ukraine's place in the international rankings with a focus on the effectiveness of the public procurement system as an important and integral element of government regulation and the business environment, identify the factors that influence changes in indicators, their critical evaluation in view of the following considerations:
(1) firstly, it is necessary to understand the environment in which our country is perceived by international organizations, investors, lenders and other interested persons in order to determine the directions of improvement and their predictive influence on the position of our country in order to increase its rating, including in the sphere of efficiency of public procurement systems;
(2) secondly, the study and analysis of the components of the international rating allows to improve the quality of preparatory work for public procurement in the field of innovation and the market for innovative products.

Purpose of the study. The purpose of the article is to study the methodology of assessing the effectiveness of the public procurement system by World Bank, to conduct a comparative analysis of Ukraine's place among other countries in the world.

Results. Benchmarking Public Procurement Performance Study launched by the World Bank in 2013. Benchmarking Public Procurement focuses on legal and regulatory environments that affect the ability of private sector companies to do business with governments.
Three reports have been published:
(1) Benchmarking Public Procurement 2015 [26], which covered 11 economies (Afghanistan, Chile, Ghana, Jordan, Mexico, Russian Federation, Sweden, Thailand, Turkey, Uganda, United States), and data was also collected later in the Russian Federation;
(2) Benchmarking Public Procurement 2016 [27], which expanded geographical coverage to include 77 economies in seven regions (Ukraine has been included in the study since 2016);
(3) The Benchmarking Public Procurement 2017 [28] report presents comparable data on public procurement laws and regulations across 180 economies.
The Benchmarking Public Procurement 2017 report presents comparable data on public procurement laws and regulations across 180 economies to meet the various needs of different stakeholders for information, analysis, and policy action. It provides private sector firms with insights on issues involving their participation in the public procurement market, while offering policy makers information on their country's public procurement regulatory system and related business practices. The data also benefit the academic and research community by offering better tools and data on procurement systems and facilitating cross-country analysis.
In Benchmarking Public Procurement 2016 indicators was aggregated by subtopic and designed to help policy makers evaluate their system's performance in a specific area of public procurement. Such indicators were evaluated:
(1) procurement life cycle: preparing bids, submitting and evaluating bids; awarding and executing contracts;
(2) complaint and reporting mechanism: availability of complaint and reporting mechanisms; first-tier review process; second-tier review process.
Scores was presented in five categories at the subindicator level: 0-20, 21-40, 41-60, 61-80 and 81-100. Economies with a score of 81 or more, which are considered close to good practice on a certain subindicator, was in the top quintile. Economies with a score of 20 or less was in the bottom quintile in the charts, which means that the economy has a lot to improve in the light of internationally, accepted good practices and principles on what Benchmarking Public Procurement measures.
Two thematic pillars are covered by the Benchmarking Public Procurement 2017 report (table 1):
1. The procurement process, from the needs assessment to the implementation of the procurement contract.
2. The public procurement complaint review mechanisms.
The two thematic pillars and eight key areas of the public procurement process covered by Benchmarking Public Procurement 2017 are summarized in table 2. In Benchmarking Public Procurement 2017 the methodology for evaluating the public procurement system includes the following groups of indicators:
(1) that are quantified in points (the maximum score for each indicator, which is quantified, is 100 points);
(2) that are not quantified and presented only in descriptive form.

ISSN: 2613-5817; E-ISSN: 2613-5825

Table 1. Two thematic pillars covered by the Benchmarking Public Procurement 2017 report

Two Thematic Pillars	
The procurement process, from the needs assessment to the implementation of the procurement contract	
Needs assessment, call for tender, and bid preparation	*Rationale:* The transparency of the bid preparation phase is critical because it is precisely at this moment that potential bidders can seek information and assess the opportunity to bid for the procurement contract.
Bid submission	*Rationale:* Once prospective bidders decide to bid for a public procurement contract, they need to comply with a variety of requirements in order to bid effectively and avoid having their bid rejected if it does not comply with the stated requirements. These requirements can create unnecessary hurdles. It is therefore important to make sure that the process is streamlined and easily accessible to all bidders.
Bid opening, evaluation, and award	*Rationale:* This phase is critical for purposes of transparency and integrity. It is important to make sure that enough guarantees are in place to protect the fairness and efficiency of the process
Content and management of the procurement contract	*Rationale:* The management of the contract is as important as the bidding process. Procurement contracts must be managed in a prompt and transperant way, and with sufficient safeguards, to protect suppliers from unilateral decisions and actions by the procuring entity.
Performance guarantee	*Rationale:* The performance guarantee protects parties in case of delays in the execution of the contract; however, to protect suppliers, the amount of the guarantee should be regulated.
Payment of suppliers	*Rationale:* Suppliers need to be paid on time. Delayed payments could hurts their cash flows, impair their ability to supply, and even put them at risk.
The public procurement complaint review mechanisms	
Complaints submitted to the First-tier review body	*Rationale:* When bidders or potential bidders notice flows in the procurement process, they should be able to file a complaint and receive a decision in a timely manner.
Complaints submitted to the Second-tier reviewer body	*Rationale:* If a first decision has been rendered concerning the procurement process before the contract has been awarded, the complainant should be able to appeal the decision to a second-tier jurisdiction

Source: compiled by the authors based on the Benchmarking Public Procurement 2017 [28]

Table 2. Thematic areas measured in Benchmarking Public Procurement 2017

Indicator	Description
are presented in descriptive form and are quantified (resulting in a final score ranging from 0 to 100)	
Needs assessment, call for tender, and bid preparation	This indicator aims at assessing the transparency and information flow at the preparation stage from the procuring entity's end. It looks at: (1) the consultation with the private sector; (2) the tendering method; (3) potential bidders' accessibility to bidding information.
Bid submission	This indicator looks at the requirements for suppliers to place bids, including: (1) registration with a government registry; (2) eligibility of foreign firms; (3) possibility of submitting bids online; minimum time frame for bid submission; (4) bid security requirements.
Bid opening, evaluation, and award	This indicator aims at assessing transparency at the bid opening and evaluation stages. It considers: (1) the method for opening the bids, including accessibility for bidders to the bid opening session; (2) the fairness of the bid evaluation; (3) notification and feedback to unsuccessful bidders; (4) standardized contract form used when awarding a contract.
Content and management of the procurement contract	This indicator looks at: (1) the relevant procedural requirements; (2) the possibilities of modifying or terminating the procurement contract when the contract is awarded and signed; (3) the acceptance of the completion of works by the purchasing entity and related procedures.
Performance guarantee	This indicator looks at the performance guarantee, including: (1) the purchasing

Indicator	Description
	entity's monitoring of the requisite performance guarantee and its amount; (2) return of such guarantee; (3) the existence of a separate entity to oversee the procuring entity's decision to withhold it.
Payment of suppliers	This indicator examines: (1) the procedure regarding suppliers' request for payment; (2) the time frame for the purchasing entity to process payment; (3) the time frame for suppliers to actually receive payment; (4) the interests or penalties available to suppliers in case of payment delays.
are not scored and merely presented for contextual purposes	
Structure of the complaints mechanism	This indicator looks at: (1) legal framework on complaints mechanism; (2) description of complaints mechanism; (3) choice of the authority before which filing a complaint.
Complaints submitted to the First-tier review body	This indicator examines issues regarding: (1) filing a complaint to challenge the tender and bidding process before the award is granted, including the complainant's standing; (2) cost of filing, duty to notify the procuring entity; (3) suspension of the procurement process; (4) independence and training of the complaint reviewers; (5) time frame for decisions; (6) legally provided remedies; (7) publication of the decisions.
Complaints submitted to the Second-tier review body	This indicator measures the process of appealing the first-tier review body decisions regarding: (1) the time granted to appeal the decision; (2) costs associated with the appeal. It also assesses the review process that takes place before the second-tier review body, including: (1) the actions required to trigger a suspension of the procurement process; (2) the time frame for a decision on the appeal; (3) remedies legally available at the second-tier review; (4) the publication of the decisions.
Post-award complaints	This indicator looks at: (1) process to complain same than for pre-award complaints; (2) standstill period after contract award to allow filing of complaints; (3) standstill time period (calendar days); (4) standstill period mandated in the legal framework; (5) standstill period set out in the notice of intention to award.

Source: compiled by the authors based on the Benchmarking Public Procurement 2017 *[28]*

For each indicator developed, the scores of individual questions are averaged and multiplied by 100, resulting in a final score ranging from 0 to 100. The economies at the top of the range (with scores approaching 100) are considered to have a regulatory framework that closely aligns with internationally recognized good practices, whereas the economies at the bottom of the range (with scores closer to 0) have significant room for improvement in the particular area measured.

The description of each indicator allows a detailed assessment of the performance of each country's public procurement system, but comparisons between countries can only be made using quantifiable metrics.

In Benchmarking Public Procurement 2016 and Benchmarking Public Procurement 2017 The World Bank has rated Ukraine's public procurement system at a rather high level. In 2016, three out of five indicators received a sufficient score within 61-80 points, two indicators ("submitting and evaluating bids", "availability of complaint and reporting mechanisms") were highly rated (81-100 points) (Fig. 1).

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

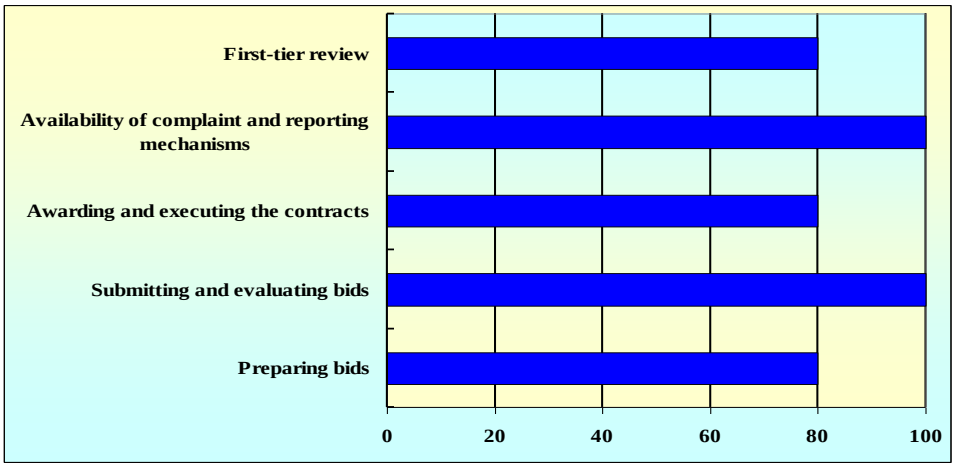


Figure 1. Assessment of Ukraine's public procurement system by the World Bank according to Benchmarking Public Procurement 2016 Report
Source: compiled by the authors based on the Benchmarking Public Procurement 2016 [27]

The assessment of the effectiveness of the public procurement system of Ukraine in 2017 by indicators covering the so-called procurement life cycle is as follows (Fig.2).

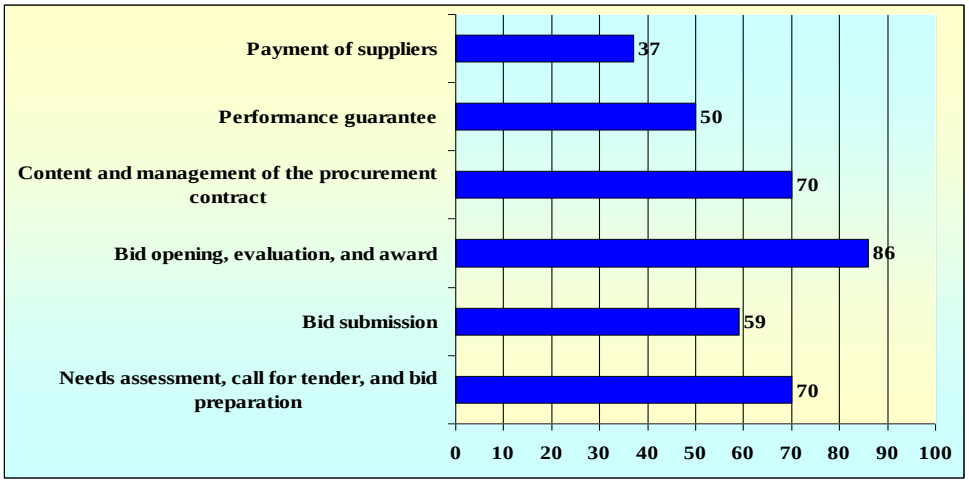


Figure 2. Assessment of Ukraine's public procurement system by the World Bank according to *Benchmarking Public Procurement 2017* Report
Source: compiled by the authors based on the Benchmarking Public Procurement 2017 [28]

The highest score (86 points) was obtained from the “bid opening, evaluation, and award”. High marks (70 points) were obtained on the indicators “content and management of the procurement contract”, “needs assessment, call for tender, and bid preparation”. The average scores (59 and 50 points, respectively) were obtained for “bid submission and performance guarantee”. For “payment of suppliers” Ukraine received only 37 points out of 100.
Analysis of the data from the countries covered by the study shows that the maximum score (100) was obtained by such countries as: Russia - on the indicator “needs assessment, call for tender, and bid preparation”; Ecuador, Peru, Philippines, Singapore, Suriname - on the indicator “performance guarantee”; Australia, Denmark, Finland, Italy, Republic of Korea, Spain, USA - on the indicator “payment of suppliers indicator”.
The minimum score (0) was earned by: Antigua and Barbuda, Australia, Czech Republic, Finland, Hong Kong, Iceland, Ireland, Lesotho, Luxembourg, New Zealand, Norway Singapore, Slovakia, Sweden, Vanuatu - on the indicator “Performance Guarantee”; Dominican Republic, Trinidad and Tobago, Vanuatu - on the indicator “Payment of suppliers”.

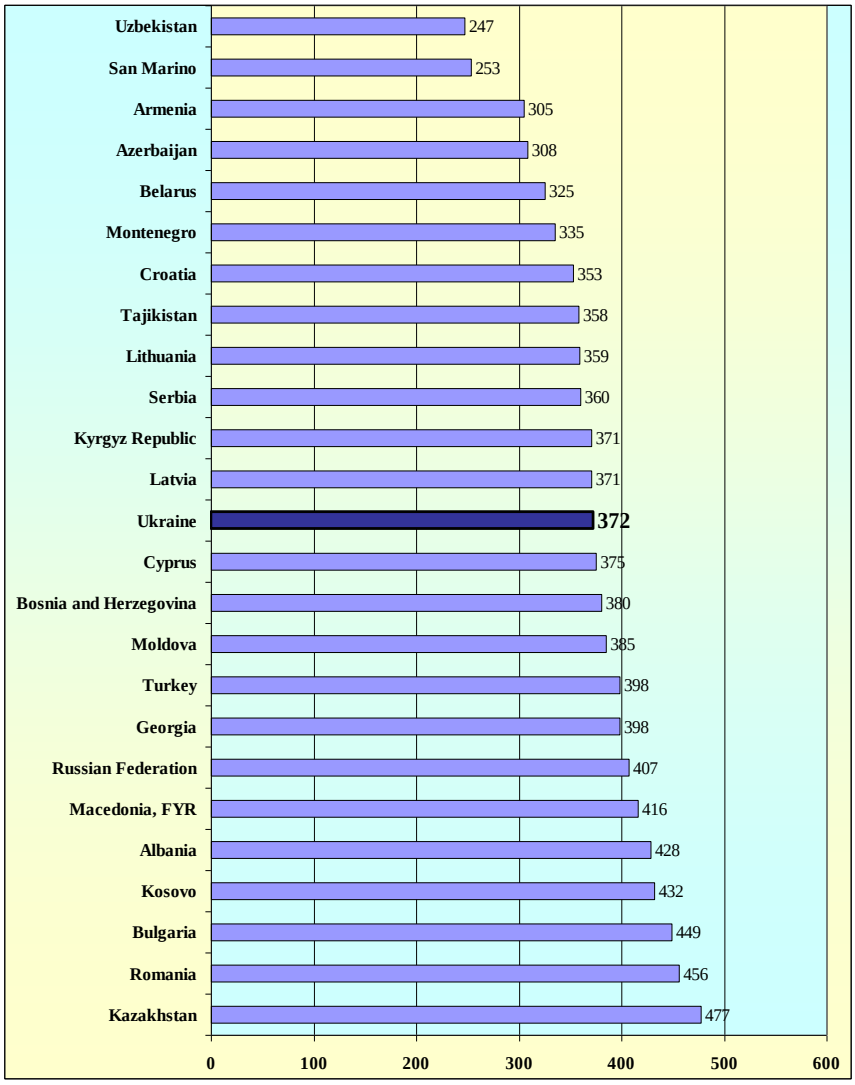
It is informative to compare the estimates obtained by the Ukraine with the countries of Europe and Central Asia (a group covering 25 countries and Ukraine included), as well as with some OECD countries that are classified as high-income countries. Given that the Report lacks a final score and a final rating, we consider it appropriate to make a comparison by the amount of points.

According to the data presented (Fig. 3), European countries (mainly Eastern Europe) and Central Asia received at least 250 points (only Uzbekistan has 247 points and San Marino - 253 points).

Points in the range from 301 to 400 were awarded to 16 countries (64% of all countries in the group), and 7 countries (28%) have points ranging from 401 to 500. Ukraine receiving 372 points (or an average of 62.0 points) is at 13th place, ahead of Latvia, Kyrgyzstan, Serbia, Lithuania, Tajikistan, Croatia, Montenegro, Belarus, Azerbaijan, Armenia, San Marino and Uzbekistan. The highest total score in the group was obtained by the public procurement system of Kazakhstan - 477 points (average score - 79.5).

By the indicator "Bid opening, evaluation, and award", Ukraine, along with Kazakhstan, Albania and Cyprus, has the highest scores among the countries in the group - 86. The highest (maximum) number of points (100) by the indicator "Needs assessment, call for tender, and bid preparation" were awarded to the public procurement system in Russia. Romania received the highest rating (94 points) for "Bid submission", Kazakhstan (91 points) for "Content and management of the procurement contract", Bulgaria (94 points) for "Performance guarantee", Bulgaria, Kosovo, Lithuania (75 points) - for "Payment of suppliers".

According to the data presented (Fig. 4), the total score of high-income OECD countries in Europe does not cross the lower limit of 300 points. Points from 301 to 400 were awarded to 17 countries, and 8 countries scored from 401 to 500.



VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

Figure 3. Rating of the countries of Europe and Central Asia group by the total number of points of assessment of efficiency of the public procurement system
Source: compiled by the authors based on the Benchmarking Public Procurement 2017 [28]

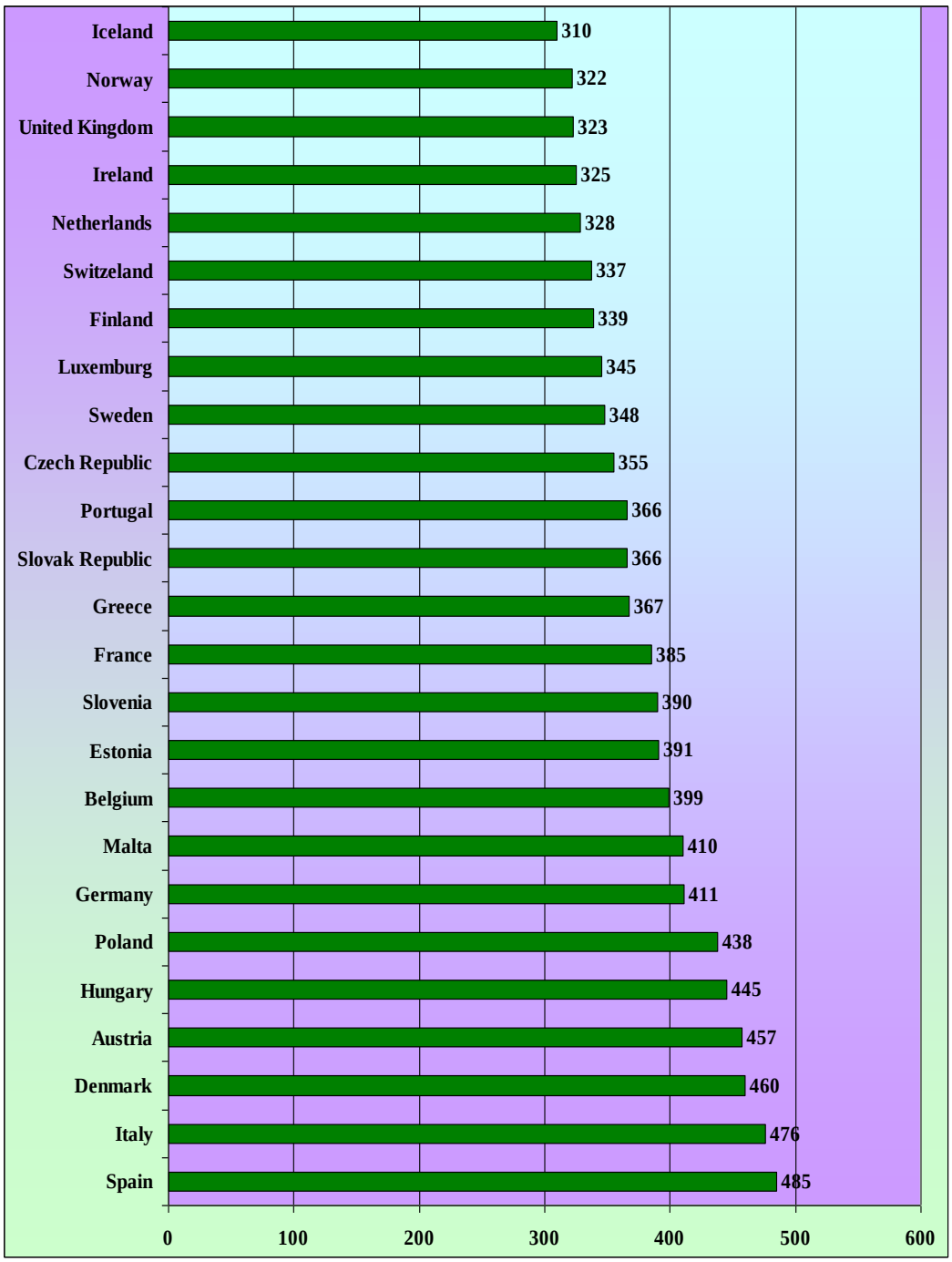


Figure 4. Rating of European countries included in the OECD high-income group by the total number of points of assessment of efficiency of the public procurement system
Source: compiled by the authors based on the Benchmarking Public Procurement 2017 [28]

The highest score was received by the public procurement system in Spain - 485 points. According to the calculations, Ukraine's public procurement system outperformed high-income OECD countries such as Iceland, Norway, the United Kingdom, Ireland, the Netherlands, Switzerland, Finland, Luxembourg, Sweden, Czech Republic, Portugal, Slovakia, Greece.

The data collected for *Benchmarking Public Procurement 2017* were used for the *Doing Business 2017* publication, which this year includes an analysis on the ease of private suppliers selling to the government [3]. *Benchmarking Public Procurement* also complements other initiatives that enhance the transparency of public financing in general, and assess the quality and effectiveness of procurement systems in particular. Such initiatives include the Public Expenditure and Financial Accountability (PEFA) framework and the Methodology for Assessing Procurement System (MAPS) of the Organization of Economic Co-operation and Development (OECD).

Conclusions and prospects for further research. The public procurement methodology involves the actions of their participants at certain stages, which cover the so-called "public procurement lifecycle", which is why a lot of control and analytical work is needed to improve the efficiency of public procurement. The result of public financial control in the form of audit, audit, monitoring should be not only the assessment of the performance, efficiency and economy of public procurement, but also the determination of the effectiveness of public procurement procedures. Given the globalization of the economy and the intensification of the European integration processes in our country, a comparative analysis of the procedures of their implementation with the corresponding systems of other countries of the world should become an important component of the evaluation of public procurement effectiveness. The results of such benchmarking identify areas of risk, and relevant information can be used to develop recommendations and proposals to improve the efficiency of the public procurement system, especially in the context of the reform of public procurement legislation and the introduction of the new Prozorro system. The results of the public procurement analysis indicate that there are some shortcomings that correspond to Ukraine's low scores according to World Bank estimates, indicating that it is advisable to use international valuation results. The prospect of further research is to investigate the second-tier indicators and methodology for evaluating the public procurement systems by World Bank for using in public procurement monitoring and review.

REFERENCES

1. Balan A., & Vitichak I. (2014). Public financial control in the field of public procurement. Economy: the realities of time. №5 (15). P. 108-114 [in Ukrainian].
2. Daniel Kaufmann. (2005). Back to Basics - 10 Myths About Governance and Corruption. Finance and Development. September 2005. Volume 42. Number 3. Access mode: https://www.imf.org/external/Pubs/FT/fandd/2005/09/basics.htm [in English].
3. Doing Business 2017. Annex: Selling to the Government Why public procurement matters. Access mode: https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB17-Chapters/DB17-Annex-Selling-to-government.pdf [in English].
4. Drozd I., & Pismenna M. (2019). Analysis of the alternative of public procurement procedures to finance public programs. Central Ukrainian Scientific Bulletin. Economic sciences. №2(35). P. 216–225 [in Ukrainian].
5. D'Souza, Anna E. and Kaufmann, Daniel. (2011). Who Bribes in Public Contracting and Why: Worldwide Evidence from Firms (May 2011). Access mode: https://ssrn.com/abstract=1563538 or http://dx.doi.org/10.2139/ssrn.1563538 [in English].
6. Fedulova L. (2011). Public procurement as a means of stimulating innovation. Strategic priorities. No. 3 (20). P. 69–75 [in Ukrainian].
7. Golovanenko M. (2016). Corruption risks and the reliability of the public procurement logistics system in Ukraine. Theoretical and applied issues of economics. Issue 1 (32). P. 77–84 [in Ukrainian].
8. Golub O. (2012). The essence and role of control of public procurement in modern conditions. Economics of development. №1. P. 54–57 [in Ukrainian].
9. Gorbatiuk Y. (2016). Analysis of powers of public authorities in the field of public procurement control. Legal Bulletin. №4 (14). P. 132–136 [in Ukrainian].
10. Gorbatiuk Y. (2016). Legal description of public procurement procedures under the Law of Ukraine "On Public Procurement". Legal Bulletin. №3. P. 132–137 [in Ukrainian].
11. Katrosha L. (2013). Performance audit as a promising method of public financial control in the public procurement system in Ukraine. Innovative economy. № 8. P. 327–331. Access mode: http://nbuv.gov.ua/UJRN/inek_2013_8_73 [in Ukrainian].
12. Krupyak I. (2017). Features of functioning of the public procurement system in the conditions of transformation of modern economic processes. Global and national problems of the economy. Issue 18. P. 458–462 [in Ukrainian].
13. Law of Ukraine "On Public Procurement" of December 25, 2015 No. 922-VIII (as amended). Access mode: http://zakon2.rada.gov.ua/laws/show/922- 19 [in Ukrainian].

ISSN: 2613-5817; E-ISSN: 2613-5825

14. Law of Ukraine "On the Fundamental Principles of Implementing Public Financial Control in Ukraine" (as amended). Access mode: http: //zakon2.rada. gov.ua/laws/show/2939-12 [in Ukrainian].
15. Martynovich D. (2016). Analysis of the effectiveness of public procurement as a tool of state aid. Investment: practice and experience. №18. P. 70–76 [in Ukrainian].
16. Melnikov O. (2016). Features of public procurement as an object of state regulation of the economy. Public administration theory and practice. №1 (52). P. 129–135 [in Ukrainian].
17. Minaylo V. 2010). On the issue of assessing the effectiveness of public procurement. Economic sciences. Accounting & Finance Series. No. 7 (25). Part 2. P. 305–313 [in Ukrainian].
18. Olefir A. (2016). Rights of public procurement as an investment mechanism. Theory and Practice of Law. Iss. 1 (9). Access mode: http://nbuv.gov.ua/UJRN/tipp_2016_1_11 [in Ukrainian].
19. Sevostyanova G. (2016). The current state of legal support for public procurement in Ukraine. Scientific Bulletin of Uzhgorod National University. Issue 10, part 2. P. 91–96 [in Ukrainian].
20. Shatkovsky O., & Yaremenko A. (2015). Harmonization of the public procurement system in Ukraine with EU standards. Comments on the legislation of Ukraine on public procurement. Access mode: http://eupublicprocurement.org.ua. [in Ukrainian]
21. Shchukin O. (2014). Control in the field of public procurement. Legal Science. № 7. P. 30–38 [in Ukrainian].
22. Shmelev I., & Prozhenko N. Independent monitoring of public procurement: practical and theoretical and methodological aspects. 2013 International Bank for Reconstruction and Development. Access Mode: http://www.worldbank.org/en/country/ukraine/publication/third-party-monitoring-of-public-procurement [in Ukrainian].
23. Slyzkonis, D. (Eds). (2013). How to control public procurement at the local level: a practical guide. Kyiv: Center for Political Studies and Analytics [in Ukrainian].
24. Tkachenko N. (2017). Professionalization of public procurement in Ukraine. KNTEU Bulletin. №5. P. 72–84 [in Ukrainian].
25. Vershina E. (2015). Efficiency of public procurement. Young scientist. № 5. P. 339–340 [in Ukrainian].
26. World Bank Group. 2015. Benchmarking Public Procurement 2015: Assessing Public Procurement Systems in 77 Economies. Washington, DC: World Bank. Access mode: http://bpp.worldbank.org/reports [in English].
27. World Bank Group. 2016. Benchmarking Public Procurement 2016: Assessing Public Procurement Systems in 77 Economies. Washington, DC: World Bank. Access mode: http://bpp.worldbank.org/reports [in English].
28. World Bank Group. 2017. Benchmarking Public Procurement 2017: Assessing Public Procurement Regulatory Systems in 180 economies. Washington, DC: World Bank. Access mode: http://bpp.worldbank.org/reports [in English].
29. Zubar V. (2010). Formation of the Public Procurement Management System in Ukraine. Extended abstract of candidate's thesis. Zaporizhzhia. [in Ukrainian].

FEATURES OF PUBLIC-PRIVATE PARTNERSHIP AS A MEANS OF REGULATING THE DEVELOPMENT OF THE SOCIAL SPHERE OF INNOVATIVE ECOSYSTEMS

[1]Malakhovskyi Yurii, [2]Zhovnovach Ruslana, [3]Nabulsi Hussein

[1]PhD of Economy, Associate Professor. Department of Economy, Management and Commercial Activities.

[2]Doctor of Economy, Professor, Head of the Department of Economic Theory, Marketing and Economic Cybernetics,

[3]PhD of Economy, Head of Business Department of AUCE (Lebanon)

[1,2]Central Ukrainian National Technical University. (Ukraine),

[3]American University of Culture and Education South Campus

E-mail: [1]yurmalala@gmail.com; [2]ruslanaz1977@gmail.com; [3]nabulsi.hussain@gmail.com

ABSTRACT

The purpose of the publication is representing the theoretical positions, methodical approaches and the scientific and practical recommendations concerning the improvement of the mechanism of regulation of public-private partnership (PPP) in the social sphere at the macro- and mesoeconomic levels of Ukraine's economy.
The theoretical basis of regulation of PPP in the social sphere of the national economy (SSNE) is disclosed, the essence of which is defined as an effective model of the project association of financial and organizational resources of stakeholders for the purpose of satisfying the expanded range of social needs of the population and improvement the level of their satisfaction by increasing the production of goods and providing the social services as a material condition of the reproduction of the ability of each individual for a long time to act as a creative element of innovative systems, flexible consideration of the peculiarities of the functioning of the humanitarian service sector of the post-industrial knowledge economy. The methodical approaches to the modernization of the mechanism of regulation of PPP in the SSNE and its implementation into the process of self-organization and self-governance of regional innovation ecosystems (RIES) are developed, which consists in enriching the spectrum and improving the quality level of satisfying the social and vital needs of the material carriers of human capital by the increasing the personal potential of the increasing the level of productivity, labor mobility, and life-time value on the basis of forming the regulatory framework for the regulation of social needs.
Keywords: public-private partnership, mechanism of regulation, social sphere, effectiveness, innovative ecosystems.

INTRODUCTION

In modern economic literature a wide range of definitions of the nature of the PPP is used. At the same time, there is no generally accepted unambiguous definition of the concept. The presence of various perspectives and the lack of clarity in the understanding of the PPP category, both at the international level and in countries where this form of interaction between the state and business is actively evolving, testifies to the need for further development of theoretical and empirical research in this area, especially in the context of the formation of multi-level innovation social ecosystems of the national economy in the conditions of development of its post-industrial stage. In different countries, the name of the partnership between the state and business has its own definition. In the UK, the term "private financial initiative" (PFI, PFII) is used. The alternatives are used in the United States, Canada (PPP, P3), Australia – P-P partnership, France – the "mixed economy community" (SEM). Similar definitions are common in other European practices (Spain – Colaboración público-privada/Asociación público-privada, Germany – Öffentlich-Private Partnerschaft, Italy – Partenariato Pubblico Privato, Denmark – Offentlig-Private Partnerskaber).
Despite the fact that individual experts [4; 5] put forward the thesis that the term PPP vs "government-private partnership" is more adequate to reflect the content of cooperation between the parties to the cooperation, the diversity of models of partnership between the state, business and society is even wider.

Literature review. The concept of public-private partnership is common in the approaches of international financial institutions in defining the essence of what is understood as a form of financial agreement between the public and private sectors. The most characteristic feature of the definition of public-private partnership, which is associated with the IMF constituent documents with the transfer of financial obligations to a private partner, is also shared by the European Investment Bank [10] and the World Bank [1; 8]. The approach of the United Nations Secretariat and the ADB

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

[10], which treats PPP as a model of cooperation between the two most powerful – the public and private sectors of the national economy, is fundamentally different. The OECD Scientific and Technological Policy Committee [9], in contrast to the parent organization, which focuses on the nature of the relationship between the state and business, defines the PPP separately as an innovative component of the cooperation between them.

The European Commission, the supreme executive body of the EU, uses a rather general definition of the nature of the PPP. Among the generalized characteristics of PPP, the following are recognized as follows: participants of cooperation are public and private sectors; the nature of the relationship between the parties of cooperation must be fixed in official documents and should be of equal partnership nature; participants in the process of commercial relations should pursue clearly defined general objectives and state interest in the provision of socially meaningful public services; the parties combine their efforts to achieve common goals, distribute costs and risks among themselves, and participate in the use of the results obtained on a parity basis.

A similar variety of approaches to the definition of the nature of PPP is also observed at the international level. The concept of partnership between the state and the private sector has not received a substantiated systemic interpretation, and existing definitions are of a recommendatory nature. Obviously, the specificity of the partnership between the state and business in a particular country depends on the goals, objectives, priorities of economic policy, legislative and regulatory framework, administrative structure and functions of the authorities, the level of development of civil society and legal culture, etc [7].

Purpose of the study. The purpose of this article is: (1) to generalize theoretical and methodological principles for identifying the essence of the concept of PPP in the SSNE, (2) to determine the peculiarities of the forms and models of regulation of the SSNE by means of PPP; (3) to propose strategic guidelines for improving the efficiency of PPP in Ukraine' SSNE; (4) to identify ways of modernizing the mechanism of regulation of PPP in the SSNE.

Results. The diversity of national forms and mechanisms of PPP by the criterion of the structure of its legal regime is classified as one that can be attributed to one of next models:

- a model with a lack of proactive comprehensive regulations in the field of PPPs, which is regulated by the general law on public procurement (Austria, Kazakhstan, Malta, Netherlands, Switzerland);
- the model of the minimum balanced legal regulation of certain aspects of PPP with the presence of numerous sectoral regulations in the absence of a complex profile (Azerbaijan, Belarus, the Great Britain, Germany, Denmark, Spain, Italy, China, New Zealand, Czech Republic, Chile, South Africa);
- a model with the presence of a unified comprehensive legal standard, but with varying degrees of completeness and detail of legal regulation:
- with the presence of special normative and safeguarding acts only at the central level (Greece, Egypt, Ireland, Latvia, Poland, Portugal, Romania, Serbia, Slovenia, Ukraine, France, Croatia, South Korea, Japan);
- with the availability of special regulatory and safeguards acts at both the central and regional levels (Argentina, Brazil, Canada, Mexico, Pakistan, the USA);
- with the availability of special normative and safeguarding acts only at the regional level (Australia, Belgium, Russia);
- a model with excessive over-saturation of PPP legislation, ineffective duplication of regulations at the national, regional, municipal levels (Brazil).

The presence/absence of a special management body in the field of PPP, the purpose of which is the implementation of service-infrastructure and other related objectives of centralized development, approval, approval, implementation, provision of projects, accumulation, systematization and synthesis of experience information, allows distinguishing between three varieties of national models:

- with the presence of one specialized central government authorities (special public - public fund) of different status (Australia, Argentina, Belgium, Brazil, the Great Britain, Germany, Italy, Kazakhstan, Canada, Latvia, Malta, New Zealand, Pakistan, Portugal, France, Croatia, Chile, Japan);
- with the simultaneous presence of several specialized bodies of state / public- public administration (Denmark, Ireland, China, Mexico, the Netherlands, Russia, the USA, Switzerland);
- with the absence of the special authorities of state / public administration in the field of PPP (Austria, Spain).

An approach based on assessing the degree of completeness of the systematic organization of the parties' cooperation in the framework of the PPP sets out the consolidated models:

- operator, with the assignment to the private partner of full or partial responsibility for the provision of service and infrastructure services, risks and responsibilities. In this case, funds received by the public partner for the services rendered are transferred in the form of remuneration to a private one;
- concession with direct contact of a private partner with consumers of services, direct receipt of money from them;
- a life cycle contract with responsibility for all stages of the creation, operation of an infrastructure object, quality of public services for a private partner;
- cooperation with the establishment of joint ventures by interested parties.

Own version of the classification of PPP models, with a strong emphasis on the level of innovation in the organization of activities, proposed by world-famous researchers of the problem – Touché Tohmatsu company:

- ordinary model (BOT, BOOT, BOOT, BBO, BOO, BLOT, DBFO, DBFT, DBF, DBO, DBOOT, etc.) with the overwhelming number of potential risks to a private partner;
- a model with reduced risks by transferring them to a partner who manages them better and also cope with financial implications;
- a model of partnership with the creation of several joint competing enterprises, the possibility of redistributing obligations between them after determining the expected level of performance and quality of services provided;
- model of the alliance, eliminating any competition and inconsistency of relations, maximizing the simplification of actions to prevent the risks of creating joint projects with unpredictable technical characteristics of the infrastructure, expected political risks;
- a model of phased (successive complementary) partnerships with the conclusion of a framework agreement, an opportunity for a public partner to suspend implementation of a particular stage, change the way of implementation of the project, involve other private partners in case of excessive length of the scope and duration of the implementation of the PPP agreement;
- the model of implementation of one of the private partners of the responsibilities of the strategic partner, “integrator” with the assumption of a significant part of the risk, while minimally participating in the implementation of the final stages of the project, optimal competitive stimulus during the period of project implementation of direct executors [2; 10].

The maximum consolidation of the PPP models allows for the identification of two global models – the contractual PPP and the institutional PPP.

The contracting of individual stages of performance of works, provision of public services, technical assistance does not involve the transfer of property rights, costs and risks to a private partner who acquires only the right to a specified proportion of income, profit or payments to be collected, a guaranteed market, privileges and preferences.

The rental (lease, leasing) involves the transfer to a private partner of state / municipal property for temporary use under certain conditions and at a specified fee. Return of the subject of lease relations by a private partner to the state owner, preservation of the last power of disposal of property (in the case of a lease) is opposed to the possibility of leasing the property by the lessee (in the case of leasing).

Conclusion of the concession agreement implies the right of the state partner of a private (on the condition of making a regular payment) that during the stipulated period the powers that are necessary to ensure the proper functioning of the object of cooperation.

In terms of remuneration opportunities for a private partner, there are three types of PPP projects:

- a model with an internal opportunity for a private partner to generate revenue by obtaining payments from users. The public sector is thus limited to defining the general conditions, accepting responsibility for the initial stages of planning, approval, announcement of concession competitions, providing procedural assistance through the issuance of operating permits;
- the model of providing a private partner for the provision of services in the field of state regulation of public works (prisons, hospitals, schools), with remuneration from the state partner exclusively in the form of payments on a commercial basis;
- the model providing a private partner with services with significant positive external social effects, the provision of which justifies the attraction of additional state / municipal financing in the case of insufficient payments for obtaining adequate financial returns.
- Consequently, the experience of developed countries in designing national patterns of partnership between the public and private sectors shows that the forms of PPP are differentiated by the parties to the cooperation on different classification grounds. By applying the applied classification of PPP models, the World Bank distinguishes four main aggregate models – Management and Lease Contracts; Greenfield projects; Divestiture; Concessions [14].
- The National Council on PPPs in the United States proposes a classification of its forms for the purpose of creation and separately allocates:
- partnerships created for the purpose of early implementation of priority infrastructure projects, formed in accordance with the procedures of the batch tender; partnerships, formed to involve management expertise of a private partner for the implementation of large and complex programs;
- partnerships whose primary goal is to attract new technologies developed in the private sector;
- partnerships aimed at attracting diverse financial resources available for business;
- partnerships that allow and encourage the development of the infrastructure created by a private partner, its ownership of the erected object and, accordingly, management of it and other capital [14].

Given the interpretations of the PPP, the purpose of studying its varieties from the point of view of understanding as an effective instrument of state regulation, rather than merely combining state and business resources, forms of economic relations, which combines state enterprise activity and other state corrective influences with the possibility of attracting

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

private investment and the competencies of private business, to the main characteristics of the PPP, which reveal the specifics of the partnership between the state and the private sector, should include:

- availability of public and private sectors;
- official relations between state and private participants;
- mutual relations of the parties are affiliated, equal in nature;
- long-term relations between the state and the private sector;
- pooling of assets (resources and competencies) of participants;
- state property as an object of partnership or joint participation of the state and business in the economic organization of a corporate type;
- the goal, which is to solve state tasks of socio-economic development of the country / region in the priority spheres of the economy;
- distribution of risks between partners;
- redistribution of responsibilities between the partners for more effective project implementation;
- availability of a profitable stage in the implementation of the PPP project [13].

The disclosure of the essence of the organizational-economic mechanism (OEM) of the PPP involves clarifying the internal content of the concept not only in the unity of the various and contradictory forms of being, but also in terms of diachronic understanding of its syntactic elements.

OEM (from the Greek μηχανή – device, device) – a multidimensional set of interacting subjects, methods, tools and processes of influence. The effectiveness of the use of OEM management is estimated by the indicators of the effectiveness of the implementation of methods, tools and levers of regulation of the object of management. An integral method for the formation of an effective OEM regulation of PPP in the SSNE involves, along with the creative combination of relatively limited, “pure” informational and functional approaches to its construction, observance of the universal principles of purposefulness, system city, adaptability, innovation. As a result, the formation and improvement of the conceptual model of the mechanism of PPP management in the SNS, ensures its functioning on the basis of real economic processes, the principle correspondence with the informational and functional nature of origin, the specification of the concept of “management system” in relation to the main objects of system analysis and achievement on this basis clearly the goals set, the additivity to the OEM of the highest level, the optimization of the regulated economic ones.

It is noteworthy that the OEM definition proposed by Nobel Prize winners in economics (2007) by L. Hurwitz, R. Myerson, and E. Maskin [6] is fundamental. The concept of a dynamic decentralized economic mechanism, proposed by L. Hurwitz, is fully in line with the requests put forward by the OEM PPP in the SSNE (Fig. 1).

In the context of European integration, the sustainable development of PPPs in Ukraine depends on the availability of effective OEMs. It should be recognized that in their research on PPPs, researchers focus on solving important but disparate applied organizational and economic problems that arise in particular segments and sectors of the social complex. The methodological principles of forming a holistic mechanism for the development of partnership in the social sphere have not yet been properly identified.

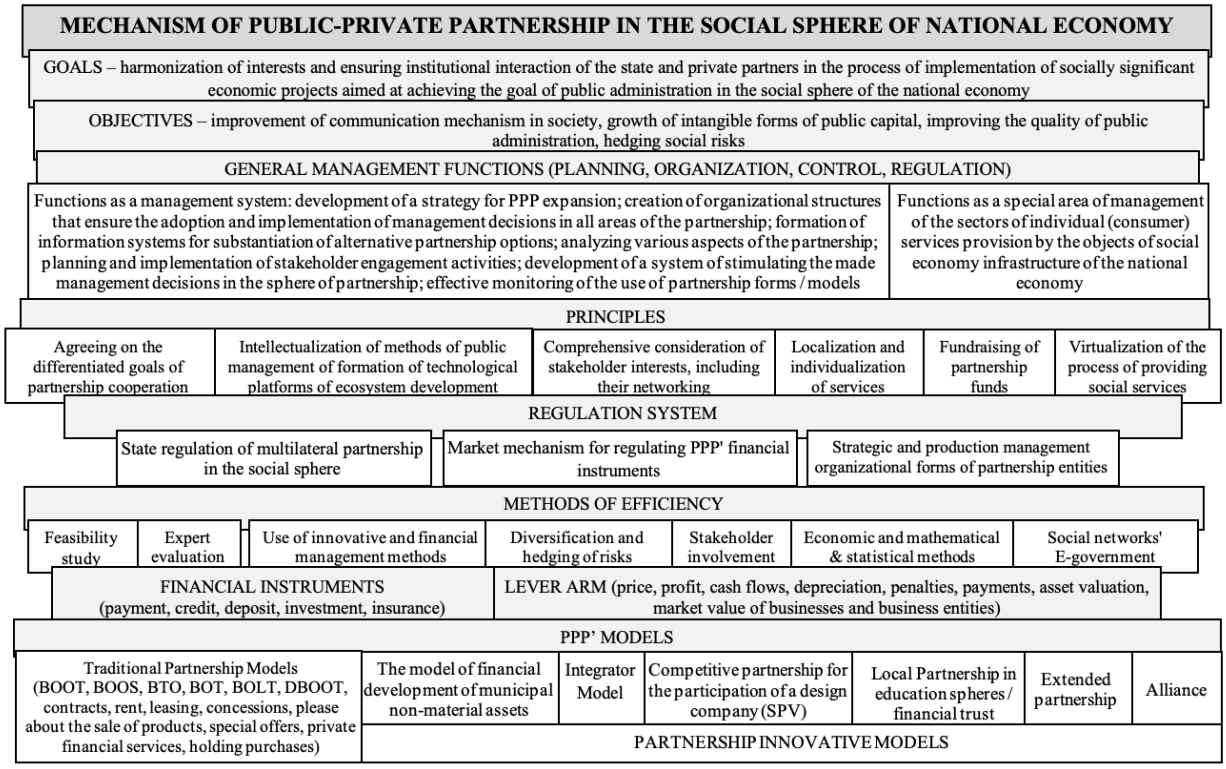


Figure 1. Scheme of the mechanism of PPP in the SSNE
Source: compiled by the author

Listed in Fig. 1 the objects and constituent elements of the PPP mechanism, which are summarized by us taking into account the inherent nature of the purposes, functions, principles, methods, techniques, tools and forms, can be laid as the methodological basis for the development of an effective model for practical application in the SSNE.

OEM PPP at SSNE is a set of practical measures, tools and instruments of organizational and economic nature, structures and regulators, management methods, management decisions that shape and influence the procedure of PPP implementation in the SSNE of Ukraine, which will facilitate the achievement of the complex economic, social, environmental and other results. The OEM's implementation of PPP involves a combination of two components – organizational and economic.

Thus, OEM PPP in SSNE is a holistic formation with a clearly expressed structure, which is formed by the basic subsystems – blocks, between which a network of stable dependencies is established. This means that the destruction of one of them causes the destruction of another, as a consequence, of the whole mechanism, and vice versa.

OEM acquires special features in the case of the introduction of PPP in the SSNE in the conditions of the formation of a post-industrial knowledge economy. The peculiarities of the formation of the OEM are conditioned by the need for the introduction of modernized forms and methods of state regulation that are being prepared in the context of the renewal of the paradigm of the deployment of the new industrial revolution 4.0, which is associated with the processes of globalization of cost chain formation processes, the network structure of innovation clusters, decentralization and regionalization of the budget process. The determining reason for updating the system requirements for the formation of the OEM PPP in the SSNE is recognition of the uniqueness of the functioning of private-public and public sector institutions in the area of providing clean and mixed public goods. On the other hand, no less important argument is the need to remove formal restrictions on the possibilities of involving non-state structures in the process, recognizing them as sufficiently dynamic and effective.

It should be noted that PPP can become one of the most effective forms of cooperation between the public and private sectors in the process of state regulation of the development of collaborative innovative ecosystems in the SSNE. The prospects for such cooperation are based on the recognition that both parties can benefit from the pooling of financial resources, technology and management knowledge in order to ensure the sustainability of the forward movement in an accelerated "smart", stable and inclusive innovation of the concept of "triple helix" the enrichment of its content through the implementation of the basic postulates of the network-local (global) concept of the formation of global value chains on the basis of promotion "quadruple helix" [3; 4; 11; 12].

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

The state-of-the-art management of public administration of PPP supports state-of-the-art management of the development of the state innovation regulation of public PPP management, including through the use of e-Government facilities; management of virtual networks; fundraising; outsourcing; participation in the implementation of social technology platforms; creation of crowdfunding platforms; conducting social certification of the region; staging of social experiments (including virtual ones); research of the needs of stakeholders of Regional (Territorial) Innovative Societal Ecosystem (R(T)ISS) in obtaining high-tech social services; formation of educational clusters on the basis of institutions of higher education as a “creative core”; creation of “nodes” of stabilization and development; new technical, intellectual, informational, social “centers of excellence”; top-priority design on the periphery of forward-looking, innovative and technology-intensive technologies; creation, according to the Japanese model, of innovative techno- political information and analytical background and cultural and spiritual environment of social rehabilitation of the regions; encouraging the use of energy- saving and environmentally friendly mini technologies for intensive and rational development of available natural resources - in the course of the implementation of the innovative social technology (IST).

IST in the post-industrial economy – a set of methods and techniques of innovation that are aimed at the creation and materialization of social innovations in society, the implementation of revolutionary innovations that cause qualitative changes in the R(T)ISS have a strategic consequence of streamlining the processes of using material and social resources, maximizing the social capital of the local community. State regulation of innovative development of public administration involves the introduction of institutional, structural, legal, innovative, technological, scientific and intellectual decisions that relate to organizational, conceptual innovations, as well as innovations in the field of improving the technology of managerial processes.

Unlike the RST, the management of the development of SSNE, which is characterized by low level of science, traditional methods of social influence, lack of effective motivation of its object, IST should be understood as a complex socio- cultural process, which, developing in accordance with objective laws, being closely linked with history and traditions, at the same time fundamentally changes the structure of R(T)ISS.

From the point of view of the modern socio-technological approach, in the framework of the implementation of the state regulation of the development of the SSNE to the R(T)ISS, the leading causes of the confrontation of the conditional “center” should come from national IES and industry/sectoral innovation ecosystem (I(S)IES) and territories strategic and tactical initiatives to promote the policy of regional socio-economic development. Actually, the latter should be based on innovative network technologies for attracting potential, currently “frozen” (hidden/shadow) economic, social, intellectual, scientific and technical resources, the growth of consumption of social services by stakeholders of the R(T)ISS.

Constant improvements in functioning models of PPP, expanding the “risk matrix” of projects allow expanding the list of their categories, specifying locations, and then using them to develop detailed maps of their means of preventing, weakening and eliminating them (Fig.2)

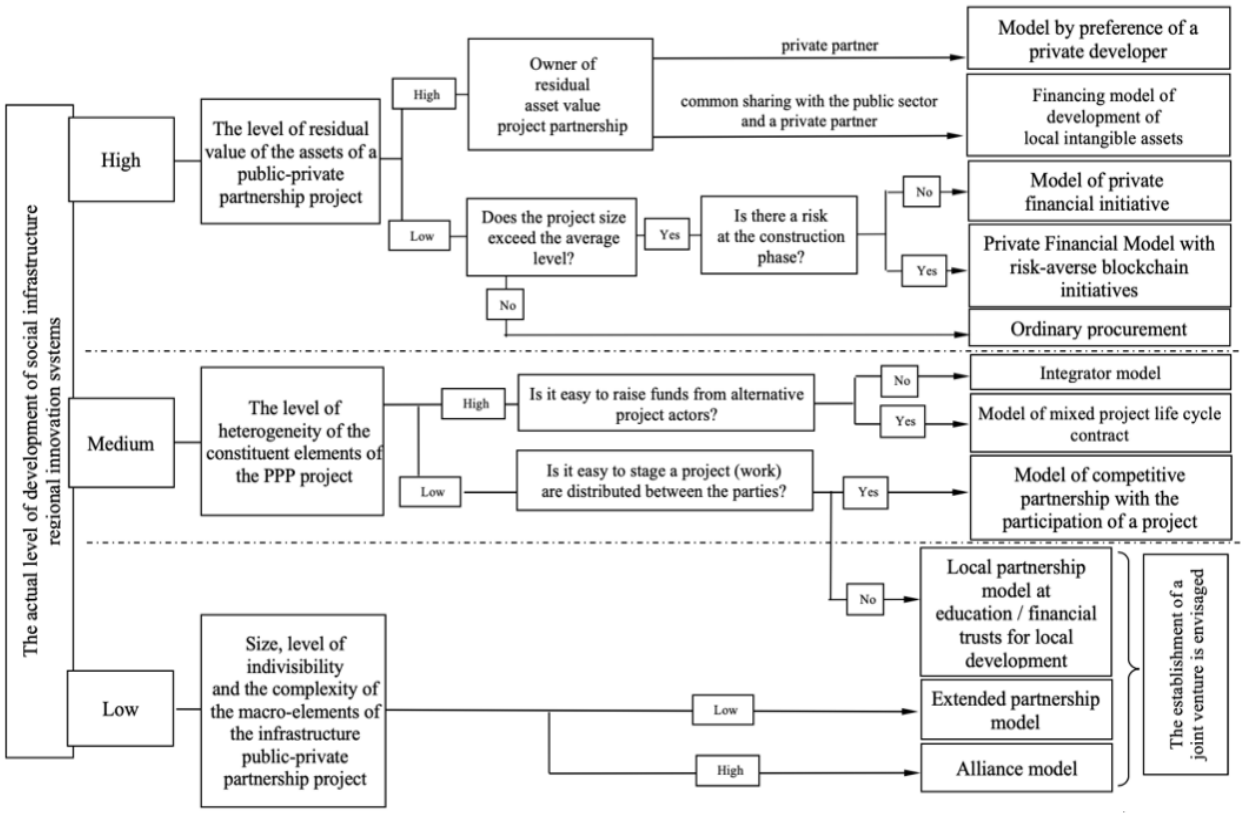


Figure 2. An algorithm for selecting an effective PPP model in the process of forming the infrastructure of SS of P(T)IES
Source: compiled by the author

"Road maps" on the way to eliminating possible threats to the implementation of PPP projects in terms of locations during the implementation of regulatory actions by the executive authorities of the government administration must necessarily include a list of feasibility studies, legal expertise, audit of transactional pricing, formation of a system of non-financial criteria for evaluations of private partners, time management, engineering expertise, crisis management, competences' management, operation management, management of emergency situations, the use of new financial instruments, in-depth technical analysis, management of framework agreements, providing the unpredictable impact of external risks and force majeure, constant change management. The complex nature of such an approach guarantees the realization of all the possibilities and advantages of using innovative models of PPP in the social sphere of a regional (territorial) innovative social and natural ecosystem, and in addition, it avoids the potential problems associated with those noted in Table 1 imperfections.

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

Table 1. Advantages and disadvantages of applying innovative PPP models in the I(T)CES of SSNE

Model PPP		Benefits	Disadvantages
Model of financing of local non-material assets development projects		Long-term focus Maximizing public sector resources Engaging private sector experience Comprehensive investment promotion Continuous monitoring of partnership development High procurement efficiency	The complexity of maintaining parity in the field of control High cost of administration and management costs Low risk transfer capability Complex accounting organization complexities
		Additional options to address the investment challenges of local EAPA: – if the level and specificity of risk, payback period, level of profitability do not meet market requirements, the viability of the project can be ensured by alternative methods; – insufficient level of financing in the public sector can be ensured by the receipt of alternative cash flows – non-availability for grant funding can be overcome by non-profit investing	
Model PFI	traditional	Ability to increase the value over the asset's lifetime High level of predictability of cost level and duration of partnership Focusing on the "value for money" problem during asset's lifetime Strong incentives for implementation Ability to be off-balance sheet	High contract value Inflexibility Excessive duration of formal procurement procedures
	with enhanced risk avoidance unit		
Integrator model		Role / responsibility allocation transparency (lower level of conflict of interest) Increasing the level of competitive pressure Attraction of a wide range of partners, including small and medium-sized businesses	If the appointment of a strategic partner takes place prior to the formal procurement procedures, there is a risk of a lack of competence and service delivery skills. Lack of integrated supply chain
		Lower procurement costs for the project High level of flexibility in program implementation	
Model of local PPP in education / local financial trusts		An opportunity for the public sector to retain influence over the strategic direction of investment High potential for continuous improvement during the next successful phases of project implementation Early receipt of commercial funds from a private partner	Conflict of interest for a strategic partner Too high a value for money benchmarking process Strong obstacles to the ability to attract alternative providers
Model of competitive partnership			
		The level of competitive pressure does not decrease over time Effective benchmarking of project implementation costs	The model is more demanding for public sector involvement Transferring major risks to the public sector Transferring ongoing responsibility to the public sector in the negotiation and management of the PPP project
Model extended partnership		Low procurement costs High level of flexibility to meet the adjusting requirements Relationships are formed gradually, without long-term contact Constantly maintaining a high level of competition	
Alliance Model		Ability to continue implementing the project under uncertainty Increasing the level of cooperation and reducing the level of disputes between partners	

Source: compiled by the author

Taking into account the fact that the mechanism for regulating PPP operating in Ukraine is influenced by the risk factors typical for all countries and the parties failing to achieve partnerships due to prior agreements of economic interests, and the process of using the organizational and economic partnership mechanism is aimed at meeting vital needs not only so many sides of a PPP that are in commercial relations, but to the general public of stakeholders, it seems advisable to pay increased attention to this aspect of the regulation of the development of the regional (territorial) innovative social and natural ecosystem.

Conclusions. The publication presents a theoretical generalization and solution of the actual scientific and applied problem, which consists in the development of theoretical positions, methodological approaches and scientific and practical recommendations regarding the improvement of the organizational and economic mechanism of regulation of public-private partnership in the social sphere of the Ukrainian economy. According to the results of the research, the following conclusions are made:

(1) The regulation of PPP is a key direction of introducing a system of measures of administrative influence of executive bodies on a complex of partner business relations between representatives of the authorities, business, public sector of society, local communities on the redistribution of powers in the field of the formation of innovative infrastructure of collective use, production of socially significant goods and services that are currently in the state monopoly. The regulation provides for the authorities to adjust the wide range of questions of transfer of responsibility, avoidance of critical risks, effective financial support, practical implementation, involvement in the management and distribution of profits of stakeholders of regional innovation systems on the principles of equality, openness, non-discrimination, adversity, ensuring integral efficiency, minimizing risks and costs.

(2) Investigating the international practice of regulation of the social sphere, combined with global industrial-logistic and information networks of regional innovation systems in the conditions of the emergence of the post-industrial economy, has allowed to substantiate the conclusions about practical non-alternative to the application of models of public-private partnership in the field of provision of public goods of collective use.

At the same time, full and high-quality satisfaction of demand for services of individual design by means of partnership cooperation is carried out within the framework of realization of the national innovation model of regulation of social sphere at the regional level.

(3) The analysis of PPP models that are associated with the national peculiarities of the implementation of the processes of supply of goods / services and contract management, the preparation of objects for turnkey operation, leasing, concessions, private financial initiatives, has made it possible to distinguish their key components elements that involve taking into account the objects of the purpose of use, functions, principles, methods, techniques, tools and forms that are collectively relied upon as a methodological basis for the development of an authority the economic and economic mechanism of regulation of the social sphere, the formation of a high quality social environment, ultimately - the quality of life in the conditions of the emergence of post-industrial economy.

(4) The strategic directions of using the mechanism of regulation of PPP in the SSNE, formulated in the work, provide for its constant updating in order to implement the elements of regulation of modernized requirements, the formation of which takes place taking into account the trajectories of the deployment of innovative social technologies. State regulation of the innovative development of public administration involves the introduction of institutional, structural, legal, innovation-technological, scientific and intellectual decisions that relate to organizational, conceptual innovations, and newest management technologies.

(5) It is established that the modern requirements of regulation of the social sphere of Ukraine by means of PPP are fully in line with the sequence of its stages, which comprehensively takes into account the locations of the stakeholders and their respective risk categories for the implementation of projects - development, sponsorship, cost overruns, delays in implementation , untimely delivery of goods / services, operational, insufficient demand and lower expected revenues, changes in macroeconomic conditions of implementation, incompletement capital (of non-profit), force majeure, a conflict of interest. Elimination of threats, refinement of places of their deployment, development of detailed prevention (relief) maps can be carried out on the basis of a complex of measures of feasibility study, legal examination, transaction pricing audit, use of non-financial criteria for evaluating private partners, time management, engineering expertise, management competencies, operational management, emergency management, financial engineering, management of framework agreements, prevention of unforeseen ion of the impact of external risks and force majeure, change management.

REFERENCES

1. Barnavsky, V.G., Klimenko, A.V., & Korolev V.A. et al. (2010). *Gosudarstvenno-chastnoye partnerstvo: teoriya i praktika [Public-private partnership: theory and practice: a training manual].* Moscow: Publishing House of State University “Higher School of Economics”. Access mode: https:// www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=2ahUKEwjtpt2Ho6zeAhWItYsKHXHeBNoQFjACegQIBxAC&url=https%3A%2F%2Fwww.hse.ru%2Fdata%2F2010%2F04%2F22%2F1216643253%2F978-5-7598-0707-0.pdf&usg=AOvVaw1D0sMGManu6cqm44RmVzOI [In Russian]
2. Building flexibility: New delivery models for public infrastructure projects. (2008). London: Deloitte & Touche LLP. Access mode: https://www.google.com/ url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=2ahUKEwiEqoPDnqzeAhVFiiwKHUXyDmIQFjABegQICBAB&url=http%3A%2F%2Finfrastructureaustralia.gov.au%2Fpolicy-publications%2Fpublications%2FDeloitte-Touche-Tohmatsu-UK-Building-Flexibility-New-delivery-models-PI-projects.aspx&usg=AOvVaw2CXDvNExT-6iNpZyRmi6Pu [In English]
3. Carayannis, E., & Grigoroudis, E. (2016). Quadruple Innovation Helix and Smart Specialization: Knowledge Production and National Competitiveness. *Foresight and STI Governance*, Vol. 10, Issue 1. – Access mode: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=2ahUKEwiv0_rbpKzeAhWEtYsKHTOvB38QFjABegQIAhAC&url=https%3A%2F%2Fforesight-journal.hse.ru%2Fdata%2F2016%2F04%2F14%2F1129617631%2F3-Carayannis-31-42.pdf&usg=AOvVaw1mbj_t2dJmr-V2Dycnh0TK [In English]
4. Fedulova, L.I., & Marchenko, O.S. (2015). Innovatsiyni ekosystemy: sutnist' ta metodolohichni zasady formuvannya [Innovative ecosystems: essence and methodological principles of formation]. *Ekonomichna teoriya ta pravo – Economic theory and law. Vol.2.* Access mode: http://irbis-nbuv.gov.ua/cgi-bin/irbis_nbuv/cgiirbis_64.exe?C21COM=2&I21DBN=UJRN&P21DBN=UJRN&IMAGE_FILE_DOWNLOAD=1&Image_file_name=PDF/Vnyua_etp_2015_2_4.pdf [In Ukrainian]

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

5. Habermas, J. The Structural Transformation of the Public Sphere (1989). Cambridge, Massachusetts, The MIT Press. – Access mode: https://www.google.com/ url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwiyztCIyqzeAhWC3CwKHfdHCZgQFjAAegQIBxAC&url=https%3A%2F%2Fpages.uoregon.edu%2Fkoopman%2Fcourses_readings%2Fphil123-net%2Fpublicness%2Fhabermas_structural_trans_pub_ sphere.pdf&usg=AOvVaw09iLjvQ72u9HoIbyMnI4Bk [In English]
6. Luzan, Yu.P. (2011). Orhanizatsiyno-ekonomichnyy mekhanizm zabezpechennya rozvytku ahropromyslovoho vyrobnytstva Ukrayiny: teoretychno-metodolohichnyy aspekt [Organizational and economic mechanism for ensuring the development of agro-industrial production of Ukraine: theoretical and methodological aspect]. *Ekonomika APK – Economics of agriculture, 2, 3-12.* [In Ukrainian]
7. Nabulsi, H. (2016). Modern approaches to regulation of public-private partnership. *Scientific papers of Kirovograd National Technical University. Economic Sciences, Issue 30, 286-296*. [In English]
8. Nizhehorodtseva, R.M., Nikitenko, S.M., & Goosen, E.V. (Eds). (2012). Gosudarstvenno-chastnoye partnerstvo v innovatsionnoy sfere: mirovoy opyt i perspektivy Rossii [Public-private partnership in the innovation sphere: world experience and prospects of Russia]. Kemerovo: Siberian Publishing Group LLC. Access mode: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&ved=2ahUKEwjp8dyro6zeAhXnp4sKHbWEC34QFjADegQIBhAC&url=http%3A%2F%2Fwww.mtas.ru%2Fupload%2Flibrary%2FPPPBOOK.pdf&usg=AOvVaw2qVCja0EGIiJ6ML7vYx9Ng [In Russian]
9. OECD (2014). OECD Science, Technology and Industry Outlook 2015, OECD Publishing. Access mode: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=2ahUKEwjDnMj25PDeAhWKDywKHW8BCvIQFjACegQICBAC&url=http%3A%2F%2Fwww.secti.pe.gov.br%2Fwp-content%2Fuploads%2F2016%2F04%2FOECD_Science%2C%2520Technology%2520and%2520Industry%2520Scoreboard_2015.pdf&usg=AOvVaw0IanWnQ11Iy3Q7YmLodFFM [In English]
10. Shilepnytskyi, P.I. (2011). *Derzhavno-pryvatne partnerstvo: teoriya i praktyka [Public-Private Partnership: Theory and Practice]*. Chernivtsi: Institute for Regional Studies NAS of Ukraine. [In Ukrainian] [89]
11. Smorodinskaya, N. (2014). Setevyye innovatsionnyye ekosistemy i ikh rol' v dinamizatsii ekonomicheskogo rosta [Network innovation ecosystems and their role in the dynamization of economic growth]. *Innovatsii – Innovation, 7(189).* – Access mode: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwjD8rG0pKzeAhXQo4sKHSryBNkQFjAAegQICRAC&url=https%3A%2F%2Finecon.org%2Fdocs%2FSmorodinskaya-Innovations-2014-07.pdf&usg=AOvVaw1x6Be89bwoY7vWc4954tM8 [In Russian]
12. Smorodinskaya, N.V., & Katukov, D.D. (2017). Raspredelennoye proizvodstvo i “umnaya” povestka natsional'nykh ekonomicheskikh strategiy [Distributed production and the “smart” agenda of national economic strategies]. Ekonomicheskaya politika – Economic policy, 6. – Access mode: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=2ahUKEwjZgKP2yvDeAhWC_CoKHabqATsQFjABegQICBAB&url=https%3A%2F%2Fdocplayer.ru%2F71148958-Raspredelennoe-proizvodstvo-i-umnaya-povestka-nacionalnyh-ekonomicheskih-strategiy.html&usg=AOvVaw2gaV1raFckQX6JRUih6lBg [In Russian]
13. Vinnik, O.M. (2014). Upravlinnya derzhavno-pryvatnym partnerstvom pry vykorystanni yoho aktsionernoyi formy [Public-Private Partnership Management in Using Its Shareholder Form]. *Visnyk Natsional'noyi Akademiyi pravovykh nauk Ukrayiny – Bulletin of the National Academy of Law Sciences of Ukraine, 4 (79).* Access mode: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=2ahUKEwjSgL7EnazeAhWGh6YKHcoJAU4QFjABegQICRAC&url=http%3A%2F%2Fdspace.nlu.edu.ua%2Fbitstream%2F123456789%2F9317%2F1%2FVinnyk.pdf&usg=AOvVaw2LAofsm0L0xuYJ_2mM9V0L [In Ukrainian]
14. World Bank Handbook. *ppi.worldbank.or.* Access mode: http://ppi.worldbank.org/resources/ppi_glossary.asp [In English]

THE ACTIVITIES UNIVERSITIES IN THE CONTEXT OF FORMING THE INNOVATIVE ECOSYSTEM

[1]Muzychenko Anatoliy, [2] Tsarenko Ilona

[1]Doctor of Economics, Professor. Professor of the Department of Economics, Management and Commercial Activity. Central Ukrainian National Technical University. (Ukraine)

[2]PhD of Economics, Assistant Professor of the Department of Economics, Management and Commercial Activity, Central Ukrainian National Technical University. (Ukraine)

E-mail: [2]ilonka.tsarenko@gmail.com

ABSTRACT

The paper deals with the issue of innovation ecosystem. The aim of this paper is to highlight the role of universities in forming the innovation ecosystems at the current stage. For the purposes of this paper, the analysis of approaches to the definition of the concept of "innovation ecosystem" is presented. The characteristics of innovation ecosystem are described. The factors, which facilitate the innovation ecosystems are grouped by the following dimensions: resources, governance, strategy and leadership, organizational culture, human resources management, people, partners, technology and clustering. The main features of both types of ecosystem (industry-driven ecosystem and university-driven ecosystem) at different levels are analyzed. The peculiarities of the main interactions between industry-driven ecosystem and university-driven ecosystem are noted.
Keywords: University, Cluster, Ecosystem, Innovation Ecosystem, Industry-driven Ecosystem, University-driven Ecosystem

INTRODUCTION

During the first decades of the 21st century, the developing countries have achieved the certain results and now are making more and more their efforts of reducing the economic gap that exists between them and the developed countries. The Asian countries demonstrate a success in these directions too, first of all, Singapore, China and Korea. A number of European countries, such as Sweden and Denmark, are already achieving consistently the high economic indicators in due to the targeted state programs, which are oriented on the formation of knowledge based economy, which is actual at the current stage in dimension of innovation model of economies. That's why, the continuing of modernization of their economies on the basis of innovative technologies remains a key aim of the state policy of these countries,that is one of the challenge at the current stage. And to help to meet the challenges of globalization, pressure on limited resources and an aging population, the EU has launched the Europe 2020 strategy for smart, sustainable and inclusive growth, where one of the three priorities is to develop an economy based on knowledge and innovation, this involves improving the quality of education, strengthening research performance, and promoting innovation and technology transfer throughout the EU (European Commission Communication, 2014).

The researches of leading scientists allow us to conclude that in the issue of formatting of a knowledge-based economy, a key role belongs to the regional development of the national economy, which is based of innovative-integrated structure, in particularity on clustered structures. In these conditions, the educational institutions become more influential as a center of generating a new knowledge and idea. In addition, according to the survey in The Economist suggests the conception of the knowledge-based economy “portray(s) the university not just as a creator of knowledge, a trainer of young minds and a transmitter of culture, but also as a major agent of economic growth: the knowledge factory, as it were, at the centre of the knowledge economy” (David 1997). Closely related to this is the idea that universities can also jump start the emergence of dynamic regional clusters of firms and thus act as crucial contributors to regional economic development (Wolfe, 2005).

According to most cluster theories, businesses are at the core of competitive clusters, with universities and other institutions forming a critical support infrastructure for continued industrial innovation and productivity growth (Feser, 2009).

According to Cooke et al. (2007), knowledge organizations such as universities and research institutes, as well as businesses involved in innovative activities are usually concentrated in a few specific regions or urban areas, and are not evenly spread across geographical space. However, the contribution of universities to regional development, in general, and to innovative regional cluster set-ups, in particular, is very difficult to measure.

Universities are one such “regional factor” that impacts all of the dimensions of cluster competitiveness. On the one hand, universities are an asset that increases the quality of inputs and producers, by upgrading human capital and disseminating knowledge. Universities also promote economic diversity. In fact, the key role of the university is not so

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

much to grow the economy, as it is to diversify it by generating new opportunities out of the old. The university is the creative side of economic destruction (Gradeck, 2004).
System of higher education institutions is becoming not only a producer of educational services and a new knowledge to its customers (which has the own centers, powerful scientific centers and laboratories, where able to attract students of such universities), but also as their consumers through the creation the powerful research centers in such universities that are actively involved to the introduction of innovation in different spheres of economy and innovation activities (Levchenko and al, 2017). Thus, universities are not just generators of commercializable knowledge or even highly qualified research scientists; they provide other equally critical mechanisms of knowledge transfer (Bramwell, 2008).
Universities generate and attract talent, which contributes both to the stock of tacit knowledge in the local economy, as well as to the 'thickness' of the local labour market (Florida, 2002; Betts and Lee, 2005). Besides, in addition to the conduct of basic research, universities provide both formal and informal technical support, as well as specialized expertise and facilities for on-going, firm based R&D activities (Grossman et al., 2001; National Academy of Engineering, 2003; Mowery et al., 2004). Also, universities act as a conduit enabling firms to access knowledge from the 'global pipelines' of international academic research networks (Bathelt et al., 2004; Lawton Smith, 2003a; OECD, 1999). Finally, rather than acting as 'ivory towers' insulated from their community, they can function as 'good community players' that support firm formation and growth by facilitating tacit knowledge exchange among networks of innovative firms and acting as 'anchors of creativity' that sustain the virtuous cycle of talent attraction and retention (Wolfe, 2005a; Henton et al., 1997; Gertler and Vinodrai, 2005; Betts and Lee, 2005).

Purpose of the study

The aim of this paper is to highlight the relationship between university ranking as an indicator of the evaluation of level of higher education of country and cluster development. For the purposes of this paper, the analysis of these indicators of 75 countries of the world. With regard to the aim, we have set the following hypothesis: we assume that there is a statistically significant correlation between university ranking and cluster development of country.

Results

To quantify the strength of the relationship, we can calculate the correlation coefficient. In algebraic notation, if we have two variables x and y, and the data take the form of n pairs, then the correlation coefficient is given by the following equation:

$$r = \frac{\sum_{i=1}^{n} (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum_{i=1}^{n} (x_i - \bar{x})^2 \sum_{i=1}^{n} (y_i - \bar{y})^2}} \qquad (1)$$

where $\bar{x}$ is the mean of the x values, and $\bar{y}$ is the mean of the y values.
This is the product moment correlation coefficient (or Pearson correlation coefficient). The value of r always lies between -1 and +1. A value of the correlation coefficient close to +1 indicates a strong positive linear relationship (i.e. one variable increases with the other). Further, according to our hypothesis, calculate the degree of relationship between Cluster Development and University Ranking, taking into account the indicators of countries of the world according to the annual report of Global Talent Competitiveness Index.
A correlation coefficient shows the degree of linear dependence of x and y. In other words, the coefficient shows how close two variables lie along a line. In our occasion, y (Cluster Development) is dependent variable and x (University Ranking) - independent variable.

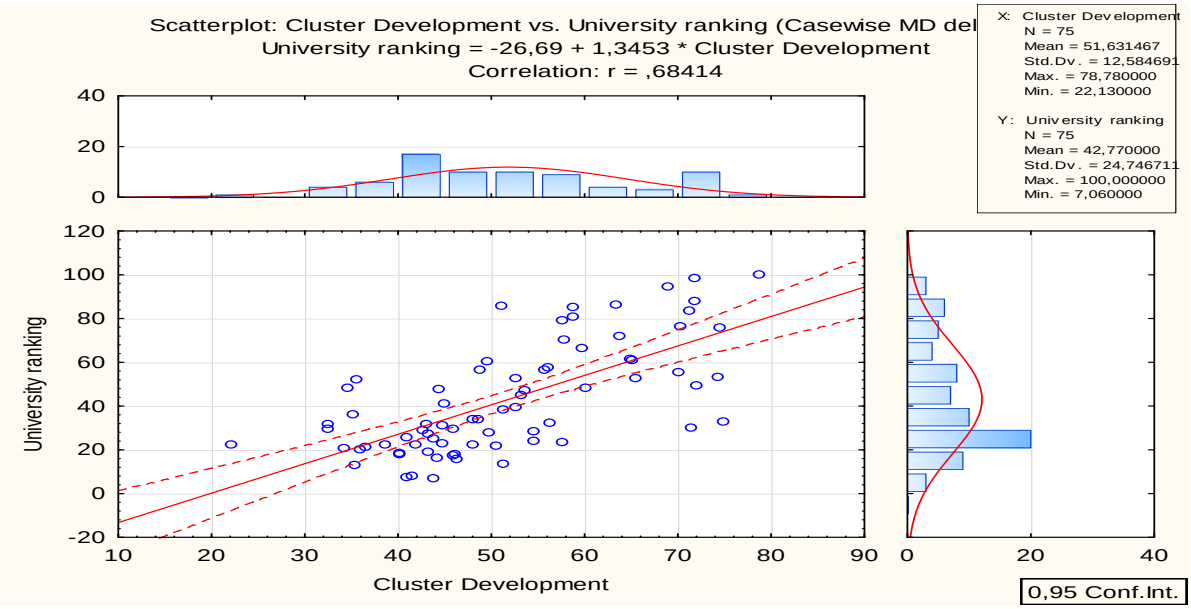


Figure 1 The ratio of correlation between Cluster Development and University Ranking

Source: Authors' own elaboration

The relationship between cluster development and university ranking depicted in Figure 1 has a notable correlation of 0.68. Besides, we can see, that mean value of cluster development is 51.63.

The lowest value of cluster development among the countries is 22.13 score (minimum), the highest is 78.78 score (maximum). The highest value is on 56.65 score higher than the lowest value (dimension). The standard deviation is 12.58. Consequently, the variance, the square of the standard deviation, is (12.58) * 2 = 25.16. The asymmetry and the coefficient of variation are given with the corresponding standard errors. The mean value of university ranking is 42.77. The lowest value of university ranking among the countries is 7.06 score (minimum), the highest is 100.00 score (maximum). The highest value is on 92.94 score higher than the lowest value (dimension). The standard deviation is 24.75.

Besides, we consider, that the modeling of regression model can be useful in process of our analysis. The purpose of regression analysis is to analyze relationships among variables (in our analysis - cluster development and university ranking), where the results serve the following two purposes: a) answer the question of how much y changes with changes in each of the x's (x1, x2,...,xk), and b) Forecast or predict the value of y based on the values of the X's.

Call:

lm(formula = form, data = data)

Residuals:

Min	1Q	Median	3Q	Max
-22.3795	-5.3636	-0.2053	4.9153	26.6815

Coefficients:

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	36.75130	2.14150	17.161	< 2e-16 ***
University Ranking	0.34790	0.04341	8.014	1.32e-11 ***

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 9.241 on 73 degrees of freedom

Multiple R-squared: 0.468, Adjusted R-squared: 0.4608

F-statistic: 64.23 on 1 and 73 DF, p-value: 1.324e-11

Statistic significance of the model:

H0: model is not statistically significant

H1: model is statistically significant

p-value: 1.324e-11 < 0.05 we reject null hypothesis and we approve alternative hypothesis that model is significant

This model describes that 21,2 % of variability of dependent variable (Cluster development), which is due to the differences in our independent variable – University Ranking, while the rest 78.8% are other factors that were not taken into account in this case.

Statistic significance of the variable:

H0: variable is not statistically significant

H1: variable is statistically significant

p-values: 1.32e-11 < 0.05 (University Ranking) we reject null hypothesis for both variables and we approve alternative hypothesis that variable University Ranking is significant.

Interpretation the results:

Ceteris paribus: if University Ranking will increase by one score Cluster Development will increase by 0,34 score.
Thus we received the regression linear model, in particular:

*Cluster development = 36.751 + 0.3479 * University Ranking.*

Thus, the obtained calculated results of our research indicate about influence the universities on the state of cluster development and could be used by stakeholders as an instrument for developing the clusters. First of all, by governments of countries as one of the element of mechanism of regulation of clusterization's process, because if the state will implement an effective policy for improving the competitiveness of higher education, in result - will increase Universities' Ranking, that as a whole will lead to activation of cluster development (1 point of University Ranking to 0,34 point of Cluster Development). Therefore, we think, that our results can be used by the state in elaboration a mechanism for the development of clustering of the economy. Furthermore, the received results strengthen the role of universities and the necessity of realization an effective state policy in the field of education.
Conclusions and prospects for further research. The challenges of the economical present of a globalized economy, which are oriented on knowledge create the need to strengthen the aspects of innovation development, development of innovation infrastructure, the functioning of which would be aimed on the activating the innovation processes, which will be ensuring the high rates of economic growth. In these conditions the significant role in the development of research and innovation infrastructure is played by the system of higher education and the universities, in particular.
The aims of increasing the effectiveness of socio-economic and scientific and technical policy involve the using of clusterization in development, based on the links of scientific institutions and operating enterprises in the network structure for the production of goods, services and innovations. Thus, the correlation-regression analysis showed a notable relationship between cluster development and university ranking, which indicate on the impact of universities and the state of higher education on the cluster development of the country. Nowadays the process of clustering is an effective tool for ensuring the sustainable development of the country's regions. In general, both the cluster structures and the regional research and scientific structures with the participation of universities are focused on solving the problems which related to cooperation between science and production, increasing the efficiency of using the potential of the region and the country according to the triple helix.

REFERENCES

1. Bathel, H., Malmberg, A. and Maskell, P. 2004. Clusters and knowledge: local buzz, global pipelines and the process of knowledge creation. In: Progress in Human Geography. Vol. 28, No 1, pp. 31–56 [In English].
2. Betts, J. and Lee, C.W.B. 2005. Universities as drivers of regional and national innovation: an assessment of the linkages from universities to innovation and economic growth. In: Charles M. Beach, Robin W. Boadway and R. Marvin McInnis (Eds.) HIGHER EDUCATION IN CANADA, Kingston, Ontario: Queen's University: John Deutsch Institute, pp. 113- 157 [In English].
3. Bramwell, A. and Wolfe, D. 2008. Universities and regional economic development: the entrepreneurial university of Waterloo. In: Research Policy, Vol. 37, No. 8, pp.1175–1187 [In English].
4. Cooke, P., de Laurentis, C., Todtling, F. and Trippl, M. 2007. Regional Knowledge Economies: Markets, Clusters and Innovation. In: Economic Geography. Vol. 85, No. 1, pp. 107–108 [In English].
5. David, P. 1997. The Knowledge Factor: A Survey of Universities. The Economist. 4 October [In English].
6. European Commission Communication. Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth, COM(2014) 130, 14 March 2014. [online]. Available online: http://ec.europa.eu/europe2020/pdf/europe2020stoc ktaking_en.pdf [In English].
7. Feser, E. 2009. Detecting university-industry synergies: a comparison of two approaches in applied cluster analysis, in Universities, Knowledge Transfer and Regional Development: Geography, Entrepreneurship and Policy. Edward Elgar Publishing, pp. 57- 84 [In English].
8. Florida, R. 2002. The Rise of the Creative Class. Basic Books, New York [In English].
9. Gertler, M.S. and Vinodrai, T. 2005. Anchors of creativity: how do public universities create competitive and cohesive communities? In: Iacobucci, F., Tuohy, C. (Eds.), Taking Public Universities Seriously. University of Toronto Press, Toronto, pp. 293–315 [In English].
10. Gradeck, R., Andrews, L. and Paytas, J. 2004. University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship. In: Universities and the Development of Industry Clusters. [online]. Available online: <https://ssrn.com/abstract=1509266> [In English].
11. Grossman, J.H., Reid, P.P. and Morgan, R.P. 2001. Contributions of academic research to industrial performance in five industry sectors. In: Journal of Technology Transfer. Vol. 26, No. 1–2, pp. 143–152 [In English].
12. Henton, D., Melville, J. and Walesh, K. 1997. Grassroots Leaders for a New Economy: How Civic Entrepreneurs Are Building Prosperous Communities. (Eds.). Jossey-Bass Publishers, San Francisco [In English].
13. INSEAD (GTCI). Global Talent Competitiveness Index. [online]. Available online: < http://global-indices.insead.edu/gtci/> [In English].
14. Levchenko, O.M., Levchenko, A.O., Horpychenko, O.V. and Tsarenko, I.O. 2017. The impact of higher education on national economic and social development: comparative analysis. In: Journal of Applied Economic Sciences. Vol. XII, No. 3(49), pp. 850 – 862 [In English].
15. Mowery, D.C., Nelson, R.R., Sampat, B.N. and Ziedonis, A.A. 2004. Ivory Tower and Industrial Innovation: University–Industry Technology Transfer Before and After the Bayh-Dole Act. (Eds.). Stanford Business Books, Stanford [In English].
16. National Academy of Engineering 2003. The Impact of Academic Research on Industrial Performance. National Academies Press,Washington, DC [In English].
17. OECD 1999. The Response of Higher Education Institutions to Regional Needs. OECD Publishing [In English].
18. Wolfe, D.A., 2005a. The role of universities in regional development and cluster formation, in Jones, G., McCarney, P., Skolnick, M. (Eds.). Creating Knowledge, Strengthening Nations. University of Toronto Press, Toronto, pp. 167–194 [In English].

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

THE COMPARATIVE ANALYSIS OF HUMAN RESOURCES DEVELOPMENT: MODERN TENDENCIES AND WAYS OF INCREASING IN TERMS OF FORMING THE INNOVATIVE ECOSYSTEMS

Levchenko Anna

PhD of Economics, Associate Professor. Department of Economics. Management and Commercial Activity. Central Ukrainian National Technical University. (Ukraine)

E-mail: lao18057@gmail.com

ABSTRACT

The purpose of this paper is to conduct a comparative analysis of human resources development in the countries of the world and in Ukraine, taking into account the global competitiveness index, the level of skills of current workforce and labour market development, components of innovation ecosystems such as business dynamism and innovation capability for 45 countries. Also, were analyzed the level of GDP per capita and the average monthly salary for these countries. It was marked out, that in the growth of innovation ecosystems the leading role play personnel professional development and availability in the country of specialists, capable for effective innovative work. At the same time, the increasing of globalization, integration and competition processes in the world leads to raising the demands for knowledge and skills of human resources. In turn, innovative progress should contribute to the economic well-being of the country and its citizens.
Key words: human resources, personnel development, skills, digitalization, innovation, innovation ecosystem, innovation development, competitiveness

INTRODUCTION

The formation of innovative model of economy in the conditions of globalization nowadays is based on a number of contemporary challenges. The spreading of the achievements of the 4-th industrial revolution, advances in the development of information and communication technologies, robotics, biotechnology, nanotechnology, big data technologies leads to the need to review the competitive advantages of the countries. As a result, modern forms and models of cooperation are becoming widespread. To these forms belong innovation ecosystems, "triple helix" model, "quadraple helix" model and other ways of stepping up stakeholder's collaboration. This is why organizational, economic and social aspects of functioning of such forms of the interaction require further scientific research.

Literature review. To various aspects of the formation and functioning of innovation ecosystems are devoted the scientific papers of many domestic and foreign scientists. In particular, foreign experts thoroughly research the issues of mapping, analysis and design of innovation ecosystems [8]; carry out the analysis of the components of the innovation ecosystem, which lead to the structuring of organic and dynamic relationships that a particular organization has with different external organizations, which allows to create innovative products faster [5]; study the role of open innovation as an iterative model with the possibility of creating an ecosystem, based on the specifics of the development of economies of the world in terms of digitization of all spheres of life, characterized by interdependence and integrated cooperation, so added value can be created only through mutual exchange [2]; identify key similarities between natural and socio-technical ecosystems, arguing that the ecosystem concept can be applied to many levels of the digital innovation landscape, linking different actors such as processes, products, services, organizations, industries and communities as they attract resources, including technology, knowledge, create and understand the value of digital innovation [13]; explore the strategic aspects of the collaboration of companies with research institutions in innovation ecosystems, identifying two types of strategies: aimed at gaining specific knowledge for the further development of a particular technology or product (IES, aimed at incremental innovation) and aimed at harnessing the full potential of innovation ecosystems (IES aimed at rather radical innovations) [11]; develop the idea of an "innovation ecosystem", that is a system of interconnected players and processes that together cause innovation to occur, considering innovation in real time and in uncertainty [6]; develop digital monitoring tools, including information on key actors, material flows and ongoing stakeholder collaboration, and recommendations to support the development and management of effective innovation ecosystems, such as the importance of creating an open data exchange culture among key regional innovation actors [10]. Among domestic scholars, Fedulova L. studies peculiarities of functioning and directions of development of regional innovation ecosystems in Ukraine [3]. Bazhal Yu. explores the issues of implementation of the "triple helix" model in the innovation ecosystem of Ukraine [1]. Yermak S. offers a vision of ways to develop the concept of innovation ecosystems in today's economy [15].

At the same time, the issues of development of organizational and economic justification for creation of innovation ecosystems in the conditions of decentralization of economic regulation, determination of strategic priorities of development of countries territories on the basis of smart specializations, creation of territorial innovation centers that would provide constructive cooperation of all key actors remain unresolved.

Purpose of the study. The purpose of this paper is to carry out a comparative analysis of human resources development in the countries of the world in comparison with Ukraine, to offer the main directions of personnel development increasing in Ukraine in terms of forming the innovative ecosystems.
Results. An innovation ecosystem is a set of organizational, structural and functional components (institutions) and their relationships involved in the creation and application of scientific knowledge and technologies that determine the legal, economic, organizational and social conditions of the innovation process and ensure the development of innovation activity at the enterprise level , as well as at the level of the region and the country as a whole, according to the principles of self-organization [4].
The key elements of an innovation ecosystem include: economy, communication, knowledge and experience, coordination, co-design, common values, ethics, ecology, technology transfer and commercialization, internationalization, education and development, communication and promotion, financing of innovation, cooperation, E-platforms [9].
According to the approach of the World Economic Forum, innovation ecosystem includes two components, which describe the business dynamism and innovation capability of each country. In turn, the business dynamism is evaluated by such indicators: administrative requirements (cost of starting a business, time to start a business, insolvency recovery rate, insolvency regulatory framework); entrepreneurial culture (attitudes towards entrepreneurial risk, willingness to delegate authority, growth of innovative companies, companies embracing disruptive ideas). The indicators of innovation capability are: interaction and diversity (diversity of workforce, state of cluster development, international co-inventions, multi-stakeholder collaboration); research and development (scientific publications score, patent applications per million population, R&D expenditures % GDP, research institutions prominence) and commercialization (buyer sophistication, trademark applications per million population) [14].
To the main characteristics of innovation ecosystems can be related the following:
-self-organization (the ability of the system to create "order" without the involvement of external or internal leader when changes happen spontaneously or as a result of local interactions);
-emergency (property of the system to have characteristics, which cannot have its elements separately -cooperation between companies leads to a result they cannot produce alone);
- adaptability (adaptation to changing conditions through internal change);
- co-evolution (the process of mutual change in the course of development interconnected entities) [15];
- interactivity (begin on the principles of network mechanism and network organization of scientific, technological and innovative activities) [4].
Accordingly to the results of rating of the world countries by the Global Competitiveness Index 4.0 in 2019 (Fig. 1), we can mark, that the leaders are Singapore (84.8), United States (83.7), Netherlands (82.4), Switzerland (82.3) and Japan (82.3). At the same time in Ukraine the meaning of Global Competitiveness Index is only 57.0, while in Romania – 64.4, in Poland – 68.9, in Czech Republic – 70.9, etc.

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

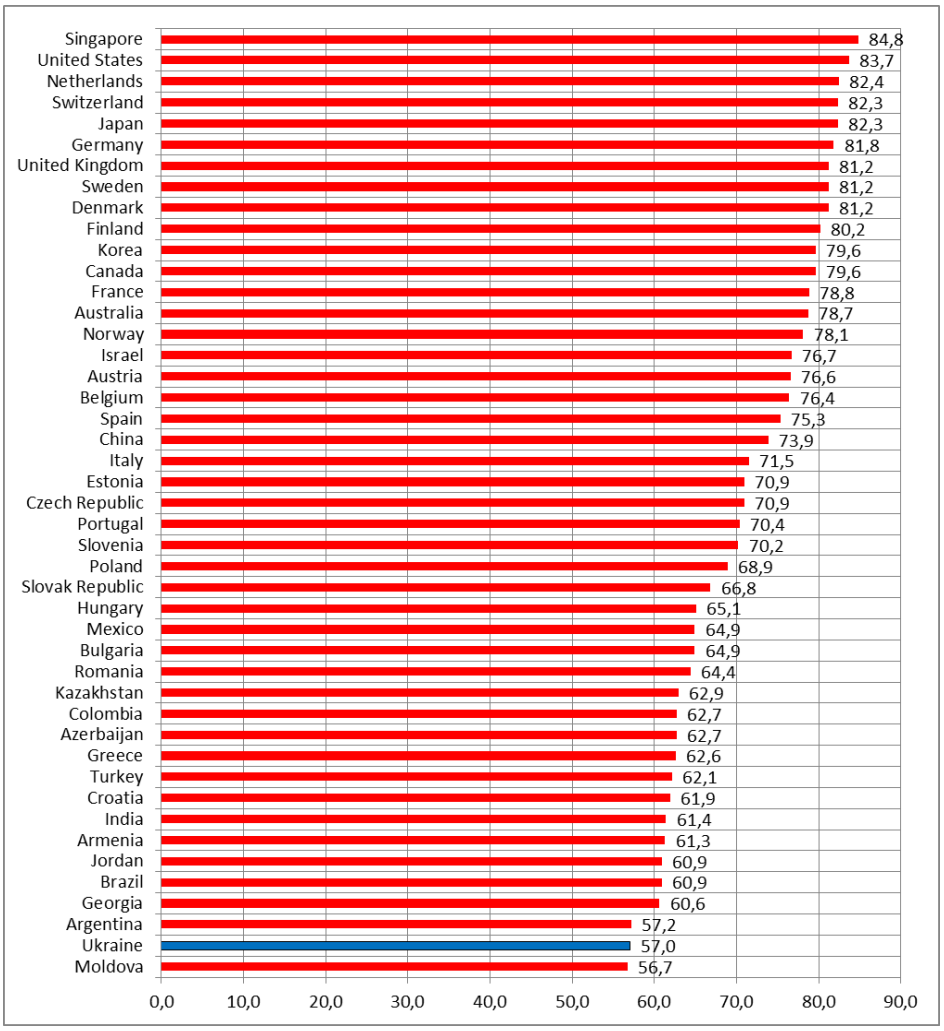


Figure 1. The rating of the world countries by the Global Competitiveness Index 4.0, 2019 (0-100)
Source: formed by the author according to the data of international statistics [14].

The meanings of the level of human resources development and innovation ecosystem state in the world countries in 2019 are presented in the Table 1. As we can see, the differences between the selected 45 countries are quite high. So, the level of the indicator of skills of current workforce, which include extent of staff training, quality of vocational training, skillset of graduates, digital skills among active population and ease of finding skilled employees, is 73.1 – in Singapore, 78.2 – in Switzerland, 75.8 – in Finland, while in Georgia – 40.6, in Croatia – 39.9, in Brazil – 39.4. In Ukraine this indicator occupies an average level – 54.5 in 2019.

Table 1. The level of human resources development and innovation ecosystem state in the world countries, 2019 (0-100)

	Human resources development		*Innovation ecosystem*	
	Skills of current workforce	*Labour market*	*Business dynamism*	*Innovation capability*
Argentina	53,2	51,8	58,3	41,7
Armenia	49,4	66,4	62,5	39,4
Australia	63,5	69,1	75,3	69,5
Austria	67,7	67,2	69,3	74,5
Azerbaijan	61,3	69,4	71,5	38,3

Belgium	65,6	63,8	74,4	71,4
Brazil	39,4	53,5	60,2	48,9
Bulgaria	49,1	64,6	61,9	45,0
Canada	66,2	75,2	76,5	74,0
China	59,4	59,2	66,4	64,8
Colombia	51,7	59,2	64,2	36,4
Croatia	39,9	56,0	54,6	37,8
Czech Republic	54,7	63,3	68,7	56,9
Denmark	71,6	78,2	80,0	76,2
Estonia	60,5	70,2	69,9	52,1
Finland	75,8	71,5	78,1	75,8
France	60,8	62,9	71,4	77,2
Georgia	40,6	65,3	62,2	32,7
Germany	67,6	72,8	79,5	86,8
Greece	49,6	52,7	58,8	45,1
Hungary	43,6	58,6	58,1	47,4
India	52,9	53,9	60,0	50,9
Israel	67,5	71,1	79,6	74,2
Italy	52,7	56,6	65,7	65,5
Japan	61,7	71,5	75,0	78,3
Jordan	57,8	57,7	56,6	38,8
Kazakhstan	50,8	67,8	66,6	32,0
Korea	62,8	62,9	70,5	79,1
Mexico	50,3	55,8	65,8	43,6
Moldova	44,4	61,9	60,1	29,9
Netherlands	72,9	74,9	80,6	76,3
Norway	69,3	73,3	76,9	68,0
Poland	48,5	59,9	62,0	49,7
Portugal	57,4	63,2	69,7	53,7
Romania	44,9	61,6	59,7	42,3
Singapore	73,1	81,2	75,6	75,2
Slovak Republic	48,4	60,7	62,8	46,3
Slovenia	57,7	64,5	70,1	58,2
Spain	56,2	61,1	67,3	64,3
Sweden	69,3	69,4	79,4	79,1
Switzerland	78,2	79,5	71,5	81,2
Turkey	42,7	52,9	58,8	44,5
Ukraine	**54,5**	**61,4**	**57,2**	**40,1**
the United Kingdom	64,6	75,0	77,0	78,2
the United States	71,7	78,0	84,2	84,1

Source: formed by the author according to the data of international statistics [14].

In most of selected countries the overall level of labour market development is higher, than the level of skills of current workforce, and in some of them the difference is significant. That's why we can notify, that the problem of increasing the level of skills of current workforce is very urgent, especially for developing countries (Armenia, Brazil, Bulgaria, Kazakhstan, Moldova, Romania, etc.).

Another important aspect of the competitiveness of the countries is the level of the innovation ecosystem development. From the Table 1 we can see, that in developed countries the meanings of both indicators – business dynamism and innovation capability – are high (United States, United Kingdom, Japan, Sweden, Switzerland, etc.). But in developing countries the main problem is a low level of innovation capability. For example, in Ukraine the level of business dynamism is 57.2, while the level of innovation capability – only 40.1 in 2019. The same situation is observed in Armenia, Azerbaijan, Moldova, Romania and others.

As a result of difference in the conditions of economic and innovative development, it exists a great divergence in the level of GDP per capita (Fig. 2). For example, in Ukraine – it achieves only 2963.5 US$ in 2019, while in Switzerland – 82950.3 US$, so it's variance is nearly 28 times.

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

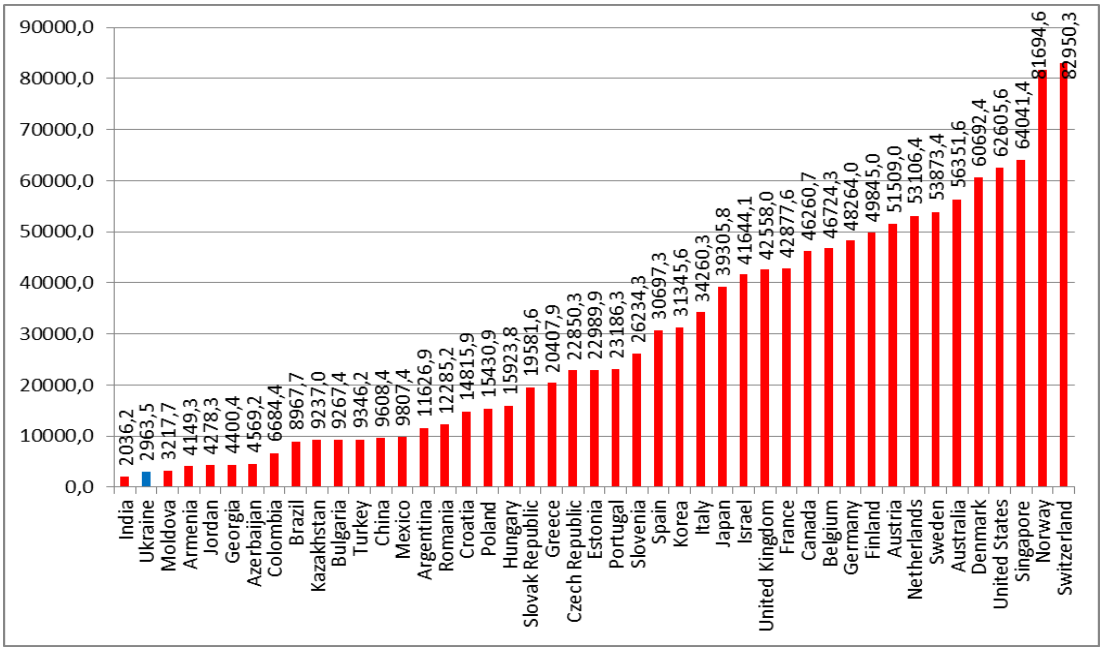


Figure 2. The rating of the world countries by the GDP per capita US$, 2019
Source: formed by the author according to the data of international statistics [14].

Obviously, the average monthly salary in selected countries differs a lot (Fig. 3). The lowest level of the average monthly salary is observed in Ukraine (only 261.2 US$ in 2017), Moldova (302.0 US$), Azerbaijan (307.1 US$), Georgia (398.1 US$), Armenia (404.1 US$), Kazakhstan (462.7 US$). The highest average monthly salary is in Netherlands (4401.6 US$), United States (5046.5 US$), Denmark (5487,1 US$), Norway (5492,0 US$), Switzerland (7351,7 US$). This situation makes a negative influence at the level of productivity of the employed population in developing countries, their interest in professional development, improvement of skills and competences, implementation of innovative ideas and innovations. So, the problem of increasing the efficiency of human resources development needs a complex approach to its solving, including introduction of economic, social and organizational measures, motivation and stimulation of employees to effective innovative work.

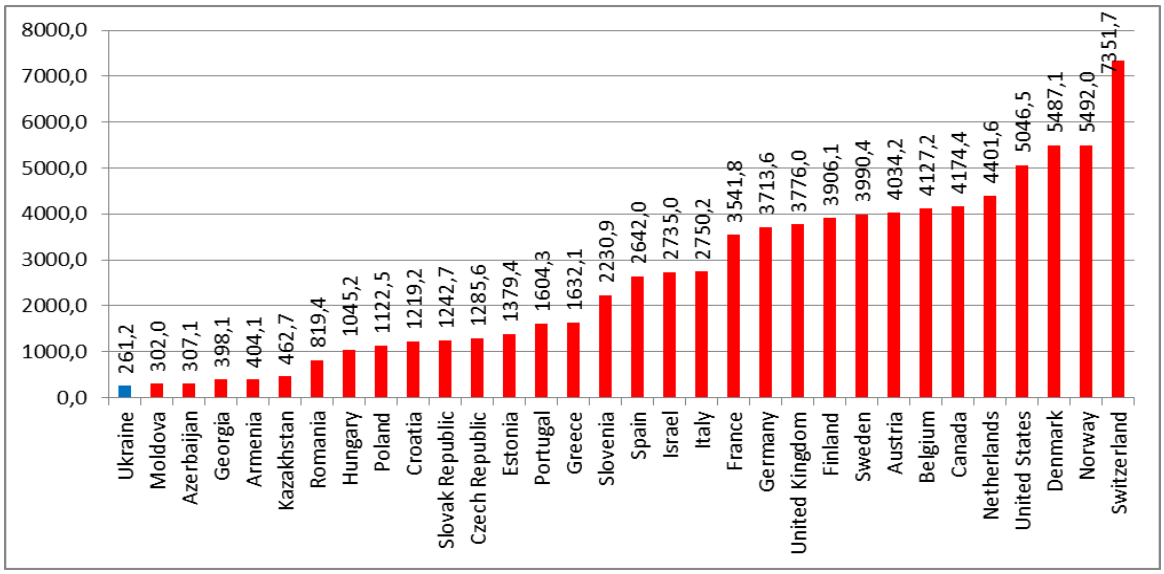


Figure 3. The rating of the world countries by the average monthly salary US$, 2017
Source: formed by the author according to the data of State Statistics Service of Ukraine [12].

In general, the creation and development of innovative ecosystems in Ukraine is hindered by:
- low level of public funding;
- lack of a favorable climate for innovation;
- lack of innovative development programs;
- unwillingness of investors to invest in innovation;
- lack of a developed business environment;
- problems with commercialization of the results [15];
- low level of income and salaries of a great part of population;
- insufficient level of innovation infrastructure development;
- low level of innovative culture, etc.

While determining the prospects for the formation and development of innovative ecosystems, it is advisable to study such components: educational component of training of specialists, professional development of employees, directions of improvement of organizational and regulatory influence in the conditions of decentralization of power and management, financial analysis, audit and information support, tax regulation, personnel support, investment activity, social development, national security [7].

The key ways of personnel development increasing in Ukraine in terms of innovation ecosystem forming, at our opinion, are: the introduction of modern forms, methods and approaches of formal, non-formal and informal learning; raising the level of information and innovation culture of the employers; development of emotional intelligence; widespread use of modern information and communication technologies; using of active and interactive methods of participation in the learning process; paying considerable attention to teamwork, practical orientation of learning; developing the ability to learn and create new knowledge. It's also very important to achieve a balance between economic benefits and the implementation of humanistic approach in human resources management, the purposes of environmental protection.

Conclusions and prospects for further research. According to the results of the comparative analysis of human resources development in the countries of the world and in Ukraine, taking into account the global competitiveness index, the level of skills of current workforce and labour market development, components of innovation ecosystems, we came to the following conclusions. In contradistinction to the developed countries, in Ukraine, as well as in other developing countries, exists a low level of innovation capability, which is one of the most important precondition of innovative ecosystems forming and functioning. Also, very low level of income and salaries negatively influences the level of productivity of the employers and the results of their professional development.

The prospect of further research is to work out a complex approach for increasing the efficiency of human resources development, to find out the ways of development of emotional intelligence, to suggest the main directions of effective collaboration between stakeholders of innovation ecosystems.

REFERENCES

1. Bazhal Yu. (2017). Implementation of the "triple helix" model in the innovation ecosystem of Ukraine. Economics and forecasting. №3. P. 124-139. [in Ukrainian].
2. Fasnacht D. (2018). Open Innovation Ecosystems. In: Open Innovation Ecosystems. Management for Professionals. Springer, Cham. DOI https://doi.org/10.1007/978-3-319-76394-1_5. [in English].
3. Fedulova L. (2016). The ways of development of regional innovative ecosystems in Ukraine. Actual problems of the economy. №7. P. 240-248. [in Ukrainian].
4. Fedulova L., & Marchenko O. (2015). Innovative ecosystems: the sense and methodological frameworks of formation. Economic theory and law. №2. P. 21-33. [in Ukrainian].
5. Ferasso, M., Wunsch Takahashi, A. and Prado Gimenez, F. (2018). "Innovation ecosystems: a meta-synthesis", International Journal of Innovation Science, Vol. 10 No. 4, pp. 495-518. https://doi.org/10.1108/IJIS-07-2017-0059. [in English].
6. Fransman, Martin. (2018). Innovation Ecosystems: Increasing Competitiveness. DOI 10.1017/9781108646789. [in English].
7. Levchenko O., & Tkachuk O. (2018). Organizational-economic principles of creation of innovative-integrated structures in conditions of socio-economic instability. Central Ukrainian Scientific Bulletin. Economic sciences. Vol. 1(34). P. 9-20. [in Ukrainian].
8. Madis Talmar, et al. (2018). Mapping, analyzing and designing innovation ecosystems: The Ecosystem Pie Mode. Long Range Planning. https://doi.org/10.1016/j.lrp.2018.09.002 [in English].
9. Pyka J., & Janiszewski A. (2014). Smart Specialisations in Regional Innovation Ecosystem. Journal of european economy. Vol. 13, №1. P. 33-51. [in English].
10. Ruokonen H, Leino J. (2018). Developing and Managing Innovation Ecosystems in the Circular Economy : Outline of a Digital Monitoring Tool. Stockholm: Nordregio; (Nordregio Policy Brief). http://urn.kb.se/resolve?urn=urn:nbn:se:norden:org:diva-5325. [in English].

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

11. Schroth, F., & Häußermann, J. Jakob. 2018. Collaboration Strategies in Innovation Ecosystems: An Empirical Study of the German Microelectronics and Photonics Industries. Technology Innovation Management Review, 8(11): 4-12. http://doi.org/10.22215/timreview/1195. [in English].
12. Statistical Yearbook of Ukraine. 2018: State Statistics Service of Ukraine 2019. Access mode: www.ukrstat.gov.ua/druk/publicat/kat_u/2019/zb/11/zb_yearbook_2018.pdf [in Ukrainian].
13. Wang, Ping. (2019). "Theorizing digital innovation ecosystems: a multilevel ecological framework". In Proceedings of the 27th European Conference on Information Systems (ECIS), Stockholm & Uppsala, Sweden, June 8-14, 2019. ISBN 978-1-7336325-0-8 Research Papers. https://aisel.aisnet.org/ecis2019_rp/9. [in English].
14. World Economic Forum. 2019. The Global Competitiveness Report 2019: Switzerland. Access mode: www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf [in English].
15. Yermak S. (2018). The development of the concept of innovative ecosystems in the modern economy. Economic Bulletin of Zaporizhzhya State Engineering Academy. Vol. 6.P. 199-203 [in Ukrainian].

THE PRIORITIES OF FORMING AND DEVELOPMENT OF INNOVATIVE-INTEGRATED STRUCTURES IN UKRAINE UNDER THE MODERN CONDITIONS

[1]Levchenko Oleksandr, [2]Tkachuk Olga, [3]Hani Haidoura
[1]Doctor of Economics, Professor,Vice-rector for scientific activities. Central Ukrainian National Technical University. (Ukraine)

[2]PhD of Economics, Associate Professor. Department of Economics, Management and Commercial Activity, Central Ukrainian National Technical University. (Ukraine)

[3]PhD of Economics, American University of Culture and Education (AUCE), Vise President. (Lebanon)

E-mail: [1]om_levchenko@ukr.net; [2]alionatkachuk2017@ukr.net; [3]hani.haidoura@gmail.com

ABSTRACT

The acceleration of the pace of innovative development of the economy of Ukraine necessitates the search for effective ways of forming innovative-integrated structures, studying foreign experience of their creation and compliance of regulatory and legal regulation of these issues with the world legislative practice. As the level of socio-economic development of different regions of Ukraine is significantly differentiated, it is advisable to develop and approve a methodology for assessing the readiness of regions to form innovative-integrated structures. The inefficiency of the territorial innovation potential and the stagnation of the socio-economic development of the national economy, which are significant threats to the national security of the state, testify to the need to justify the applied aspects (including organizational, regulatory, logistical, financial, personnel, educational, information support) of creating innovative structures in the regions of the country in accordance with the priorities defined by the National Innovation System and the available resources, defines key performance indicators for their performance.
Keywords: innovation, innovative-integrated structure, innovation activity, cluster development, innovation potential

INTRODUCTION

In the conditions of formation of the innovative model of economy development in Ukraine and the course of European integration chosen by our country, the issues of creation of subjects of economic activity and their associations capable to carry out efficient economic activity and accelerate the pace of innovative development of economy become especially relevant. However, today in Ukraine there is a decrease in the pace of innovation activity, the volume of sales of innovative products in the country and abroad is declining, the level of deterioration of fixed assets in most sectors of the national economy is critical and their updating is extremely slow, which poses a significant threat to the national security of the state. Formation of innovative-integrated structures and their further integration into national and international economic systems are an effective means of solving these problems.
The conducted research has shown the need to develop practical and applied recommendations for the formation and development of innovative-integrated structures in Ukraine as one of the key conditions for ensuring the economic growth of Ukraine in the conditions of unstable socio-economic environment, creating an innovation-friendly environment, providing support to entities implementing innovative activities, depending on the available innovation potential.

Literature review. Various aspects of the formation and functioning of innovative-integrated structures are devoted the scientific researches of many domestic and foreign scientists. In particular, foreign experts thoroughly investigate the role of such structures in ensuring the national security of innovative development of the US economy in the context of global competitiveness [9], the functioning and specificity of managing competitive cluster entities in France [2], perform comparative analysis of German clusters in comparison with other countries [5], investigate the role of economic clusters in spatial planning during periods of planned and market economy in China [11]. Useful practical experience on the formation of innovative clusters, which can be adapted to national realities, includes studies on the importance of clusters in terms of gaining regional economic growth in Romania in the context of post-crisis and globalization processes [8], a comparative description of the prerequisites for cluster formation in Central Europe with emphasis on Poland, the Czech Republic, Slovakia and Austria [1].
At the same time, existing scientific works need to be further deepened and supplemented in order to form a complex system of development of innovative-integrated structures, which would include a set of organizational, managerial, economic, regulatory, personnel, financial aspects of the formation of innovative-integrated structures, methodological bases of security assessment and methodological bases of innovative potential of territories rising.

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

Purpose of the study. The aim of the paper is to study the practical and applied foundations of the formation and development of innovative-integrated structures as a factor in ensuring national security in an unstable socio-economic environment and the chosen course of European integration of Ukraine.

Results. In the conditions of rapid deployment of innovation processes, all integrated organizations equally faced the problem of active participation in scientific and innovation activities, without which it is impossible to maintain stability and competitiveness in the market environment, to provide a qualitatively new level of reproduction of production processes, as well as the desired profitability [7]. One of the most common forms of innovative-integrated structures are the innovation clusters.

The innovation cluster is a progressive form of establishing a system of cooperative communications of business and research cooperation between business entities with the possibility of involving state structures of different departmental affiliations, the functional basis of which will be a research organization – a participant of the national technology transfer network, technology and technology transfer / or organizational innovation, adapting it to the enterprise, highlighting all the possible related risks and providing full economic rationale for the introduction of appropriate innovative business solutions [3].

We consider, that the main components of the formation and development of innovative-integrated structures are [6]:

1. Educational component – defining the role of vocational education institutions and educational component in the formation of innovation ecosystems, functions and ways of improving the activity of the research sector of universities during the generation of innovations, the implementation of an integrated assessment of the competitiveness of higher education in terms of transition to an innovative model of the economy, characteristics quality management systems for higher education institutions and approaches to optimizing higher education funding while training specialists for higher education need of innovative-integrated structures.
2. Professional development – development of proposals for introduction of the system of "lifelong learning" of staff of innovative-integrated structures and definition of its economic advantages in the conditions of formation of innovative model of economy development taking into account foreign experience, determination of influence of professional development on the quality of human capital of innovative-integrated structures analysis of the state and tendencies of human resources development in measuring international comparisons.
3. Human resources – analysis of the adequacy of the human resources of the regions to the needs of the innovative economy, the state of human capital development in the measurement of the formation of innovative-integrated structures at the present stage.
4. Organizational and regulatory impact – determination of strategic directions of increasing the competitiveness of the national economy and priorities of development of regions in terms of modern innovation dynamics, practical aspects of improving the evaluation of the efficiency of the modern public procurement system in Ukraine in the context of improving the process of regulating the activities of innovation and integrated approach, directions of activization of activity of territorial communities in maintenance of development of innovative-integrated structures.
5. Financial analysis, audit and information support – developing an approach to the fundamental analysis of exchange rates as a factor of sustainable functioning of innovative-integrated structures under the influence of political and economic events in the conditions of socio-economic instability, determining the role of historical financial information as a criterion for audit classification, auditing and other tasks to provide confidence to business entities, ways to develop the market for audit services for innovative-integrated structures in Ukraine and in the world, identification of information needs of participants of innovative-integrated structures as users of audit results.
6. Tax regulation – determining priorities for improving the taxation system for innovative products producers and ensuring their state support, taking into account regional and sectoral priorities, assessing the possibilities of developing innovatively integrated business structures within the existing tax system in Ukraine, reviewing tax instruments to stimulate innovation activities management.
7. Investment support – substantiation of ways of increasing the investment attractiveness of domestic producers of innovative products by types of economic activity in the conditions of strengthening globalization processes in the world, directions of state financial support for the development of innovative activity in Ukraine.
8. Social development – defining the directions of formation of social capital of a regional research and production innovation cluster, in particular, on the basis of higher education institutions.
9. Encouragement of entrepreneurial activity – identification of problems and prospects of development of innovative entrepreneurship, in particular, of venture business in Ukraine.
10. Ensuring national security – defining the peculiarities of functioning of innovative-integrated structures as a factor of national security of the state.

The rating of some European countries and Ukraine by the indicator “State of cluster development” in 2019 is presented at the Fig. 1.

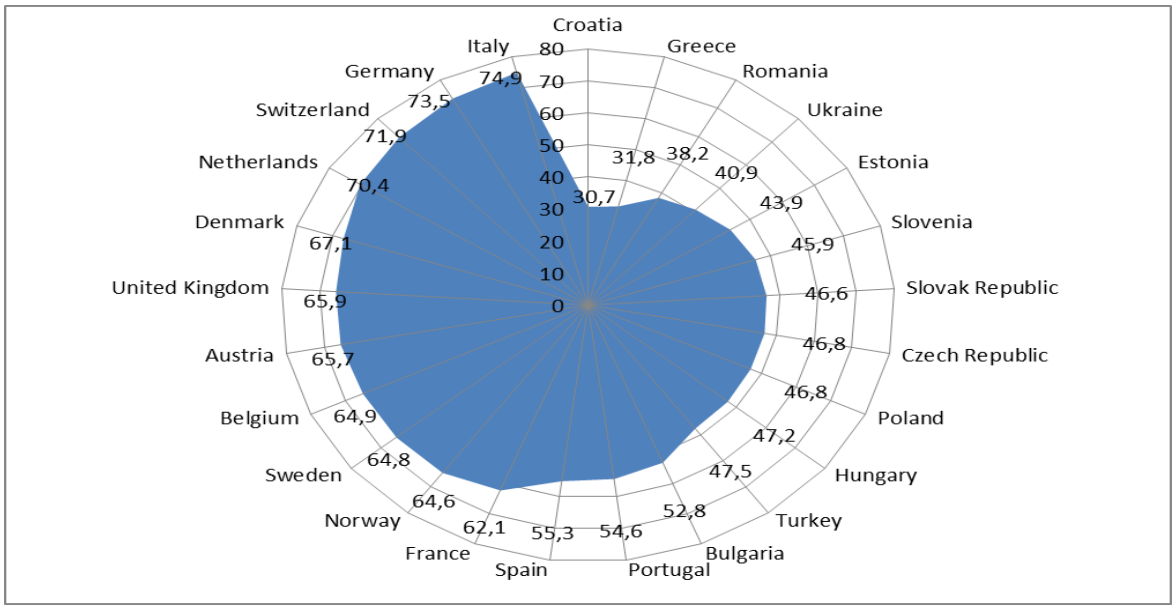


Figure 1. The rating of some European countries and Ukraine by the state of cluster development (according to Global Competitiveness Index 4.0, 2019, meanings from 0 to 100)
Source: formed by the authors at the base of international statistics [10].

As we can see, the difference between the most developed European countries and others is rather significant. Very high is the state of cluster development in Italy (74.9), Germany (73.5), Switzerland (71.9), Netherlands (70.4), Denmark (67.1), while in Ukraine – only 40.9. That's why, there is a considerable scope for enhancing cluster development potential, which should be involved.

The priorities of innovative-integrated structures development in Ukraine in future should include:

-defining the theoretical foundations for the functioning of innovative ecosystems, including principles, factors, benefits and threats;

- identification of advantages and disadvantages of the process of decentralization of regulation of economy in Ukraine;

-conducting an analysis of the best domestic experience in the field of efficient functioning of the amalgamated hromadas, as well as leading foreign practices of decentralization reforms;

-carrying out an analysis of the status and tendencies of functioning of the amalgamated hromadas by regions of Ukraine;

-development of a comprehensive methodology and assessment of the quantitative and qualitative parameters of socio-economic status and innovative potential of the territories;

-substantiation of mechanisms improvement directions in the sphere of educational potential and research institutions as an integral part of innovative clusters of territories, creation of innovation centers as a prerequisite for development of innovative potential of the region through successful functioning of territorial innovation ecosystems;

-development of proposals for improvement of regulation of personnel, educational, scientific, financial-investment, information-analytical, tax, ecological and other components of territorial innovation ecosystems;

-developing measures to enhance the interaction of key stakeholders within territorial innovation ecosystems (the Quadruple Helix Model);

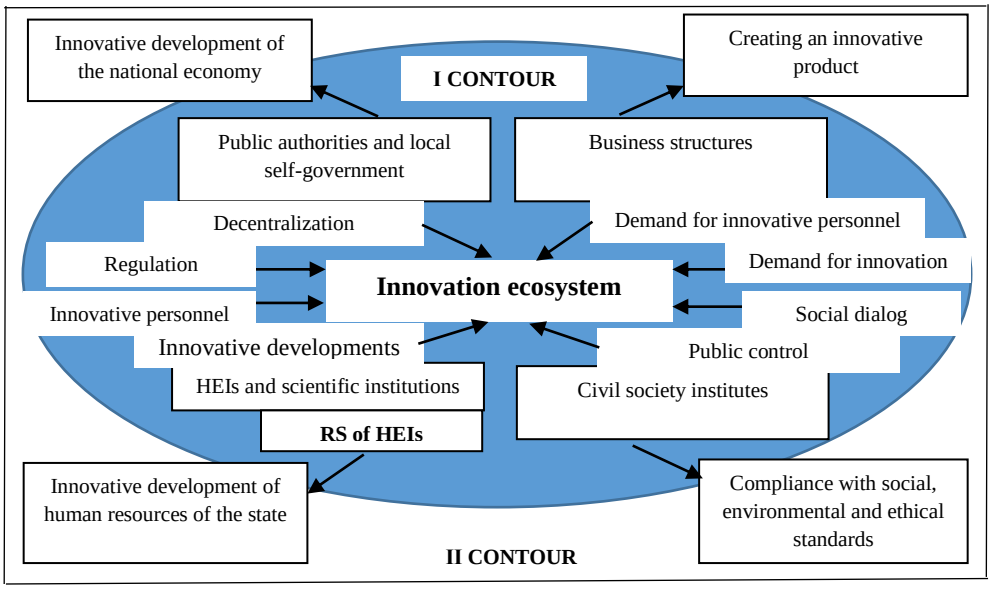
-development and implementation of measures to enhance the professional competence of the amalgamated hromadas managers and employees by acquiring the modern organizational, managerial, analytical and other skills necessary to ensure integrated, effective, innovation-oriented development of territorial associations in the context of decentralization;

-development of proposals for ensuring the functioning of the model of vertical and horizontal knowledge transformation within territorial innovation ecosystems;

-development of practical recommendations for ensuring local economic development, taking into account the particularities of activities in the context of decentralization.

So, nowadays the organizational support for the implementation of strategic priorities of state regulation of innovative development of the research sector of higher educational institutions (RS of HEIs) in Ukraine under the conditions of global localization of the innovation-network economy, formation of practical bases for the formation of innovative ecosystems becomes very important (Fig. 2).

ISSN: 2613-5817; E-ISSN: 2613-5825



I CONTOUR – Tactical interaction, during which the RS of HEIs is the generator of innovative developments, which are further commercialized by other entities of the innovation ecosystem, and contribute to the innovative training of professionals

II CONTOUR – strategic results achieved through the active participation of the RS of HEIs in all

Figure 2. The role of the research sector of higher educational institutions at the innovation ecosystem development
Source: formed by the authors according to [4]

It can provide the following benefits:
-will facilitate their development taking into account the tendencies of internationalization of research activity, decentralization of financial processes of regional cluster network structures;
-update promotion format, organizational and informational support executive bodies of modernization processes as full participants in venture capital schemes, effectively combining their activities in the functions of government regulation and public sector research HEIs internationally, national and regional economy and the level of individual HEI.

Conclusions and prospects for further research. The application of effective tools, levers and methods of managing the process of development of innovative associations, the formation of territorial innovation ecosystems, the introduction of smart-approach to the organization of management will help to increase the competitiveness of territories and their investment attractiveness by creating high-quality new jobs, ensuring a high level of added value and decent value remuneration of specialists, and consequently the preservation and development of human resources, overcoming negative migration processes in Ukraine.
The prospect of further research is to work out proposals for the implementation of effective mechanisms for ensuring the effective functioning of territorial associations, the creation of innovation centers, the establishment of cooperation of all stakeholders (state and local government, business structures, scientific and educational institutions, the public), which will significantly increase the level of competitiveness both at the level of regions and the state as a whole.

REFERENCES

1. Bialic-Davendra M., Pavelková D, & Vejmělková E. (2014). The Clusters Phenomenon in the Selected Central European Countries. Cambridge Scholars Publishing, 2014. 220 p. [in English].
2. Chabault D., & Martineau R. (2013). L'encadrement des pôles de compétitivité par l'État: entre stratégie émergente et injonctions étatiques. Politiques and management publuc, 2013, Volume 30/3, pp. 413-432. [in French].
3. Farat O.V. (2014). The essence and types of development of innovative clusters. Scientific Bulletin of Kherson State University. Series: Economic Sciences. Vol. 9(7). P. 67-71. [in Ukrainian].
4. Haidoura H.M. (2018). State regulation of innovative development of the research sector of higher education institutions of Ukraine. Thesis for obtaining of Candidate of Economic Sciences Degree. Central Ukrainian National Technical University Ministry of Education and Science of Ukraine, Kropyvnytskyi. 20 p.
5. Hantsch S., Kergel H, & Lämmer-Gamp T. (2013). Cluster management excellence in Germany: German clusters in comparison with European peers. European Secretariat for Cluster Analysis (ESCA), Berlin, March 2013. 26 p. [in English].

6. Levchenko O., & Tkachuk O. (2018). Organizational-economic principles of creation of innovative-integrated structures in conditions of socio-economic instability. Central Ukrainian Scientific Bulletin. Economic sciences. Vol. 1(34). P. 9-20. [in Ukrainian].
7. Marchuk L.P. (2012). Features of functioning of integrated structures in conditions of innovative development. Economy and region. №1. P. 189-194. [in Ukrainian].
8. Vlasceanu C., & Vorovenci I. (2014). The role of clusters and cluster development tools in the European Unionin regional economic development, in the context of post-crisis economy and globalization. Studies in Business and Economics. 2014, vol. 9, issue 1, pp. 148-155. [in English].
9. Weisbrod G.A., Cuter D, & Duncan C. (2013). The Role of Transit in Support of High Growth Business Clusters in the U.S. American Public Transportation Association, December 2013. 84 p. [in English].
10. World Economic Forum. 2019. The Global Competitiveness Report 2019: Switzerland. Access mode: www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf [in English].
11. Zhenshan Y., Pu H., & Jianming C.C. (2015). Economic clusters: A bridge between economic and spatial policies in the case of Beijing. Cities, Volume 42, Part B, February 2015, Pages 171-185. [in English].

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

CONCEPTUAL FRAMEWORKS FOR PERSONNEL MANAGEMENT PROCESSES REENGINEERING IN THE DIGITAL ECONOMY

[1]Lopushniak Halyna, [2]Kravchuk Oksana

[1]Head of Personnel Management and Labor Economics Department, Kyiv National Economic University named after Vadym Hetman. (Ukraine)

[2]Assistant Professor of Personnel Management and Labor Economics Department, Kyiv National Economic University named after Vadym Hetman. (Ukraine)

Email: [1]halyna.lopushniak@kneu.edu.ua; [2]kravchuk_ok@yahoo.com

ABSTRACT

The digitalization of personnel management, the constant introduction of new digital technologies into the HR manager's activities requires the description, optimization, and personnel management processes reengineering of that should be the basis for the implementation of any digital technology. The purpose of the study is to formulate the conceptual bases for the implementation of reengineering of personnel management processes based on the study and generalization of the experience of organizations and the development of the theoretical base available today. The article deals with the issues of personnel management business processes reengineering of a modern organization. The algorithm of carrying out personnel management business processes reengineering in the organization is offered. The changes that can be expected as a result of the personnel management business processes reengineering in relation to personnel work are justified, in order to successfully ensure the business processes of the organization.
Keywords: reengineering, business process, process approach, personnel management, personnel management processes.

INTRODUCTION

Current management trends are defining new approaches to personnel management. The digitalization of personnel management, the constant introduction of new digital technologies into the HR manager's activities requires the description, optimization, and personnel management processes reengineering of that should be the basis for the implementation of any digital technology. These processes involve rethinking ways of working at all levels of HRM, eliminating unnecessary and inefficient subprocesses and procedures, and finding more effective ways of operating the HR service. Business process reengineering is one of the important areas of improvement of personnel management. It aims not only to make every procedure effective, but also to make the whole system of these procedures more productive. That is why the HR manager who is about to start the optimization and reengineering process needs to know the goals and expected results, the timeframes required for these processes, the effort and the financial resources they need.

Reengineering allows to standardize the process by introducing standard procedures and models of fundamental changes in the nature of the work performed and the entire administrative system. Personnel management plays a significant role in the entire business process of a company. Human resource integrates and integrates all business processes of the company, directly supports organizational culture and corporate strategies. Therefore, personnel management business processes reengineering is an integral part of the company's business processes reengineering and means renaming and redesigning personnel management processes in order to achieve optimal personnel management and overall work of the company.

Today, the issues of personnel management effectiveness need to be considered in the light of the changing management paradigm, which response to the peculiarities and trends of the digital economy, which means the transition from a managerial hierarchy to working in teams focused on continuous innovation and mutual knowledge sharing. Therefore, it is necessary to rethink the way business is organized and take a fundamentally new approach that will fully realize the benefits of new digital technologies usage in personnel management.

The experience of implementing a business process management approach in personnel management demonstrates the importance of the fact that the indispensable condition for the successful implementation is its fulfilment in all directions, in all departments, together with the HRM department. However, today there is a lack of theoretical and applied research in this area.

Studies of the essence and importance of business process reengineering were initiated by Hammer and Champie (1993) and further developed in the works of Davenport (1993, 2015), Jacobson (1995), Peppard and Rowland (1995), Robson and Ullah (1997), Scheer (2001), Harrington (2002), Repin and Yeliferov (2004), who proposed the concept of reengineering, adapting it to modern market requirements.

The achievements of Ukrainian scientists in the field of process management and business processes reengineering are also quite significant. There are many researches on methodological approaches and other aspects of business process reengineering in works of Vinogradova (2005), Fedulova (2007), Kozachenko (2010), Komandrovskaya (2011), Kulyk (2013), Lysenko (2013), Kuznetsova (2014), Melnychenko and Shayenkova (2015),.Melnyk (2018), Taranyuk (2018).

Some theoretical and methodological aspects of personnel management reengineering are covered in the works of scientists, in particular, much attention is paid to the process approach development in personnel management in the works of Kryvoruchko (2013), Nazarova (2012), Kondratyev and Lunev (2007),

Despite numerous studies, there is no generalized conceptual basis for personnel management processes reengineering that would consider personnel management as a holistic, designable process. Therefore, the relevance of the problem of theoretical analysis and the development of scientifically sound recommendations on the conceptual framework of the implementation of personnel management processes reengineering led to the study outlined in this article.

The research purpose is to formulate the conceptual bases for the implementation of personnel management processes reengineering based on the study and generalization of the organizations' experience and the modern theoretical base development.

RESEARCH RESULTS

The modern sphere of business organization is characterized by high dynamism due to constantly changing needs of consumers, the orientation of goods and services production on meeting the individual needs of customers and customers, continuous improvement of technical capabilities and digitization, strong competition. In these circumstances, management shifts the emphasis from managing the individual resources use to the organization of dynamic business processes. As a result, the concept of business process reengineering is gaining ground. Its popularity began in the 1990s. The reasons for the business processes reengineering can be explained by the accelerating pace of change in the enterprise's external environment, including due to digital technologies. Throughout the world, changes in the organization of production and management activities began to happen faster. The need for significant changes in production and its organization could be caused to the following internal reasons:

- increasing the complexity of new products to a level where neither a person nor a group of people can know all the technical characteristics of a product, thus complicating managerial tasks;
- the inefficiency of further increasing the number of employees at all levels of the enterprise to solve complex management tasks; compensating for the increased complexity of products and business methods by increasing the number of employees at middle management levels leads to an increase in the number of delays and errors;
- staff number growth has ceased to affect customer satisfaction;
- insufficient return on investment in computer systems and information technology, when the use of digital technology alone did not solve the problem of effective management.

Such a popular tool as business process reengineering could not be overlooked by scientists, so there are many definitions of it in the scientific and applied literature. The of Hammer&Champy (1993) approach is based on defining business process reengineering as a fundamental rethinking and radical redesign of business processes to achieve significant improvements in key business performance indicators such as cost, quality, level of service and efficiency. The above definition has four key points, namely: fundamentality, which is to rethink current business rules and regulations, which often turn out to be outdated, erroneous, and unacceptable; the radicality that lies in the transformation of the whole existing system and not in its individual parts, that is, it is not superficial changes, but the rejection of all the old and the search for completely new processes; significance is manifested in the absence of a reengineering link with minor partial or incremental improvements; to achieve "jump" improvement of performance indicators (500-1000% and more); and a process that is defined as a system of consistent, purposeful, and regulated activities in which process inputs are transformed into outputs (process outcomes) that are of value to consumers through management influence and resources.

Reengineering in the understanding of Hammer and Champy (1993) involves the creation of business processes "from a blank page". At the heart of the second approach to understanding business process reengineering is the "blank sheet" method of T. Davenport (1993), which suggested, before embarking on the design of new business processes, to study and describe existing business processes. Thus, there are at least two main approaches to business process reengineering now: "revolutionary" when there is a sharp and painful breakdown of the old management and implementation mechanism of the new, and "evolutionary", which is a combination of reengineering with methods of gradually improving the quality of processes.

In addition, individual authors focus their attention exactly on the goals of business process reengineering, particularly on improving the work that will enable a breakthrough in their field. This is central to Peppard and Rowland's (1995) approach, which speaks of business processes reengineering as a philosophy of improvement, and its main task is determining fundamental improvements by redesigning the process in a way that maximizes value and maximizes

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

value. minimizing all other metrics. This approach can be equally effectively applied both at the individual process level and at the whole organization level. This approach can be equally effectively applied both at the individual process level and at the whole organization level.

For a fuller explanation of what business process reengineering is, Hummer and Champi (1993) make common misconceptions about this. First, reengineering is not an automation of existing processes, because automation is an easy way to do the wrong thing more effectively. Second, it is not software reengineering that rebuilds existing information systems, translating them into more modern technologies, since software reengineering often provides nothing but the creation of more sophisticated computerized systems that automate the same processes. Thirdly, it is not restructuring or downsizing, in which the transition to production is smaller at lower costs, because re-engineering, in contrast, produces more with less power. Fourth, it is not a reorganization or construction of a flat organization, because the problems encountered by enterprises lie not in organizational structures but in process structures; and the method by which the organizational structure can be improved is to reengineer the processes so that they are no longer fragmented. Lastly, it is not quality management or the like for continuous quality improvement, because even if quality management and business process reengineering approaches have a lot in common, they both recognize the importance of the processes, both starting from the needs of the consumer and building on, starting from them. , however, there is a fundamental difference between quality improvement programs working with specified processes and improving what is there, and reengineering deleting existing processes and replacing them with completely new ones.

In other words, it is possible to summarize the essence of business process reengineering as a way of reforming an organization or certain areas of its activity, which contributes to a dramatic increase in efficiency by overriding business processes, adjusting or replacing the business model used; or as a highlight of major business processes, their detailed research and study, public language description, and analysis to further transform.

But the question arises which of the approaches to understanding the essence of reengineering is most applicable to the personnel management process reengineering.Тут, на нашу думку, потрібно оцінювати ступінь впливу на організаційну структуру. Thus, evolutionary reengineering does not imply significant changes in the functioning of the organization but optimizes only the internal integration of different processes. With revolutionary reengineering, all business processes are redesigned and the organization reorients itself to a new type of business. Therefore, when deciding what personnel management process reengineering should be, in our opinion, preference should be given to evolutionary reengineering, which is not related to fundamental changes in strategy, management policy, but only affects its effectiveness.

Reengineering aims not only at the productive activity of each branch of business, but also at targeting the whole system of their interaction for maximum effect, which cannot be obtained individually, but really achieved through joint efforts organized in an optimal way. Therefore, when deciding on the personnel management process reengineering, a clear definition and realistic assessment of the goals of such a project, their correlation with the expected results, forecasting the complexity and financial costs are required, since a complete reorganization of business processes requires significant investments, long terms in the functioning of the whole organization.

Reengineering allows us to standardize the process itself by introducing standard procedures and models of fundamental change in the nature and nature of the work performed and the entire management system. However, as noted by Abdikeyev and Kiselev (2011), it will end in business improvement and will only lead to efficiency if the management system based on considering processes as the basis for integrating management of the organization is effective.

Such processes include personnel management, which plays a special role in the overall system of business processes of the company. Therefore, it is difficult to overestimate the role of the personnel management system, the contribution of personnel management processes to the achievement of strategic goals and the level of organization management effectiveness, since the most important resources of any organization - human resources - must work for the result required by the company.

Thus, the reengineering of an organization's business processes cannot be accomplished without the personnel management process reengineering, which involves rethinking and redesigning personnel management processes in order to achieve optimal performance for staff and the entire organization. In this regard, the goal of personnel management business process reengineering can be formulated as a holistic and systematic modeling and reorganization of material, financial and information flows aimed at optimizing the organizational structure, redistribution and minimizing the use of different resources, reducing the timeframe for meeting customer needs, improving the quality of their service. According to the international standard ISO 9001: 2000 implementation of personnel management business-process aims to achieve the following goals: providing business processes with human resources that have the necessary training, competence and awareness, stimulating and motivating staff to achieve strategic goals and fulfill the tasks of the organization; increase in labor productivity; ensuring average wage growth with inflation outpacing it.

In general, personnel management business processes reengineering solves the following tasks:

- facilitating the creation of a network of communications for emergencies (as it develops horizontal management relationships);

- creation of organizational prerequisites for centralization of information flows (since it facilitates the receipt of information systematized by specific processes);
- facilitating the separation of senior management functions and creating a network of task forces (as it allows the use of process team technology for these purposes);
- motivation creative approach, analyzing situations and teamwork (because on the basis of these principles the nature of work and the role of employees in reengineering are changed);
- facilitating the successful combination of center-centered strategy and decentralized decision-making (as it relies on mixed processes and matrix management structures);
- creation of organizational conditions for enterprise restructuring (since it links changes in management structure with the activities of process teams).

In order to organize an effective personnel management system, it is necessary to organize a process cross-functional interaction of different structural units, allocating responsibility in the personnel management business process. If the enterprise management system does not function effectively, it is a reflection of ineffective personnel management, because the staff is either not sufficiently trained or not motivated. Personnel management is effective to the extent that employees successfully utilize their potential to fulfill the overall goals of the enterprise. The process model of management should not oppose and break the widespread functional model with the vertical hierarchical structure and contradict the project management. The process model is another representation of the functions and relationships in an organization, the basic elements of management of which are activities and their results.

The scheme of identification of business process of personnel management is based on the following provisions:

- the owner of the personnel management business process is defined as the head of the relevant unit in the enterprise (head of human resources department, head of HR service);
- the process' entry is the requirements of other business processes of the enterprise (technological process of production, sales of products, processes that serve the main production, research process, etc.), the general requirement in this case - to provide business processes to personnel in the required quantity with sufficient competencies for quality performance of their duties;
- the full realization of the labor potential corresponding to the requirements of the enterprise can be considered as a way out of the process;
- development of the regulation of the personnel management process implies alignment of certain conditions of organizational, organizational-methodical, organizational-administrative, technical, regulatory, technical-economic and economic support, as well as the formation of normative-reference materials that establish norms, rules, methods of personnel management.

Further description of this process of personnel management depends on the specific characteristics of the enterprise and the conditions of its operation. The process should include recruiting, training, informing and motivating employees based on the tasks of the production process. The key role in the organization of personnel process is given to the HR service because it is the "owner" of the relevant business process and in the hierarchy of goals of the organization carries out a set of targeted measures for personnel management. These measures are implemented by the personnel service through the system of its functions, namely: the selection of personnel, its adaptation, training, and development, assessment, motivation, dismissal, etc. Here is a description of the personnel management process.

- Human resource planning (Recruitment, Selecting, Hiring, Training, Induction, Orientation, Evaluation, Promotion, and Layoff). Generally, we consider Human Resource Planning as the process of people forecasting. Right but incomplete! It also involves the processes of Evaluation, Promotion, and Layoff. Recruitment aims at attracting applicants that match certain Job criteria. Selection is the next level of filtration; it aims at shortlisting candidates who are the nearest match in terms of qualifications, expertise, and potential for a certain job. Hiring is deciding upon the final candidate who gets the job. Training and Development are processes that work on an employee onboard for his skills and abilities up-gradation.
- Employee remuneration and Benefits Administration are the processes that involve deciding upon salaries and wages, Incentives, Fringe Benefits, and Perquisites, etc. Money is the prime motivator in any job and therefore the importance of this process. Performing employees seek raises, better salaries, and bonuses.
- Performance Management is meant to help the organization train, motivate and reward workers. It is also meant to ensure that the organizational goals are met with efficiency. The process not only includes the employees but can also be for a department, product, service or customer process; all towards enhancing or adding value to them. Nowadays there is an automated performance management system (PMS) that carries all the information to help managers evaluate the performance of the employees and assess them accordingly on their training and development needs.
- Employee Relations include Employee retention is a nuisance with organizations especially in industries that are hugely competitive in nature. Though there are myriad factors that motivate an individual to stick to or leave an organization, certainly few are under our control. Employee relations include Labor Law and Relations, Working Environment, Employee health and safety, Employee- Employee conflict management, Employee- Employee Conflict Management, Quality of Work Life, Workers Compensation, Employee Wellness

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

and assistance programs, Counseling for occupational stress. All these are critical to employee retention apart from the money which is only a hygiene factor.

The efficient designing of these processes apart from other things depends upon the degree of correspondence of each of these. This means that each process is subservient to others. You start from Human resource Planning and there is a continual value addition at each step. All processes are integral to the survival and success of HR strategies and no single process can work in isolation; there has to be a high level of conformity and cohesiveness between the same.

Generalizing different definitions, we can formulate the process of "personnel management" as a logical sequence of time-consuming technologies (such as staff selection, adaptation, evaluation, training) related to the implementation of tasks of the personnel management system in the organizational structure of the enterprise, leading to consistent changes in the intermediate states of both the personnel themselves and their management systems transform the input resources into the final product for the consumer at the output. A number of specific features of the personnel management process should be emphasized, namely: process activity is not limited to providing all organizational processes with personnel, but includes the continued maintenance and development of this resource - the continuity of the process with constantly changing outcome criteria; the process of "personnel management" is not a process implemented solely by the personnel service, it involves both direct managers and functional services (units), so it is necessary to define precisely the composition of the participants, their areas of responsibility and interaction; as a full-fledged and self-contained, this process is not acceptable for all organizations, but only for those who have built a personnel management system where it has embraced scale and gained significant status in the organization. But in most organizations, personnel services are the only element of the business structure that "interferes" with the structures of the individual business verticals and their subdivisions, while remaining neutral - not indifferent but impartial. According to the process approach, the performance appraisal should reconcile the employee's performance with the deliverables.

A process-oriented approach in personnel management is a management tool that not only reduces unproductive costs but also improves product quality, allows you to have complete information about the current business process and make timely and strategically sound decisions. The use of a process approach to managing the efficiency of the enterprise and its personnel in terms of restructuring and reengineering allows to build the most optimal forms of organizational interaction between staff, management, owners, investors; qualitatively transform the dynamic and structural characteristics of the work potential of the enterprise, increase its innovative susceptibility. Therefore, the following provisions should become the conceptual basis of reengineering in the field of personnel management.

Establishing a relationship between the unique competencies of the staff and the competitiveness of the organization, the allocation, and identification of such competences, motivating the staff to continuous self-development and self-improvement. Business process reengineering involves continuous, daily improvement in the quality and productivity of the organization's staff, which is impossible without continuous development and continuous training. It is at the expense of high quality in all processes and components of activity that the company can survive, beat competitors, and the employee - to meet their own needs. It is essential to combine the individual needs and interests of the employee with the achievement of the strategic goals of the organization through a staff motivation system. Particular emphasis should be placed here on the intangible motivation, especially the involvement of executives in management decisions, then they will constantly think about improving their activities and will discuss it regularly in collective meetings. With such a collective organization of work, continuous improvement becomes the main value of the company and its employees.

Research and evaluation of personnel management processes in order to identify the contribution of each of them to increase the value of products (works, services), good in value-added formation. The process approach to personnel management involves organizing the execution of its processes as a cross-flow of work that permeates the entire system of business processes of the company. That is why the traditional (formal) organizational structure of staff should be complemented by a role structure of staff that positions the employee in horizontal interaction, establishes team interaction and facilitates team formation in the processes.

The personnel management system should be the basis for the personnel management processes reengineering. In reengineering, in no case should the principle of the hierarchical interconnection of elements of the personnel management system be violated. According to Akimenko (2012), in the terminology of reengineering the elements of the system (fundamental components) should be considered basic business logic: mission and strategy, structures, processes, culture, and functional components - the classic set of processes of personnel management: selection, development, evaluation, simulation, etc. This requires the implementation of a rigorous algorithm for consistent construction of basic business logic as the foundation of the system and processes of personnel management, as its superstructure.

Consideration of all activities of the personnel management system of the organization, as a network of interaction processes that realize the task of providing and developing staff the necessary qualifications and competencies to achieve strategic goals. This means considering all personnel management activities as a network of interaction processes that take place within the organizational structure of the company and realize the purpose of its existence; provides for drastic changes in the status and requirements for the employees of the organization; changes in the status and requirements of employees make significant adjustments to the "personnel management" process and its individual

sub-processes or business actions. Today, in management practice different approaches to personnel management are applied, the most traditional and popular of which are functional, systemic, situational, project. Understanding the distinctive features of each, it should be recognized that they should not exclude but complement each other. According to Apenko and Golub (2011), the success of implementing a process-based approach to personnel management will depend directly on the harmonious combination of management approaches to the benefits of different approaches. Implementation of the process approach to personnel management is a set of measures related to the creation, dissemination and practical use of a set of methodological, methodological and procedural principles of such personnel management construction, in which it acts as a process in the network of interacting processes of the organization.

Creating a flexible organization structure through horizontal reorganization of processes, ie reorientation of attention from functions to processes by creating cross-functional self-managed commands. Replacement of functional structural units in teams involves the unification of specialists previously divided into different units with virtually no change in their functional responsibilities. This significantly changes the motivation of employees, because an employee of such a team is focused on the end result, the needs of the client, not the needs of the organization. But the implementation of such a flexible structure will not produce the expected results if the overall organizational systems of planning, resource allocation, conditions of material incentives remain unchanged, the leadership style does not change, and the employees' desire for independence in decision-making and self-development will not be supported. The team worker is no longer limited to knowledge of the operation, the team members are equally responsible for achieving the overall result; the boundaries between their areas of responsibility are blurred; changing the requirements for the competence of a team worker, who must become more versatile, have a broader outlook and be aware of all the work that is being done to achieve the result. Usually reengineering is initiated from the top down, and often leads to job cuts in the organization. The characteristics of non-redundant workplaces change significantly, requiring, as a rule, higher skills, a variety of tasks to be performed, a higher level of responsibility, with a corresponding increase in remuneration. Therefore, employees in new conditions should be able to quickly and quickly learn new tasks, getting rid of the established stereotypes of work behavior. Therefore, the personnel development system must be thoroughly reorganized. Particular attention should be paid to instilling skills in rapidly changing conditions, the ability to make decisions. Required training for executives must include training in discussion skills, the development of persuasion skills, modern methods of working with staff, modern theories of motivation and tools to apply them in practice. Control is inferior to the place of delegation of powers, the extension of decision-making freedom. We need employees who set their own rules. responsibility, which rests with employees, gives the right to decide independently when solving the tasks.

The consistent implementation of the process approach inevitably leads to the need to introduce a new generation of management technologies based on the integration of management influences. This integration needs to be done simultaneously in three ways:

First, the actions of managers of all levels must be integrated into a corporate system of purposeful, consistent and well-understood organizational human management technologies in the company, presented in the form of corporate standards;

Second, the development of technology must be combined with the development of personal skills of managers to create productive relationships with people through effective motivation and communication, to increase their stress resistance and performance;

Third, sustainable performance is not possible without information support, so a set of management tools needs to be implemented.

Therefore, the personnel management processes reengineering should be implement and done in stages.

Preparatory stage, which involves the formation of a work plan and team reengineering.

The stage of visualization, which involves the development of the image of the future personnel management system. It forms the desired image of personnel management processes, taking into account the strategy of the company, its main guidelines and ways of their achievement. Choosing the right reengineering goals means that you find areas that can really be significantly improved and are vital to the business. Personnel management can be represented as a pro-process or business function alongside financial, material and information resource management. The main result of the visualization phase is the formulated requirements from the environment and the specification of goals (strategy, scenarios for future development).

Stage, which defines the basic principles, methods and technologies of personnel management reengineering, which are a tool for achieving these goals.

Reverse engineering stage, which creates a model of real or existing personnel management system; analysis of the existing system and identification of business processes. It reproduces the system of works, procedures and operations by which the company fulfills its existing goals; a detailed description of the main processes of personnel management, their effectiveness is evaluated. The results of the analysis of the internal organizational environment, the data of the audit and the controlling of the personnel are used to create the personnel management model, and the processes that require radical restructuring are identified. The results of this stage model the existing processes of personnel management.

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

The direct engineering stage, on which the model of the new personnel management system is developed and the current processes are redesigned. It is important to define the functional areas and to allocate powers within the elements of the management structure in order to avoid possible duplication. In order to create a quality business model of personnel management, it is important to redesign the selected processes of personnel management, to create more efficient working procedures, to identify technologies (including information) and ways of their application; to form new staff functions, to redesign job descriptions, to determine the optimal system of motivation, to organize working teams, to develop programs for training and retraining of specialists; to create the information systems necessary for the reengineering; test the new model on a limited scale. Building a business model of personnel management helps to clearly explain the nature of the special relationships that are established between business process owners and the owner of the workforce and reveals the basic principles of using economic, sociological and psychological laws to build the right set of management actions for staff in order to improve efficiency and competitiveness. This system must be integrated into the overall management system and can not exist in isolation from strategic and operational management, solving the whole complex of tasks facing the organization.

The stage of communication design, which determines the communication system horizontally and vertically between the elements of the control structure to work out the optimal, ie eliminate obstacles in their information interaction processes.

Stage of implementation, which implements the model of personnel management in the practice of the organization. The ability to dock and move from old processes to new ones is important here. The peculiar "tests" of the resulting structure of management should be conducted by the "collective mind" of representatives of all levels of management of the company using the methods of mathematical modeling and modern information technologies to optimally distribute the management load.

The feasibility of implementing a process-based approach to management will depend on the outcome, which will be positive with the rapid quantitative and qualitative growth of the organization, allowing effective management of staff in complex and territorially distributed structures to improve the quality of customer service; if the organizations have the potential for growth and development but the resource of the used personnel management technologies is close to exhaustion; for large organizations with a long term of activity existing in the conditions of dynamic, actively develops with the presence of healthy competition, which, for example, massive operations with individuals, a large flow of the same type of operations are inherent. But the process approach to personnel management will bring negative results for organizations where each contract or agreement is individual and business processes are constantly changing for each specific order; for organizations where the product is based on creativity and creativity; for organizations operating in a non-competitive environment (monopolies, government agencies, etc.) and organizations with poor functional structure.

The effects of applying the principles of the process approach to personnel management can be considered at the level of the organization and the individual employee. Thus, in the case of effective implementation and use of principles of process approach to personnel management, the enterprise will receive the following advantages: the level of product quality and production efficiency increases; increased labor activity; improves the speed and quality of information transmission; employees have a sense of dignity; the goals of informal leaders in the divisions converge with those of management; improving the relationships of ordinary employees and managers; a system of criteria for evaluation of the main activities within the units is created a single corporate culture is ensured; Improving the job search for each unit by understanding each unit's activities. As a result of implementing a process approach, the organization's staff receives greater opportunities for career growth, a sense of involvement in a common cause, greater satisfaction with their work, opportunities for professional and qualification promotion, new opportunities for moral and material rewards, increased employment guarantees as a result of increasing the effectiveness of the organization, new opportunities for their intellectual development. As a result of the process approach to the development of the personnel of the organization the following indicators of employees are improved: the level of qualification; business qualities; efficiency; quality of work performed; style and methods of work; participation in innovation; discipline; psychological compatibility with the team; management of subordinates.

The implementation of the reengineering of personnel management processes requires dramatic changes and significant qualitative transformations into HRM service, in the traditional sense. In the context of reengineering, modern HRM service may have the necessary competencies to perform the following functions and tasks:

- information monitoring of production and socio-cultural situations in the company through constant monitoring of personnel situation on the widest possible range of social, economic, psychological and other criteria with the maintenance of electronic database;
- implementation of point counseling and methodological support of employees on their request and on the plan, with special attention to the issues of formation of psychological knowledge and skills of managers;
- formation and implementation of a holistic system of personnel management processes, embedded in the corporate system of business processes and aimed at achieving the company's competitive advantage;
- automation of management of personnel management processes and outsource part of personnel functions to outsourcing;
- formation of a corporate knowledge base in terms of personnel management.

It should be remembered that only a combination of personal methods and organizational decisions will provide a lasting effect. From the perspective of the company's development and enhancement of the intellectual component of business competitiveness it is necessary that the vector of influence should be aimed at professionals and personal self-development of the staff.

CONCLUSION

A process-oriented approach in personnel management is a management tool that not only reduces unproductive costs but also improves product quality, allows you to have complete information about the current business process and make timely and strategically sound decisions. The use of a process approach to managing the efficiency of the enterprise and its personnel in terms of restructuring and reengineering allows to build the most optimal forms of organizational interaction between staff, management, owners, investors; qualitatively transform the dynamic and structural characteristics of an enterprise's labor potential and increase its innovative susceptibility.
The personnel management processes reengineering stimulates the innovative activity of the HRM service, becomes the basis for the constant renewal and capacity building of their organizational culture. The essence of business process reengineering is to optimize not the individual functions performed by the units, but the activity of the whole enterprise, with the formation of end-to-end business processes and customer needs. It is based on the recognition of the value of business processes, the simplification, and the increase of their efficiency, the strengthening of links between business units. Since personnel management permeates all areas of the organization, all processes that affect the effectiveness of other production management systems, this process is a decisive competitive advantage of any organization. However, HR processes are not localized within the personnel management, but are cross-cutting: they go through the entire organization. They are actively involved both by staff specialists and business process owners themselves - heads of divisions, therefore, in order to organize an effective personnel management system, it is necessary to organize process-functional interaction of various structural units, optimally allocating responsibility in the business process. This involves integrating personnel management processes, knowledge management and support of organizational culture. Only such combination can create favorable stimulating conditions for staff to share their knowledge with the company, to develop new knowledge, without hearing threats to their existence in the company. Integrated management requires, first and foremost, new management philosophy and a new staff management policy, new staffing practices and new information tools.
To summarize, we should generalize the most common trends and traits that are both negative and positive in terms of the successful implementation of a process approach to personnel management. Overall, the results of the study, as well as data from other publications, suggest that in the near future an increase in the number of organizations expected to develop, implement and implement a process approach to enterprise management, and in particular personnel management, is expected in the near future. In the coming years, there will be a transition of organizations from a simple description of their business processes to their automation, continuous improvement and control.

REFERENCES

1. Abdikeyev N. Kiselev, AD (2011). Knowledge management and corporate re-engineering business. Moscow: INFRA-M.
2. Akimenko, V. A. (2012). Reinzhiniring protsessov upravleniya chelovecheskimi resursami v organizatsii [Reengineering human resource management processes in an organization]. Statistika i ekonomika. 5. 23-27.
3. Apenko, S. N., Golub, N. A. (2011). Razrabotka proyekta vnedreniya protsessnogo podkhoda k upravleniyu personalom [Development of a project for the implementation of a process approach to personnel management]. Vestnik Omskogo universiteta. 1. 132-137.
4. Davenport, T. H. (1993). Process innovation: reengineering work through information technology.Boston, MA: Harvard Business School Press.
5. Davenport, T. H. (2015). Process management for knowledge work. Handbook on Business ProcessManagement 1. Berlin-Heidelberg: Springer.
6. Fedulova, L.I. (2007). Suchasni kontseptsii m en edzhmentu [Modern management concepts].Kyiv: Tsentr uchbovoi literatury.
7. Hammer M., Champy J. (1993). Reengineering the Corporation: A Manifesto for Business Revolution. New York: HarperCollins.
8. Harryngton, Dzh., Esselyng, K. S., Van Nymvegen Harm. (2002). Optymyzacyja byznes-processov (dokumentyrovanye, analyz, upravlenye, optymyzacyja) [Optimization of business processes (documentation, analysis, management, optimization)]. SPb.: Yzd-vo Azbuka.
9. Jacobson I., Ericsson M., Jacobson A. (1995). The Object Advantage: Business Process Reengineering with Object Technology. ACM Press, Addison-Wesley Publishing.

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

10. Komandrovs'ka, V.YE.,Morozenko, O.YU. (2011). Biznes-protsesy pidpryyemstva: sutnist' ta metody vdoskonalennya [Business processes of the enterprise: essence and methods of improvement.]. Problemy pidvyshchennya efektyvnosti infrastruktury. 30. 28-32
11. Kondrat'yev V.V., Lunev YU.A. (2007). HR inzhiniring. Kak postroit' sovremennuyu model' organizatsii deyatel'nosti personala [HR engineering. How to build a modern model of organization of personnel activities]. Moskow. Eksmo, 2007. 512.
12. Kozachenko, A. V. (2010). Praktychni pidhody do polipshennja biznes-procesiv [Practical approaches to improving business processes]. Retrieved from: http://easycode.com.ua/2010/11/praktichni-pidxodi-do-polipshennya-biznes-procesiv/ (accessed 10.11.2019).
13. Kryvoruchko, O. N., Sukach, YU. A. (2013). Osnovni polozhennya reinzhynirynhu protsesiv upravlinnya personalom [Basic provisions of reengineering of personnel management processes.]. Ekonomika transportnoho kompleksu, (21), 15-25.
14. Kulyk, Yu.M. (2013). Reinzhy nirynh lohistychnykh biznes-protsesiv i system yak osnova yikh samovdoskonalennia ta rozvytku [Reengineering logistics business-processes and systems as the basis of self -improvement and development]. Retrieved from http://economics.opu.ua/files/archive/2013/No2/87-94.pdf (accessed 10.12.2019).
15. Kuznyetsova I.O. (2014). Inzhynirynhova paradyhma yak metodolohichne pidgruntya pobudovy protsesu upravlinnya [Engineering paradigm as a methodological basis for building a management process.]. Ekonomika: realiyi chasu. № 2 (12). p. 52-57.
16. Lysenko, O.A. (2013). Klas yfikatsiia biz nes -protsesiv na promyslovykh pidpryiemstvakh: teoretychni aspekty [Classification of business-processes at industrial enterprises: theoretical aspects].dspace.nuft.edu.ua. Retrieved from http://dspace.nuft.edu.ua/jspui/bitstream/123456789/9488/1/15.pdf
17. Mel'nychenko, S.V., Sheyenkova, K.A., 2015. Upravlinnya biznes-protsesamy v turyzmi: monohrafiya [Management of business processes in tourism: a monograph.]. K. : Kyyiv. nats. torh.-ekon. un-t.
18. Mel'nyk, L.M. (2018). Zabezpechennya staloho rozvytku mashynobudivnykh pidpryyemstv zasobamy upravlinnya biznes-protsesamy: teoriya, metodolohiya, praktyka: monohrafiya. [Ensuring sustainable development of machine-building enterprises by means of business process management: theory, methodology, practice: monograph.]. Ternopil', FOP Palyanytsya V.A.
19. Nazarova N. K. (2012). Pobudova kadrovoho biznes-protsesu v modeli reinzhynirynhu personalu pidpryyemstva [Construction of personnel business process in the model of reengineering of the personnel of the enterprise]. Visnyk Donbas'koyi derzhavnoyi mashynobudivnoyi akademiyi. 1 (26). 157
20. Peppard J., Rowland Ph. (1995). The Essence of Business Process Re-engineering. Prentice Hall, Hemel Hempstead, England.
21. Repyn V.V., Elyferov V.H. (2004). Protsessnyy podkhod k upravlenyyu. Modelyrovanye byznes-protsessov [Process approach to management. Business Process Modeling.]. M.: RYA «Standarty y kachestvo». 224.
22. Robson M., Ullakh F.(1997). Praktycheskoe rukovodstvo po reynzhynyrynhu byznes protsessov [A Practical Guide to Business Process Reengineering]. M.: Audyt, YUNYTY. 224.
23. Sheer A.-V. (2001). Modelyrovanye byznesa [Business Modeling]/ M. Vest'-Metatekhnolohyya. 352.
24. Taranyuk, L.M., Taranyuk, K.V. (2018). Zaprovadzhennya radykal'nykh transformatsiy biznes-protsesiv na rivni krayinsvitu yak motyvatsiya do neobkhidnosti zmin v roboti vitchyznyanykh ta zarubizhnykh pidpryyemstv. Reinzhynirynh biznes-protsesiv marketynhovoyi sfery promyslovykh pidpryyemstv: monohrafiya [Introduction of radical transformations of business processes at the level of the countries of the world as a motivation for the need for changes in the work of domestic and foreign enterprises. Reengineering of business processes of marketing sphere of industrial enterprises: monograph]. Sumy: Vydavets' SNAU.
25. Vynohradova, O.V. (2005). Reinzhynirynh biznes-protsesiv u suchasnomu menedzhmenti [Reengineering of business processes in modern management]. Donets'k: Vyd. DonDUET.

DERMATOGLYPHIC ANALYSIS IN TURNER'S SYNDROME

[1]Aytakin Hasanova, [2]Khadija Yusufova

[1,2]Azerbaijan Medical University, Department of Medical Biology and Genetics

ABSTRACT

The palm- and finger-prints of 10 patients suspected to have Tumers syndrome were analysed. The results were compared to the dermatoglyphic patterns characteristic of Turner's syndrome found in the literature. In 3 cases a dermatoglyphic picture corresponding to that of the literature was observed. In one case a perfect analysis could not be performed because of a congenital malformation of one of the hands. In 4 cases no perfect correspondence was found. With the aid of dermatoglyphic examinations the possibility of Turner's syndrome was excluded in 2 cases. In these 2 cases the karyotypes did not prove to be X monosomy either. The method is believed to be useful for differential diagnosis of gonadal dysgenesis.

The importance of dermatoglyphics in indicating chromosome abnormalities is well known but the data concerning Turner's syndrome are not quite concordant. The characteristic features emphasized by all the authors (Alter, 1967; Forbes, 1964; Holt and Lindsten, 1964; Loeffler, 1967; Penrose, 1967; Spasov et al., 1975; Uchida and Soltan, 1963; Uchida et al., 1964; Gorlin et al.,1990; Kobylıansky et al., 1997; Rıchards et al., 1997: are as follows:

1. a great number of whorls (more than 5) on the fingers
2. high total ridge count (TRC) (higher than 140)
3. axial triradius in t position
4. high frequency of the four-finger fold
5. opinions differ concerning the high value of the atd angle

According to Penrose (1967) it is about 60, according to Spasov et al. (1975) if the sum of the angle of the two hands is more than 90, it is suggestive of Turner's syndrome.

Alter (1965; 1967) enumerates further characteristic features:

1. double loop on the hypothenar
2. an increased ab ridge count
3. loop on the thumb
4. radial loop on the second finger.

According to Holt and Lindsten (1964):

1. the patterns of the thenar are rare
2. radial loop on the fourth finger
3. the whorl pattern is the most frequent on the first and fourth fingers
4. the arch pattern is more rare.

According to Spasov et al. (1975) the additional triradii of the palm are also characteristic.

Because of the somewhat contradictory data, we decided to observe the paint- and finger-prints of 10 patients with clinical Turner's syndrome.

MATERIAL AND METHODS

The data were analysed using the method of Cummins and Midlo (1961) and modified by Penrose (1963; 1968). Our results were compared to the characteristic features of Turner's syndrome found in the literature, and to the results of the control group. We used the palm- and finger-prints of 40 medical students as a control. The significance of the difference from the control was controlled by the X^2 test. In 3 cases the dermatoglyphic features corresponded to the literary ones; in one case a complete analysis could not be performed because of congenital malformation of one of the hands; in four cases most of the characteristic features were identified on the prints, in two cases the possibility of Turner's syndrome was excluded.

During the chromosome analysis 8 cases proved to be X monosomy, in the two cases excluded on the basis of dermatoglyphic features we found normal karyotypes.

RESULTS

From the qualitative features in the types of the ending of the main lines we did not find forms characteristic of Turner's syndrome. The frequency of the reduction of the C main line and of the supernumerary triradii was established. Contrary to the literary data, in our examinations frequency of the reduction of the C main line was higher than in the control group, but not significantly. The ratio of the supernumerary triradii was significantly higher ($p<2.5\%$) in the group of patients with Turner's syndrome (Fig.1). The interdigital spaces bordered by the main lines proved to be richer in pattern, but the difference was not significant (Fig. 2).

ISSN: 2613-5817; E-ISSN: 2613-5825

In the t position of the axial triradii the control group and in the t'and t'' position the group of patients with Turner's syndrome showed a higher percentage. but the difference was again not significant (Fig. 3). The literary data do not refer to the importance of the number of the axial triradii. The 1t showed a higher ratio in the control group, the 2t in the group with Turner's syndrome. The difference was significant (p<=2.5%) (Fig.3).
In agreement with the literary data (Alter, 1965; 1967; Holt and Lindsten,1964; Spasov, 1975; Uchida and Soltan, 1963; Uchida et al., 1964) the patterns of the hypothenar were much stronger in the group with Turner's syndrome.
The difference between the patterned and empty hypothenars proved to be sig- nificant (p<0.1 %). We did not find the characteristic frequency of the big double loop described by Alter (1965; 1967), though it was found in one of our cases.

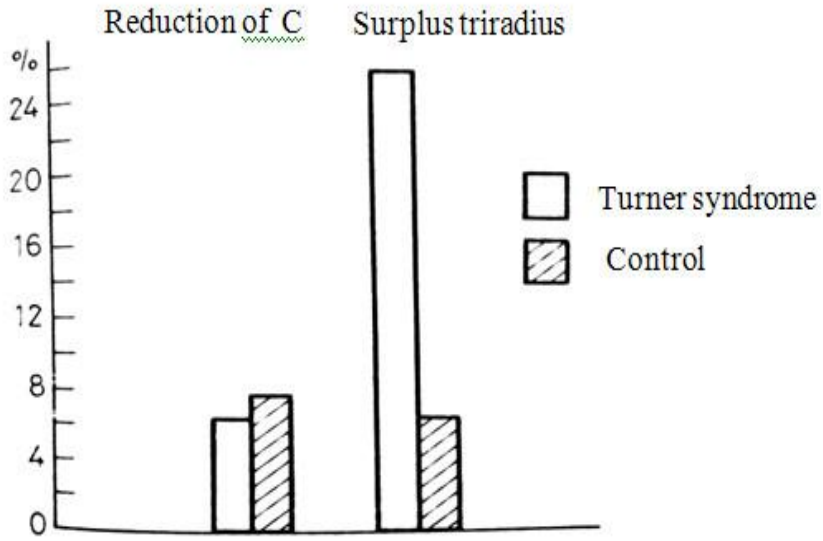


Figure 1. Comparison of the reduction of C main line and the surplus triradius.

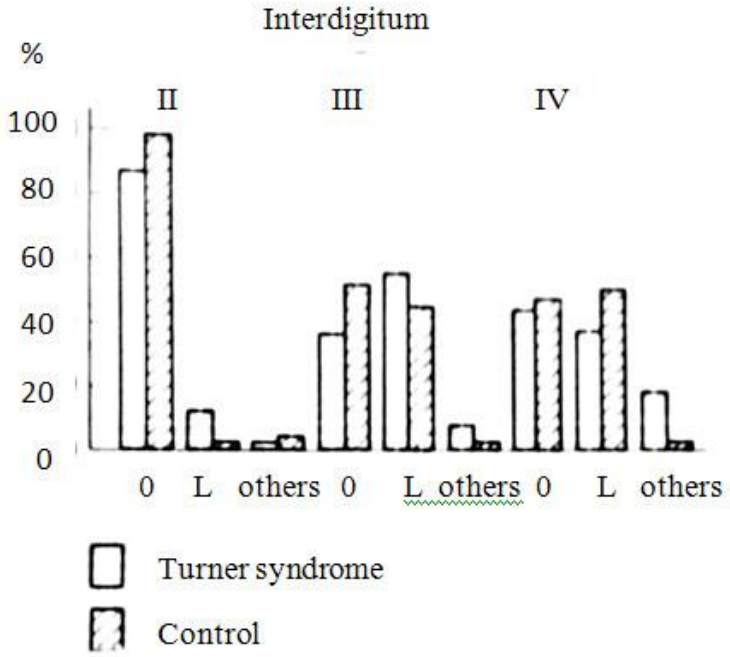


Figure 2. Pattern of the interdigital areas.

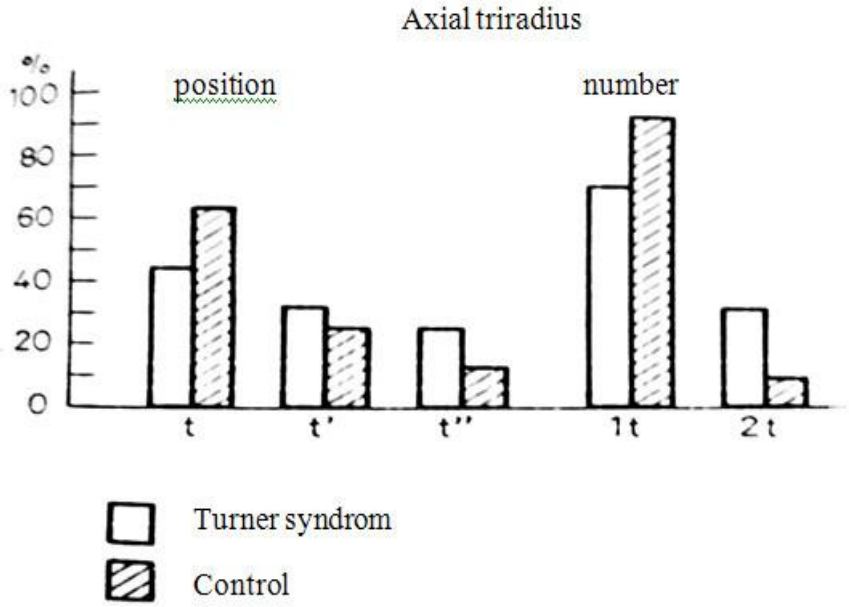


Figure 3. The position and number of axial triradii.

We found the thenar also to be richer in pattern in the group with Turner's syndrome than in the control group, contrary to the literary data (Holt and Lindsten, 1964). The difference was significant (p<5%) (Fig. 4).

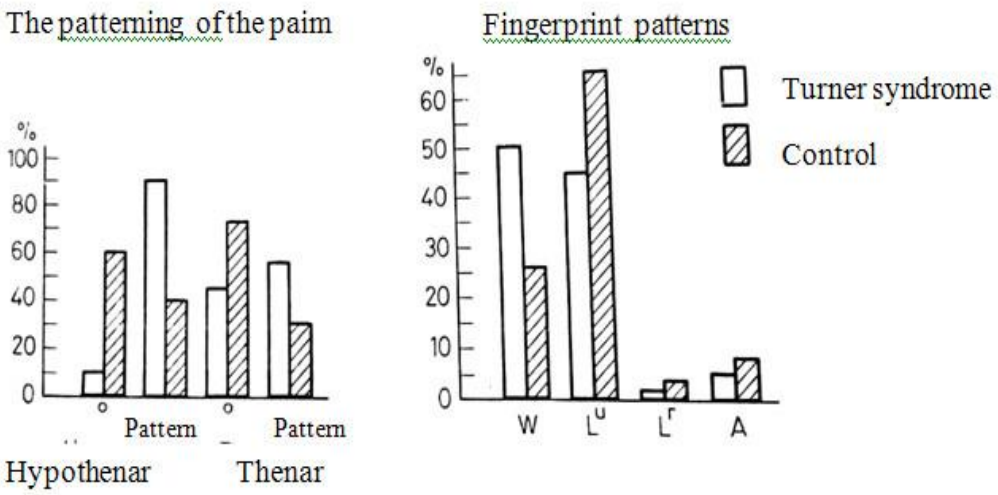


Figure 4. Comparative study of the patterns of the palm-and finger-prints.

Of the finger patterns in the Turner's group the whorl pattern was most frequently found followed by the ulnar loop, the arch and the radial loop (Fig. 4). We found the arch pattern only in the two patients with gonadal dysgenesis excluded from the group of Turner's syndrome. In the 8 patients with Turner's syndrome the frequency of the arch was 0. In the normal population the ulnar loop is the most frequent, then the whorl, after that the arch and the radial loop. This was also seen in our control group. The differences were significant (p< 0.001). The frequency of the whorls proved to be the highest not on the first and fourth but on the fourth and fifth fingers, contrary to the data of Holt and Lindsten (1964). We found the radial loop on the second finger, instead of the fourth. A characteristic feature, though it is not a dermatoglyphic formation, is the defect of the flexion ridges, the so-called four-finger ridges or monkey- groove, which is quite frequent. We found it on both hands of two patients, on | one hand of 4 patients, and there was only one patient

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

without this formation. In the two cases excluded from the patients with clinical Turner's syndrome there was no four-finger ridge. It was very rare in the control group; the difference was significant (p« 0.001) (Fig. 5).

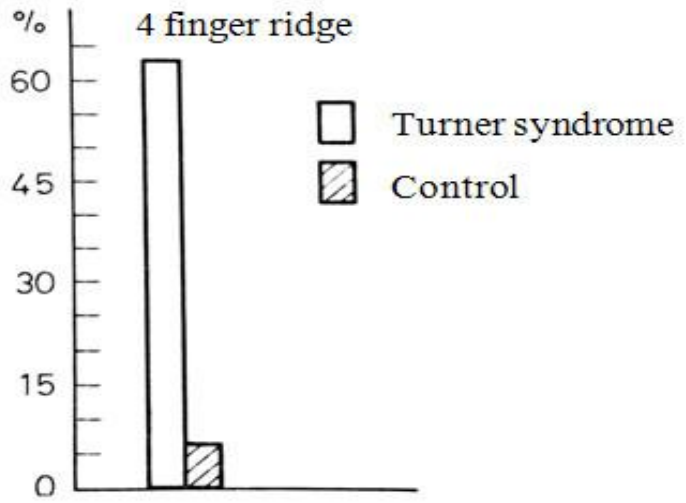


Figure 5. Frequency of appearance of four finger ridge ("monkey-groove").

Analysing the quantitative features, we compared their average in the two groups but we did not make a significance test. The increase of the maximal atd angle is considered by all the authors to be very important in Turner's syndrome. In our examination the average of the Turner's group was 108.63 while that of the control was 91.61. There undoubtedly was an increase, but contrary to the opinion of Spasov et al. (1975), the average of the control group was higher than 90.

Our material also showed an increase of the ab ridge count but at the same time a much greater decrease of the td ridge count. The latter was the result of the axial triradii being in a higher position (Fig. 6). We determined the total ridge count of the palm as the sum of the ab, cd and td ridge counts. As the decrease of the td was higher than the increase of the ab, the total ridge count of the palm showed a decreasing tendency (Fig. 6).

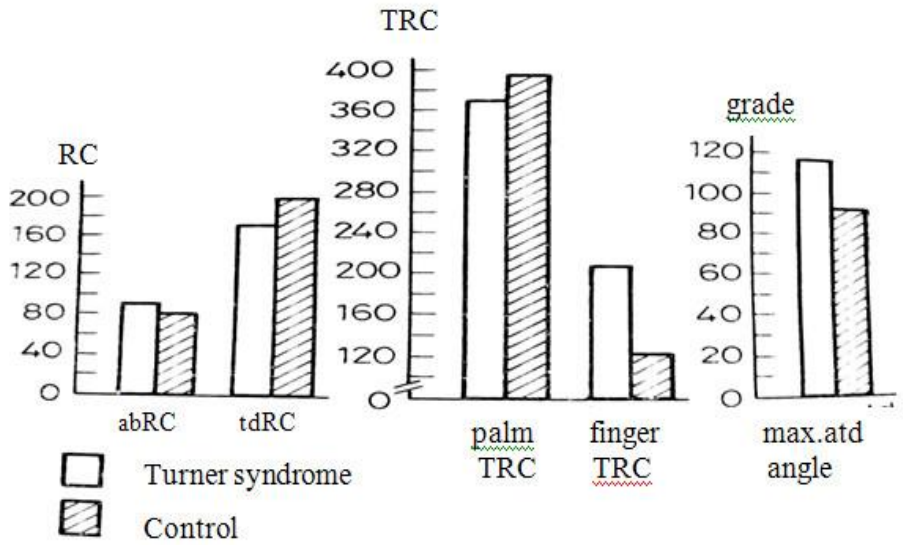


Figure 6. Comparison of quantitative characteristics (RC,TRC, maximal atd angle).

The total ridge count of the fingers proved to be very high in our material with Turner's syndrome. If the TRC is higher than 140 this indicates the presence of Turner's syndrome. The average in our group was 209, while that of the controls 123 (Fig. 6).

Though it cannot be found in the literature, we counted the intensity of patterns of the palm and the fingers. This means the number of all triradii in both cases. The normal intensity of patterns of the palm is 10. It was 12.63 in our Turner's group, and 10.70 in the control group. This value was in agreement with the significantly higher number of the supernumerary triradii (Fig. 7). A still greater difference was found in the intensity of the patterns of the fingers, which can be attributed to the significantly higher ratio of the whorls (Fig. 7).

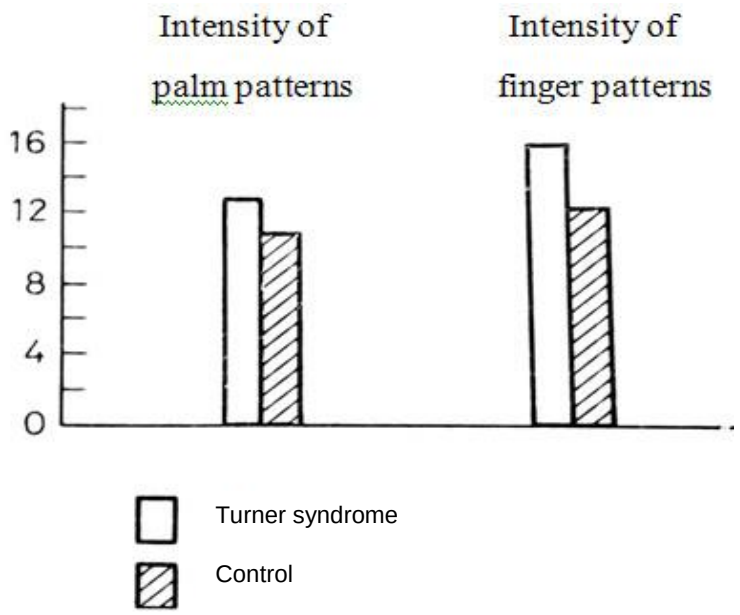


Figure 7. Differences in intensity of palm and finger patterns.

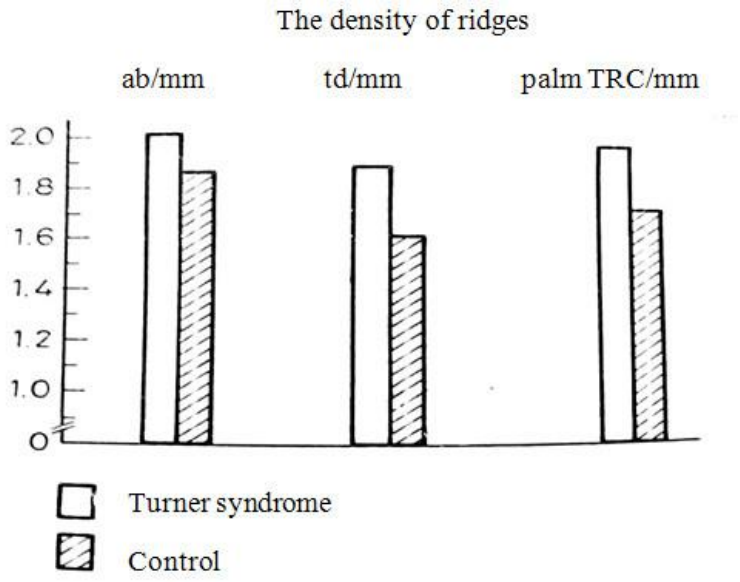


Figure 8. Examination of the density of ridges as a new parameter. (By the density of ridges we mean the ratio between the ridge count and the length in mm.

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

We determined the ridge density of ab, td, and on all the particular parts of the palm. We could not find any corresponding data in the literature. All the ridge densities were much higher than in the control group; thus the appearance of finer, thinner ridges can be considered to be another characteristic feature of Turner's syndrome (Fig. 8).

CONCLUSIONS

In our examination we observed a great number of dermatoglyphic features, and in this way we got nearer to the shaping of the exact diagnosis based on the skin ridge system.
The fact that we found a patient with gonadal dysgenesis in the control group by observing the dermatoglyphic picture also shows the correctness of our approach. Her detailed examination has not yet been finished.
We consider this method important in the differential diagnosis of gonadal dysgenesis. We shall carry on with our examination with greater material of Turner's syndrome and gonadal dysgenesis.

REFERENCES

1. ALTER,M. (1965): Is hyperploidy of sex chromosomes associated with reduced total finger ridge count? Amer. J. hum. Genet., 17, 473—475.
2. ALTER, M. (1967); Dermatoglyphic analysis as a diagnostic tool. Medicine, 46, 35-56.
3. CUMMINS, H. and MIDLO, C, (1961): Finger prints, palms and soles. An introduction to dermatoglyphics. Dover Publications, New York.
4. FORBES. A. P. (1964): Fingerprints and palm prints (dermatoglyphics) and palmar-flexion creases in gonadal dysgenesis, pseudohypoparathyroidism and Klinefelter's syndrome. New Engl- J- Med., 270, 1268-1277.
5. Gorlın R.J., Cohen M.M. (JR.), Levın L.S.(1990): Turner Syndrome In: Syndromes of the head and neck Oxford University Press, 54–58.
6. HOLT. S. B. and LINDSTEN, J. (1964): Dermatoglyphic anomalies in Turner's syndrome. Ann. hum. Genet., 28, 87—100.
7. Kobylıansky E.,Bejerano M.,Vaınder M.,Bat-Mırıam.,
8. Katznelson M.(1997): Relationship between genetic anomalies of different levels and deviations in dermatoglyphics traits. part 2: Dermatoglyphics peculiarities of females with Turner's syndrome. Anthropol. Anz., 55, 315–48.
9. LOBFFLER.L.(1967); Spezielle Morphologie und Indizwert der Befunde bei Personen mit chromosomalen Aberrationen. Hautleisten und Krankheiten. Editor: HIRSCH, W. Grosse Verlag, Berlin. pp. 105-108.
10. PENROSE, L. S. (1963); Finger-prints, palms and chromosomes. Nature, 197, 933-938.
11. PENROSE, L. S. (1967): Finger-print pattern and the sex chromosomes. Lancet, i, 298-300.
12. PENROSE, L. S. (1968): Memorandum on dermatoglyphic nomenclature. Birth Defects orig. Art. Ser., 4, 1-13.
13. Rıchards B., & Mandasesus S.(1997): A study of dermatoglyphics in gonadal dysgenesis: a computerized analysis applicable in underdeveloped countries. Stud Health Technol Inform; 43, 290–4.
14. SPASOV, V., DOKUMOV, S. and GENKOVA, P. (1975): Les dermatoglyphes chez les malades a dysgenesie gonadique, manifestation du processus dysplasique genera). Rev. franç. Gynec., 70. 117-120.
15. UCHIDA, I. A. and SOLTAN, H. C. (1963): Evaluation of dermatoglyphics in medical genetics. Pediat. Clin. N. Amer., 10, 409-422.
16. UCHIDA. I. A., MILLER, J. R. and SOLTAN, H. C. (1964): Dermatoglyphics associated with the XXYY chromosome complement. Amer. J. Hum. Genet., 16, 284-291.

METHODS OF RISK ASSESSMENT OF INNOVATION PROJECT IN TERRITORIAL DEVELOPMENT

Roman Shapovalov

Applicant of the Department of Management, Public Administration and Personnel, Ternopil National Economic University, Ukraine
Email: shapovalov1@bigmir.net

ABSTRACT

The article studies the methodical approaches to the methods of risk assessment of an innovative project in the development of territories.
In the course of the research it was proved that the methods of risk assessment of an innovation project in territorial development contributes to the effectiveness of integrated development and solution of the housing problem in Ukraine, improving the comfort of urban residents, construction development using innovative solutions that are effective and beneficial to both state and private investment and construction organizations.
The project implementation period and investment costs and risks are determined, which often require diversification of project financing sources; the interdependent indicators of construction - density and superficiality influencing characteristics of energy consumption are offered.
Keywords: innovation risks, methods of risk calculation, specific risks of projects, modified norm of risk premium, territorial development.
Main Material: Risks can be divided into two groups: factorial, aggregate. With the factor-by-factor method, the main task is to accurately assess and select the amount of risk premium for certain types of risk (risk factors). In aggregate methods, no attention is paid to individual risk factors. The purpose of such calculations is to establish a discount rate based on the minimum additional information about the company.
When using the factor-by-factor method in the amount of risk premium in the general case, three types of risks are taken into account: country risk (political risk); risk of unreliability of project participants; the risk of non-receipt of project revenues (in other terminology - "unsystematic", the risk that relates to just this project).
In addition to the factor-by-factor method of calculating the discount, there are a number of other methods, such as the Weighted Average Cost of Capital (WACC), the Adjusted Present Value (APV) method, and the Beta method, which should be given special consideration, taking into account its following advantages: clarity and relative simplicity of calculation; wide applicability of the method; the possibility of combining the Beta method and the factorial method.
The application of the beta method is based on the following classification of risks associated with the project: they are all divided into the risk of unforeseen completion of the project (for example, due to bankruptcy, insolvency, unpromising geological object) and variation risk, which determines the variability of project profitability its implementation. The discount rate *E,* which takes into account these risks, is calculated according to the Capital Assets Prices Model (CAPM):

$$E = Eo + \beta\,(R - Eo), \qquad (1)$$

where *Eo* is return on risk-free investment; *R* is average market return in the industry in the region at the time of calculation; β is a ratio that reflects the relative riskiness of this project compared to investing in the average market stake. Usually 0 = <β = <2.
The main task at this stage is to determine the β-coefficient. Such methods can be divided into computational, statistical and expert. Given the specificity of calculation and statistical methods, as well as a number of limiting factors, it is worth paying attention to the expert method, as it allows you to take into account all the specific risks of projects. The method of calculating the β - coefficient by experts is given in the table below (Table 1):

Table 1. Method of calculating the β-coefficient by experts

	Total	Rick level								
Risk factor		1. low			2. middle			3. high		
Value of β		*0,00*	*0,25*	*0,50*	*0,75*	*1,00*	*1,25*	*1,50*	*1,75*	*2,00*
GENERAL ECONOMIC FACTORS										

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

Socio-political risk								X		
Domestic economic risk							X			
Foreign economic risk						X				
INDUSTRIAL FACTORS										
Cyclic factor					X					
Stage of development			X							
Competition							X			
Regulation								X		
Barrier to market entry							X			
RISK FACTORS AT THE LEVEL OF THE ENTERPRISE										
Liquidity								X		
Income stability							X			
Financial lever								X		
Operating lever						X				
Market share						X				
Clientele diversification										X
Product diversification							X			
Diversification by territory										X
Technological level						X				
RISK OF INCOMPATIBILITY OF INTERESTS										
The possibility of conducting a policy to the detriment of the interests of holders of securities of the enterprise									X	
TOTAL NUMBER OF OBSERVATIONS	18	0	1	0	1	4	5	4	1	2
CALCULATION OF WEIGHED AVERAGE VALUE β	23	0	0,25	0'	0,75	4	6,25	6	1,75	4

The scale of the degree of risk is set expertly, each degree of risk is assigned a corresponding value of the β-coefficient. The list of project risks is determined and for each item of the list the subordination of the project to the corresponding risk is revealed. Next, the weighed average value of the β-coefficient is calculated mathematically. In this case, β = 23/18 = 1,28.

For innovative projects, it is possible to apply the modified risk rate proposed by Jensen:

$Ei = Eo + \beta (R - Eo) + V$; $Ei = E + V$, при цьому $V = \beta v (R - Eo)$, (2)

where *V* is the part of the risk premium that depends on the rating, reputation of the enterprise and the part of the risk premium that is not due to general market trends and reflects variational non-systematic risk (this includes innovation risk).

In essence, *V* can be included in the composition of *β (R - Eo),* but to determine the innovative component, it is more correct to allocate it, as done in the above formula. When calculating the discount rate for IIP together with the classic, it is advisable to use a compound formula:

$$D_v = \frac{1}{((1+E)(1+V))^i}. \quad (3)$$

Thus, when *Ei = E + V*, where *V* is the rate of innovation risk, following the law of economic feasibility, additional benefits (*P*) in the innovation project should always be > 0 i > *Ve*, де *Ve* , where *Ve* is the average value of *V* for the duration of the innovation project. Thus, if *P* <*Ve*; *P* <0, investing in innovation is not economically feasible, it is more profitable to invest in similar traditional investment projects. The reason why it is not possible to compare *P* with *V*, but it is necessary to calculate *Ve* in advance, lies in determining the risk premium. The risk premium in this case is the static potential additional return for the innovative component of the project, unchanged at any point of the project. Innovation *risk (V)* in turn affects project performance in a dynamic way through the project discount rate, which depends on the time. Therefore, it is necessary to bring *V* into the appropriate *P* form, namely: to calculate such *Ve* at a time-constant discount rate, at which the project indicators will be equal to the indicators obtained through the classical discount rate and *V*. The formula *Ve* is defined as follows:

Let x be a conditional income equal in all periods of the post-investment phase of the project. For the purity of the calculation in the formula *Ev = (E + V), E* can be equated to 0, so, in our case, the risk rate will be formed only by innovation risk (*Ev = V)* => the discount rate will take the following form:

$$D_v = \frac{1}{(1+V)^i} \quad (4)$$

where *Dv* is the discount rate; *V* is the risk rate of the innovative component of the IIP of the territory, and *i* is the discount period;

Then

$$\frac{x}{(1+V)^i} + \frac{x}{(1+V)^{i+1}} + \cdots + \frac{x}{(1+V)^n} = \frac{(n-i+1)x}{(1+Ve)};$$

$$Ve = \frac{(n-i+1)}{\sum_{i=t}^{n} \frac{1}{(1+V)^i}} - 1, \quad (5)$$

where *t* is the first period of income withdrawal from the project, $t \in [0 \ldots n)$;
$(n - i + 1)$ is the number of periods of withdrawal of income from the project.
Ve (2.4) takes into account the duration of development and investment of innovation, which is a very important factor when considering project risks.
When calculating the discount rate for IIP, it is impractical to use the formula:
$D_v = \frac{1}{(1+Ev)^i}$, where *Dv* is the discount rate of the IIP, *Ev* is the risk rate for the IIP, and *i* is the discount period;
The formula below better reflects the innovative nature of the project, and also allows you to compare the risk components of IIP and IP-analogues. This is achieved due to the fact that the discount rate for IIP is based on the discount rate of the IP-analogue:

ISSN: 2613-5817; E-ISSN: 2613-5825

$$D_v = \frac{1}{((1+E)(1+V))^i}, \quad (6)$$

where *E* is the risk rate for the investment project-analogue; *V* is risk rate of the innovation component.
The economic meaning of this formula is as follows: the discounted values of the income of the IP-analogue are additionally discounted by the amount of innovation risk, this value reflects the risk difference between the IP-analogue and the IIP.
The calculation of the value of the risk premium should also reflect the advantages that arise in innovative products over existing products. The following formula allows you to take into account this aspect:

$$P = \frac{IM}{AM} - 1 \quad (7)$$

where *P* is the risk premium, expressed in shares or percentages; IM is absolute profitability of innovative products, *AM* is absolute profitability of analog products.
In turn, the principle of calculating *IM* and *AM* is given below:

$$IM = \frac{I_c - I_{cc}}{I_{cc}} M_i$$
$$AM = \frac{A - A_{cc}}{A_{cc}} M_a, \quad (8)$$

where I_c is the market value of innovative products (determined on the basis of marketing and statistical research), I_{cc} is the cost of production, M_i is demand (attractiveness) for innovative products (in shares), A_c is market value of analogue products, A_{cc} is production cost analogue products, M_a is demand (attractiveness) for analogue products (in shares).
In the case of energy-saving innovations in the development of territories, when commercial efficiency can not be calculated, but there is economic efficiency, which is expressed in reducing production costs and sales rate per unit of heat, you can determine *P* by comparing the energy density (ED) of the innovative energy supply scheme indicators, or with indicators of analogues:

$$P = 1 - \frac{ED_i \cdot CC_i}{ED_a \cdot CC_a}; \; P = 1 - \frac{ED_i \cdot CC_i}{ED_n \cdot CC_n}, \quad (9)$$

where CC_i is specific cost / cost of 1 kW of energy in the case of an innovative solution, taking into account additional capital investment in energy-saving innovations; CC_a is specific cost / production cost of 1 kW of energy for the analogue of the innovation scheme; CC_n is the average unit cost of production of 1 kW of energy in the region. ED_i is an indicator of the energy density of the building in the case of an innovative solution; ED_a is an indicator of energy density of building of the territory in case of analog; ED_n is an indicator of the energy density of the built-up area, which reflects the current standards of energy consumption in buildings.
(*P*) obtained by this formula reflects the economic benefits of the final consumer and producer of electricity in the form of savings by reducing the amount of energy consumed and its cost compared to the analogue of the innovative solution.
In general, the formula for determining the advantage (*P*) is a set of formulas (8) and (9):

$$\begin{cases} P_1 = \frac{IM}{AM} - 1 \\ P_2 = 1 - \frac{ED_i \cdot CC_i}{EB_a \cdot CC_a}, \end{cases} \quad (10)$$

P_1 reflects the advantage obtained by increasing the profitable part (commercial efficiency), with the condition under which IIP is considered commercially effective $\begin{bmatrix} P_1 > 0 \\ P_2 > Ve \end{bmatrix}$; P_2 is the advantage obtained through savings in energy production (economic efficiency), with the condition under which the project is considered cost-effective – $P_2 > 0$.
Summary and conclusion: Thus, *Ve*, P_1, and P_2 allow:

- assess the feasibility of investing in innovation;
- assess the impact of innovation on the basic individual development of the territory;

• assess the additional risks of innovation that arise in connection with the implementation of the FE in the development of the territory;

• evaluate the premium for the risk of innovation in the individual development of the territory, expressed in additional profitability, which reflects the relative commercial and economic efficiency.

In this case, *Ve* і P_1, in addition to rapid analysis of the project, can be used in the search for such classic indicators as *IRR* and *NPV*. They will allow to adjust these indicators for the innovation component:

$$NVP_{IIP} = \frac{1 + P_1}{1 + Ve} \cdot NVP_{IIP}, \qquad (11)$$

NPV_{IIP} net discounted income of IIP of territory development; P_1 is risk premium, expressed in additional profitability of IIP; *Ve* is the average risk rate for this IIP; NPV_{IP} is net discounted income of the IP proprietorship of the territory.

Thus, *Ve*, P_1 and P_2 have the following properties and advantages:

• they allow to make the express analysis of an innovative part of the investment project;

• they ake into account the specific properties of innovative projects, namely: additional risks and benefits;

• they take into account the time factor of project implementation as a factor that increases its risks;

• they introduce an innovative amendment to the basic calculations of the investment project, i.e. can be used to search for classic performance indicators, such as *IRR* and *NPV.*

REFERENCES

1. Marzaev, Aleksandr Viacheslavovich. (2003) Metodicheskie osnovy otsenki snnovatsii v stroitelstve [Methodical bases of an estimation of innovations in construction]: dys. ... kandidata ekonomicheskikh nauk: 08.00.05. Moskow. 174 p. [in Russian].
2. Seniv, Bohdan Hryhorovych. (2004) Analiz efektyvnosti investytsii v rekonstruktsiiu i tekhnichne pereozbroiennia diiuchykh pidpryiemstv [Analysis of the effectiveness of investments in the reconstruction and technical re-equipment of existing enterprises] : dys. ... kand. ekon. nauk : 08.06.04. Ternopil. 195 p. [in Ukrainian].
3. Resolution of the Cabinet of Ministers of Ukraine (2012), "Procedure and criteria for assessing the economic efficiency of project (investment) proposals and investment projects" available at: http://www.me.gov.ua/Legislati veActs/Detail?lang [in Ukrainian].
4. State Agency of Ukraine for Investments andDevelopment (2010), Order "Methodical recommendations for the development of business plans of investment projects", available at:http://phm.gov.ua/miskarada/upravlinnya viddili/upravekonomiki/informatsiyaprovid/programi rozvitku [in Ukrainian].
5. Marion, A. (1999). *Le Diagnostic d'Entreprise [Business Diagnosis].* Paris: Ed. ECONOMICA.
6. Telyshevska L. I. Pershocherhovi umovy aktyvizatsii innovatsiinoi diialnosti yak osnovy tovarnoi polityky suchasnykh pidpryiemstv [Urgent measures for the activation of innovation activity as the basis of product policies of modern enterprises]. *Ekonomika promyslovosti – Economy of Industry,* 2011, No. 2-3 (54– 55), p. 188-192 [in Ukrainian].
7. Sheremet, A. D., & Sayfulin, R. S. (2003). *Metodika finansovogo analiza [The method of financial analysis].* Moscow: INFRA-M.
8. Grynchutskyy, V. I. Interrelation of investment and innovation activies of the industrial enterprise // Global and national problems of economy. 2016 13. P. 236–243. URI: http://global-national.in.ua/archive/13-2016/49.pdf.
9. Antoniuk, L. L. Poruchnyk, A. M., Savchuk, V. S. Innovatsii : teoriia, mekhanizm rozrobky ta omertsializatsii : monohrafiia [Innovations : theory, mechanism of development and commercialization : monograph]. Kyiv : KNEU, 2003, 394 p. [in Ukrainian].
10. Mykytyuk, P. P. (2011). Analiz efektyvnosti investytsiino-innovatsiinoi diialnosti pidpryiemstv : teoriia i praktyka: dys. d-ra ekon. nauk: 08.00.09. Ternopil [in Ukrainian].

THE BALTIC SCIENTIFIC JOURNALS
PIRETC
PROCEEDING OF THE INTERNATIONAL RESEARCH EDUCATION & TRAINING CENTER

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

EVALUATION OF MARKETING ACTIVITIES OF ENTERPRISES TAKING INTO ACCOUNT THEIR CYCLING DEVELOPMENT

Yevhen Palkovskyi

Applicant of the Department of Management, Public Administration and Personnel, Ternopil National Economic University, Ukraine.
Email: shapovalov1@bigmir.net

ABSTRACT

The compatibility of a balanced system of indicators of marketing activities (BSIMA) with existing systems of indicators used in other departments of the enterprise is of great importance. Thus, it is necessary to ensure the objectives of the BSIMA coincide with the objectives defined in other systems. In addition, it is necessary to ensure the indicators of BSIMA to not to contradict the indicators that are set in other systems at the same level or of the system of marketing indicators of other divisions of the enterprise or of the system of indicators of other functional areas.
The use of a balanced system of indicators of evaluation the quality of the marketing mix, implies that in each case more or less prospects (areas for assessing the effectiveness of marketing activities) with a change in their content can be used. This is due to the fact that the components of BSIMA must be designed to meet the requirements of a wide variety of enterprises and industries. However, these components are a model, not a dogma. There is no mathematical theorem that can prove that the four components of prior functions of marketing are necessary and sufficient. It is much more important in each case to evaluate the quality of fulfillment of these functions and the quality of marketing mix at every stage of the enterprise development.
Keywords: marketing activities, marketing efficiency, marketing service, marketing management, BSIMA.

Main Material: To assess the quality of the marketing mix, a group of indicators is used, reflecting the effectiveness of methods and the culture of application of marketing tools. This index, in essence, reflects the tactical marketing component, i.e. the key one in determining the current marketing activity, as it directly characterizes the effectiveness of marketing activities.
A marketing mix, or marketing complex, includes a set of controllable marketing variables that a firm uses in an effort to elicit a desired response from the target market. Since the elements of the marketing mix (marketing tools) are closely related to the four priority functions of marketing, assessing the quality of these functions, you can, accordingly, evaluate the quality of the marketing mix.
To create a set of indicators that characterize the quality of the marketing mix, traditional indicators of marketing effectiveness, financial indicators, specific indicators for assessing the quality of individual instruments are taken as the basis.
As a grouping of key indicators, a functional approach can be used (table 1).
Since the quality of the marketing mix is a multifactorial indicator, it can be represented as a model:

$$KMM = f(F1, F2, F3, F4), \quad (1)$$

where *F1* is a group of analytical indicators; *F2* is group of assortment quality indicators; *F3* is group of sales and distribution indicators; *F4* is group of communication indicators.
Formula (2) in General form using an additive model and the number of indicators (*n*) can be represented as:

$$\text{KMM} = [A_1 \cdot (I_1^{m1}) + A_2 \cdot (I_2^{m2}) + A_3 \cdot (I_3^{m3}) + \cdots + A_n \cdot (I_n^{mn})], \quad (2)$$

where $A_1, A_2, A_3, \ldots, A_n$ - respectively, the weight of the indicators, and $\sum_{i=1}^{n} A_i = 1$;

m1, m2, m3,..., mn is the corresponding measure of the index of each *i*-th indicator, where *i = [1, n].*

To identify the ranges of *KMM* values, the scale is used:

0 <KMM <0.4 - low quality of the marketing mix;

0.5 <KMM <0.7 - average quality of the marketing mix;

0.8 <KMM <1.0 - high quality marketing mix.

Table 1. Grouping of indicators that reflect the quality of methods and culture of marketing mix

Components of the quality of the marketing mix of the company	Contents
Quality of the analytical function	Share of marketing research costs in the total marketing costs; Share of refusals from orders in total turnover;
Quality of assortment	Index of commodity competitiveness nomenclature; Share of goods in the stage of growth and maturity in the whole range of goods;
Quality of sales and distribution function	Share of gross revenue per one sales agent; Ratio of output in the warehouse to turnover; Ratio of the profit of the channel of movement of goods to the total costs of this channel of movement of goods;
Quality of communication function	Share of new orders in the total volume of available orders; Exhibition activity; Advertising activity

After evaluating each of the four elements of marketing activity of an industrial enterprise, an assessment of the level of marketing activity of the enterprise as a whole, taking into account the cyclical nature of development. The composition and sequence of work carried out by the enterprise in this regard are presented in Figure 1

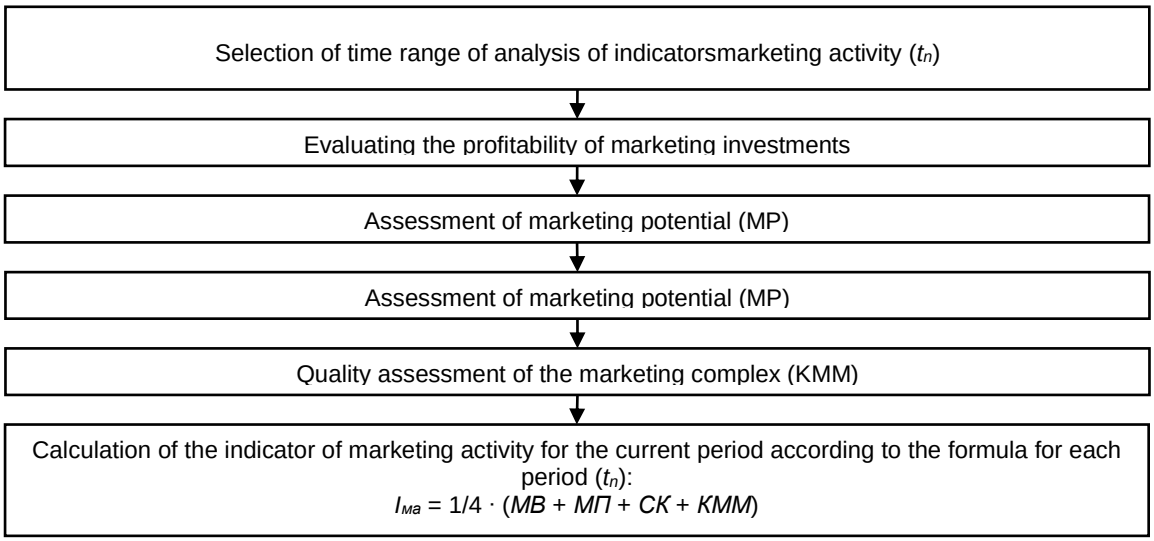


Figure 1. Assessment of the level of marketing activity of the enterprise taking into account the cyclical nature of development

A comprehensive assessment of the actual level of marketing activity of the enterprise at time (*t)* is carried out according to the additive model, according to the following formula:

$$I_{ма}\ t_n = 1/4 \cdot (МВ\ t_n + МП\ t_n + СК\ t_n + КММ\ t_n), \quad (3)$$

where $I_{ма}$ *is* an indicator of marketing activity of the enterprise.

Indicators of marketing activity are related to the functions of marketing: analytical, assortment, sales, communication and the function of accounting and control. In the table 2 presents some of them.

Regulation of marketing activity for each of the functions of marketing involves the use of various techniques and techniques.

As part of the analytical function, in order to identify an unstable market, marketing staff need to analyze the relationship between profits from short-term projects to total and net profit from all activities (high values of these indicators reduce the quality of income).

VOLUME 08 ISSUE 01 2020
ISSN: 2613-5817; E-ISSN: 2613-5825

To perform the assortment function, taking into account the risk of sales, it is necessary to analyze the assortment portfolio of the enterprise and identify groups of goods with relatively stable demand, which will allow the company to minimize the impact on its activities of economic cycles. To stabilize revenues, the company must include in the range of products in demand in different phases of the cycle.
Analyzing the extent of the sales function, it is necessary to assess the change in actual sales of different products in different markets, depending on the goals set in this area.
To assess the activity of the communicative function is required to identify the relationship between the cost of promotion and sales in value terms by the following parameters: the cost of maintaining sales agents, attributed to sales; costs of advertising and PR related to sales; sales promotion costs, administrative costs of sales services, etc., are also included in sales.

Table 2. The relationship of indicators of marketing activity of the enterprise with the functions of marketing.

Groups of indicators of marketing activity	Examples of indicators	Sources of information about indicators
1. Indicators of market research activity	Share of marketing research costs in total marketing costs	Relevant balance sheet items and financial statements
2. Indicators of assortment policy activity	Correlation of product range with elasticity of demand; The share of "growing" and "mature" goods in total goods; Risky subject-target specialization	Estimated figure for analytical data accounting; Estimated indicator (on based on BCG - matrix); Estimated indicator according to analytical accounting
3. Indicators of sales activity.	Efficiency of sales agents; Profitability of goods channels.	Data on the number of visits to intermediaries and consumers; about the number of goods sold; Sales volume per consumer; Ratio of channel profitability to costs (analytical accounting)
4. Indicators of strategy activity	Increase in the share of sales in new markets to total sales	Special calculations (from the data of analytical and current accounting), analysis of matrices
5. Indicators of communication activity	The share of product growth to advertising costs; Number of new consumers to the total number; Increase in return on costs for the promotion of goods; Rating of exhibition activity of the firm	Special calculations (from the data of analytical and current accounting)
6. Profitability indicators	Profit quality indicators; Income stability indicators; Profitability in terms of goods and markets	Special calculations (from the data of analytical and current accounting)
7. Indicators of strategy activity	Increase in the share of sales in new markets to total sales	Special calculations (from the data of analytical and current accounting), analysis of matrices

The cost-to-sales ratio should be analyzed in terms of overall financial objectives. This is necessary in order to determine where the organization has the largest revenue entry.

Summary and Conclusion: Thus, the article presents indicators of marketing activity according to the functions (market research, assortment policy, sales activities, communication activities) and general indicators (profitability, strategy activity). It allows to use this method of evaluating the marketing activity of an industrial enterprise in the development of the portfolio strategies of the enterprise. In this case, the indicators of marketing activity is used in the form of complementary variables that evaluate such characteristics as the relative competitive advantage of the enterprise (GA / McKinsey matrix), business competitiveness (Sell / DPM matrix), and the competitive position of the enterprise (Hofer matrix).

REFERENCES

1. Antoniuk A. A. (2007) Vybir pidhodiv do formuvannia pokaznykiv otsinky efektyvnosti marketynhovoi diialnosti na pidpryiemstvi [The choice of approaches to the formation of indicators for assessing the effectiveness of marketing activities in the enterprise]. *Derzhava ta rehiony. Ser.: Ekonomika ta pidpryiemnytstvo – State and regions. Ser .: Economics and Entrepreneurship*. No 2. P.11–14. [in Ukranian].
2. Kaplan, Robert S., Norton David P. (2004) Sbalansyrovannaia systema pokazatelei. Ot stratehyy k deistvyiu [Balanced scorecard. From strategy to action.]. Moscow: ZAO «Olimp-Biznes», 2004. 416 p. [in Russian].
3. Kaplan, R. S., Norton D. P. (2004) Orhanyzatsyia, oryentyrovannaia na stratehyiu. Kak v novoi byznes-srede preuspevaiut orhanyzatsyy, prymeniaiushchye sbalansyrovannuiu systemu pokazatelei [Strategy-oriented organization. How organizations with a balanced scorecard thrive in the new business environment]. Moscow: ZAO «Olimp-Biznes», 416 p. [in Russian].
4. Verba V. A, Hrebeshkov O. M. Suchasni metodychni pidkhody do otsinky efektyvnosti marketynhovoi diialnosti pidpryiemstva [Modern methodological approaches to assessing the effectiveness of marketing activities of the enterprise]. Retrieved from: http://economica.org.ua/2009/efmarkdijaln/ [in Ukranian].
5. Herasymiak N. V. (2012) Teoretyko-metodychni pidkhody do otsinky efektyvnosti marketynhovykh zakhodiv promyslovoho pidpryiemstva [Theoretical and methodological approaches to assessing the effectiveness of marketing activities of an industrial enterprise]. *Ekonomichnyi chasopys-XXI – Economic magazine-XXI*. №5-6. P. 40–43. [in Ukranian].
6. Kolesnyk V. M. (2006) Metodychni aspekty otsinky efektyvnosti marketynhu v silskohospodarskykh pidpryiemstvakh zernoproduktovoho kompleksu APK [Methodological aspects of assessing the effectiveness of marketing in agricultural enterprises of the grain complex of agro-industrial complex]. *Ekonomika APK – Economics of agro-industrial complex*. No 3. P.78–82. [in Ukranian].
7. Otsinka efektyvnosti diialnosti sluzhby marketynhu. Kryterii roboty sluzhby marketynhu [Evaluation of the effectiveness of the marketing service. Criteria for the work of the marketing service]. Retrieved from: http://www.megos.org.ua/marketynh.13.13.html [in Ukranian].
8. Upravlinnia marketynhovymy resursamy [Marketing resources management]. Retrieved from: http://marketopedia.ru/273-marketing-resource-managementmrm.html [in Ukranian].
9. Usyk S. P. (2011) Otsinka efektyvnosti marketynhovoi diialnosti vitchyznianykh pidpryiemstv [Evaluation of the effectiveness of marketing activities of domestic enterprises]. *Ekonomika ta derzhava – Economy and state*. No 5. P. 33–38. [in Ukranian].
10. Shchur O. M., Kopets H. R. (2013) Udoskonalennia otsinky efektyvnosti marketynhovykh vytrat [Improving the assessment of the effectiveness of marketing costs]. *Visnyk nats. un-tu «Lvivska politekhnika». Lohistyka – Bulletin of National University "Lviv Polytechnic". Logistics.* No 469. C. 333–337. [in Ukranian].
11. Mykytyuk P. P., Tsetner L. O. (2016) Tendentsii rozvytku modeliuvannia protsesu marketynhovykh komunikatsii pidpryiemstv-vyrobnykiv sportyvnykh tovariv [Trends in the development of modeling the process of marketing communications of enterprises producing sporting goods]. *Ekonomichnyi prostir – Economic space*. No 113. P. 206-219. [in Ukranian].
12. Mykytyuk P. P., Tsetner L. O. (2016) Marketynhova otsinka rynku sportyvnykh tovariv u konteksti profesionalizatsii suchasnoho sportu [Marketing assessment of the sporting goods market in the context of professionalization of modern sports]. *Hlobalni ta natsionalni problemy ekonomiky – Global and national economic problems*. No 13. P. 334–338. [in Ukranian].

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

Bahrain

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

Vladimer Papava
Tbilisi State Medical University. Assistant-Professor. PhD. MD.
Zaira Gudushauri
Georgian-Azerbaijan University named G.Aliyev. Assosiate Professor. PhD. ES.

Germany

Hans-Juergen Zahorka
Assessor jur., Senior Lecturer (EU and International Law, Institutions and Economy), Chief Editor of "European Union Foreign Affairs Journal", LIBERTAS - European Institute, Rangendingen
Alexander Dilger
University of Münster. Professor of Business Economics. PhD in Economy.

Greece

Margarita Kefalaki
Communication Institute of Greece. PhD in Cultural Communication. President of Institute.

Hungary

Nicasia Picciano
Central European University. Department of International Relations and European Studies.

India

Federica Farneti
University of Bologna. Department of Sociology and Business Low. Associate Professor. OhD in Economic & Management.
Prasanta Kumar Mitra
Sikkim Manipal Institute of Medical Sciences. Deptartment of Medical Biotechnology. PhD in Biochemistry.
Samant Shant Priya
Lal Bahadur Shastri Institute of Management, New Delhi, Associate Professor in Philosophy PhD in Marketing.
Sonal Purohit
Jain University, Center for Management Studies, Assistant Professor, PhD in Business Administration, Life Insurance, Privatization.
Varadaraj Aravamudhan
Measi Instittue of Management. Associate Professor. PhD in Management.

Iraq

Rana Khudhair Abbas Ahmed
Irag, Baghdad, Alrafidain University College. Lecturer, Global Executive Administrator, Academic coordinator. PhD in Scholar (CS).

Iran

Azadeh Asgari
Asian Economic and Social Society (AESS). Teaching English as a Second Language. PhD

Italy

Simona Epasto
University of Macerata. Department of Political Science, Communication and International Relations. Tenured Assistant Professor in Economic and Political Geography. PhD in Economic and Political Geography
Donatella M. Viola
London School of Economics and Political Science, London, Assistant Professor in Politics and International Relations at the University of Calabria, Italy. PhD in International Relations.

Jordan

Ahmad Aljaber
President at Gulf University. German Jordan University, Founder / Chairman of the Board. Ph.D in Computer Science
Ahmad Zamil
Middle East University (MEU). Business Administration Dept. Associate Professor. PhD Marketing
Ikhlas Ibrahim Altarawneh
Al-Huessien BinTalal University. Business Department. Full Professor in Human Resource Management.
Asmahan Majed Altaher
Arab Academy for Banking and Financial Sciences. Associate Professor. PhD in Management Information System.
Sadeq AlHamouz
Middle East University (MEU). Head Computer Information Systems. PHD. Computer Science.

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

Morocco

Mohammed Amine Balambo
Ibn Tufail University, Aix-Marseille University. Free lance. Consultant and Trainer. PhD in Philosophy. Management Sciences, Specialty Strategy and Logistics.

Nigeria

Bhola Khan
Yobe State University, Damaturu. Senior Lecturer and Head, Dept. of Economics. PhD in Economics.

Norway

Svitlana Holovchuk
PhD in general pedagogics and history of pedagogics.

Pakistan

Nawaz Ahmad
The Aga Khan University. Chief Examiner. PhD in Management.

Poland

Grzegorz Michalski
Wroclaw University of Economics. Faculty of Engineering and Economics. PhD in economics. Assistant professor.
Kazimierz Waluch
Pawel Wlodkowic University College in Płock, Assistant Professor at the Faculty of Management. PhD in Economy.
Robert Pawel Suslo
Wroclaw Medical University, Public Health Department, Health Sciences Faculty, Adjunct Professor of Gerontology Unit. PhD MD.
Tadeusz Trocikowski
European Institute for Eastern Studies. PhD in Management Sciences.

Qatar

Mohammed Elgammal
Qatar University. Assistant Professor in Finance. PhD in Finance

Romania

Camelia Florela Voinea
University of Bucharest, Faculty of Political Science, Department of Political Science, International Relations and Security Studies. PhD in Political Sciences.
Minodora Dobreanu
University of Medicine, Pharmacy, Sciences and Technology of Târgu Mureș. Faculty of Medicine. Professor. PhD in Medicine.
Odette (Buzea) Arhip
Ecological University Bucuresti. Professor at Ecological University. PhD.

Russia

Alexander A. Sazanov
Leningrad State University named A.S. Pushkin. Doctor of Biological Sciences. Professor
Alexander N. Shendalev
State Educational Institution of Higher Education. Omsk State Transport University. Associate Professor
Andrey Latkov
Stolypin Volga Region Institute of Administration, Ranepa. Sc.D. (Economics), Ph.D. (Politics), professor,
Andrei Popov
Director "ProfConsult Group". Nizhniy Novqorod Region. PhD
Anton Mosalyov
Russian State University of Tourism and Service. Associate Professor
Carol Scott Leonard
Presidential Academy of the National Economy and Public Administration. Vice Rector. PhD, Russian History
Catrin Kolesnikova
Samara Architectural and Constructional University. PhD
Ekaterina Kozina
Siberia State Transportation University. PhD
Elena Klemenova
South Federal University of Russia. Doctor of Pedagogical Sciences. Professor

Saudi Arabia

Serbia

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

Iryna Skrypchenko
Prydniprovsk State Academy of Physical Culture and Sports. Department of Water Sports. Associate Professor. PhD in Physical Education and Sport.
Katerina Yagelskaya
Donetsk National Technical University. PhD
Larysa Kapranova
State Higher Educational Institution «Priazovskyi State Technical University» Head of the Department of Economic Theory and Entrepreneurship, Associate Professor, PhD in Economy,
Lesia Baranovskaya
National Technical University of Ukraine "Kyiv Polytechnic Institute", PhD, Associate Professor.
Liliya Roman
Department of Social Sciences and Ukrainian Studies of the Bukovinian State Medical University. Associate professor, PhD in Philology,
Lyudmyla Svistun
Poltava national technical Yuri Kondratyuk University. Department of Finance and Banking. Associated Professor.
Mixail M. Bogdan
Institute of Microbiology and Virology, NASU, department of Plant of viruses. PhD in Agricultural Sciences.
Nataliya Bezrukova
Yuri Kondratyuk National Technical University. Associate Professor, PhD in Economic.
Oleksandr Voznyak
Hospital “Feofaniya”. Kyiv. Head of Neureosurgical Centre. Associated Professor
Oleksandra Kononova
Prydniprovska State Academy of Civil Engineering and Architecture (PSACIA), Assoc.professor of Accounting, Economics and Human Resources Management department. PhD. in Economic Science.
Oleksandr Levchenko
Central Ukrainian National Technical University, Kropyvnytskyi. Vice-Rector for Scientific Activities. Professor.
Olena Cherniavska
Poltava University of Economics and Trade, Doctor of Economical Sciences. Professor
Olga F. Gold
Ukrainian National University named I.I. Mechnikov. PhD
Olga I. Gonchar
Khmelnytsky National University, Economics of Enterprise and Entrepreneurship, Doctor of Economic Sciences, Professor.
Roman Lysyuk
Assistant Professor at Pharmacognosy and Botany Department at Danylo Halytsky Lviv National Medical University.
Stanislav Goloborodko
Doctor of Agricultural Sciences, Senior Researcher. Institute of Agricultural Technologies of Irrigated Agriculture of the National Academy of Agrarian Sciences of Ukraine
Svetlana Dubova
Kyiv National University of Construction and Architecture. Department of Urban Construction. Associate Professor. PhD in TS.
Kyiv Cooperative Institute of Business and Law
Tetiana Kaminska
Kyiv Cooperative Institute of Business and Law. Rector. Doctor of Science in Economics. .
Valentina Drozd
State Scientific Research Institute of the Ministry of Internal Affairs of Ukraine. Doctor of Law, Associate Professor, Senior Researcher.
Vasyl Klymenko
Central Ukrainian National Technical University. Department of Electrical Systems and Energy Management. Doctor TS. Professor.
Victoriya Lykova
Zaporizhzhya National University, PhD of History
Victor P. Mironenko
Doctor of Architecture, professor of department "Design of architectural environment", Dean of the Faculty of Architecture of Kharkov National University of Construction and Architecture (KNUCA), member of the Ukrainian Academy of Architecture
Yuliia Mytrokhina
Donetsk National University of Economics and Trade named after Mykhaylo Tugan-Baranovsky., PhD in Marketing and Management. Associate Professor
Yulija M. Popova
Poltava National Technical University named Yuri Kondratyuk. PhD in Ecomomic. Assiciated professor

Crimea

Lienara Adzhyieva
V.I. Vernadsky Crimean Federal University, Yevpatoriya Institute of Social Sciences (branch). PhD of History. Associate Professor
Oksana Usatenko
V.I. Vernadsky Crimean Federal University. Academy of Humanities and Education (branch). PhD of Psychology. Associate Professor.
Oleg Shevchenko
V.I. Vernadsky Crimean Federal University, Humanities and Education Science Academy (branch), Associate Professor. PhD in Social Philosophy

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

Representation of Azerbaijan International Diaspora Center in Georgia and NGO International Research, Education & Training Center are publishing scientific papers of scientists on Website and in Referred Journals with subjects which are mentioned below:

© SOUTHERN CAUCASUS SCIENTIFIC JOURNALS

Gülüstan Black Sea Scientific Journal of Academic Research has ISSN, E-ISSN and UDC numbering:
ISSN: 1987-6521 (Print), E-ISSN: 2346-7541 (Online), DOI prefix:10.23747, UDC: 551.46 / (051.4)/B-64

AGRICULTURAL, ENVIRONMENTAL & NATURAL SCIENCES

SOCIAL, PEDAGOGY SCIENCES & HUMANITIES

MEDICINE, VETERINARY MEDICINE, PHARMACY AND BIOLOGY SCIENCES

TECHNICAL AND APPLIED SCIENCES

REGIONAL DEVELOPMENT AND INFRASTRUCTURE

ECONOMIC, MANAGEMENT & MARKETING SCIENCES

VOLUME 08 ISSUE 01 2020

ISSN: 2613-5817; E-ISSN: 2613-5825

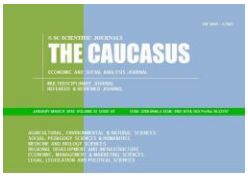
LEGAL AND POLITICAL SCIENCE

CONFERENCE NEWSLETTER

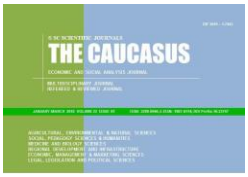
MULTIDISCIPLINARY JOURNAL

The Caucasus Economic and Social Analysis Journal has ISSN, E-ISSN and UDC numbering:
ISSN: 2298-0946 (Print), E-ISSN: 1987-6114 (Online), DOI prefix:10.23747, UDC: 3/K-144

MULTIDISCIPLINARY JOURNAL



CONFERENCE NEWSLETTER



NGO International Research, Education & Training Center is publishing scientific papers of scientists on Website and in Referred Journal with subjects which is mentioned below:

© THE BALTIC SCIENTIFIC JOURNALS
Proceedings of the Estonian International Academy of Social Sciences (PIASE) has ISSN, E-ISSN and UDC numbering: ISSN: 2613-5817 (Print), E-ISSN: 2613-5825 (Online), DOI prefix:10.23747, UDC:

SOCIAL, PEDAGOGY SCIENCES & HUMANITIES

Historical Sciences and Humanities
Psychology and Sociology Sciences
Philosophy and Philology Sciences
History of Science and Technology
Social Science
Pedagogy Science
Politology
Geography
Linguistics

MEDICAL SCIENCE

Clinical Medicine
Prophylactic Medicine
Theoretical Medicine
Stomatology & Dentistry

ECONOMIC, MANAGEMENT & MARKETING SCIENCES

Economics and Management of Enterprises
Economy and Management of a National Economy
Mathematical Methods, Models and Information Technologies in Economics
Accounting, Analysis and Auditing
Money, Finance and Credit
Demography, Labor Conomics
Management and Marketing
Economic Science

LEGAL, LEGISLATION AND POLITICAL SCIENCES

Theory and History of State and Law
International Law
Branches of Law
Judicial System and Philosophy of Law
Theory and History of Political Science
Political Institutions and Processes
Political Culture and Ideology
Political Problems of International Systems and Global Development

JOURNAL INDEXING

ISSN: 2613-5817; E-ISSN: 2613 – 5825, DOI PREFIX: 10.36962/PIRETC
©Publisher: NGO International Research, Education & Training Center.
Deputy and founder of organization: Seyfulla Isayev. Azerbaijan Marine Academy. Student.
©Editorial office: Narva mnt 5, 10117 Tallinn, Estonia.
©Typography: NGO International Research, Education & Training Center. The Baltic Scientific Journals.
Registered address: Narva mnt 5, 10117 Tallinn, Estonia.
Tel: +994 55 241 70 12; +994518648894
E-mail: gulustanbssjar@gmaill.com, sc.mediagroup2017@gmail.com, caucasusblacksea@gmail.com
Website: http://sc-media.org/

ISSN: 2613-5817; E-ISSN:2613-5825, DOI PREFIX: 10.36962/PIRETC
VOLUME 08 ISSUE 01 2019

PIRETC

MULTIDISCIPLINARY JOURNAL
REFEREED & REVIEWED JOURNAL

PSYCHOLOGY, SOCIOLOGY, ANTHROPOLOGY, AND PHILOSOPHY SCIENCES
ECONOMIC, MANAGEMENT & MARKETING SCIENCES
AGRICULTURAL, ENVIRONMENTAL & NATURAL SCIENCES
LEGAL, LEGISLATION AND POLITICAL SCIENCES

http://sc-media.org/piretc/