International Economic Relations: Integration Associations and Ukraine in the Global System of International Trade

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ABSTRACT

On the basis of cluster analysis, homogeneous groups of international integration associations of the world have been established and their structure has been determined. This made it possible to determine the objective position between the integration associations and Ukraine in the global system of international trade. The functional dependencies of development of the international integration are calculated, and the most informative factors are determined. The results of the research are the basis for analyzing the problems and prospects for the development of Ukraine's integration in the global system of international trade.

Keywords: Clusters of integration associations; International integration space; Discriminant analysis; International trade system.

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Relaciones Económicas Internacionales: Las Asociaciones de Integración y Ucrania en el Sistema Global de Comercio Internacional

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RESUMEN

Sobre la base del análisis de conglomerados, se han establecido grupos homogéneos de asociaciones de integración internacional del mundo y se ha determinado su estructura. Esto permitió determinar la posición objetiva entre las asociaciones de integración y Ucrania en el sistema mundial de comercio internacional. Se calculan las dependencias funcionales del desarrollo de la integración internacional y se determinan los factores más informativos. Los resultados de la investigación son la base para analizar los problemas y las perspectivas de desarrollo de la integración de Ucrania en el sistema global de comercio internacional.

Palabras claves: Agrupaciones de asociaciones de integración; Espacio de integración internacional; Análisis discriminante; Sistema de comercio internacional.

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1. Introduction

There are more and more integration groups at the current phase of international economic relations, states seek to become their members to improve trade conditions. This contributes to the intensification of international trade in some regions and, as a consequence, increase the intensity of world trade. International trade as the oldest form of international economic relations in the era of globalization is transforming into a global system and contributes to a qualitatively new stage of development of the world economy. Thus, we can determine that a characteristic feature of the modern development of the global system of international trade are integration processes.

This problem acquires additional urgency, given the contradictory interaction of the processes of regionalization and globalization, when the process of globalization forms new characteristics and types of regionalization, intensifying competition between integration associations, especially in the field of international trade. Based on this, the research of the integration vector of the development of the global system of international trade, which determines the nature, becomes especially relevant today. The peculiarities and strategic directions of the development of international trade relations within the world integration groups as integral components of the global system of international trade are interesting.

The object of study are the integration processes in the global system of international trade. The research considered all WTO-registered integration associations and Ukraine. Therefore, 51 international integration associations identified were studied according to the UNCTAD classification. It is the United Nations Conference on Trade and Development, established in 1964 as a permanent intergovernmental body, and is a key body of the General Assembly on trade and development (UNCTAD, 2020).

The purpose of the article is to study the development of trade and economic relations at the system of integration processes.

1. Assessment of the current positions of world integration associations and Ukraine in the space of international trade and economic relations.
2. Determining the analytical relationships of differences in the development of trade and economic relations of integration associations in the global system of international trade.

2. Literature review

The issues of analysis of the processes of international economic integration and their impact on the nature and development trend of international trade are covered in the works of many researchers. Of particular relevance is the issue of forecasting and management of integration processes using mathematical tools. Thus, the researcher J. O'Neill (2020) performed an expert analysis of comparative statistics of the current level of development of member countries of integration entities, in particular, economic opportunities and prospects for integration of the BRICS countries and beyond. S. Kozmenko, T. Savchenko, D. Kazarinov (2012) studied the issues of integration of economies of different regions on the example of financial convergence of Ukraine with some post-Soviet countries and major trading partners of the Eurozone, in particular, Poland, Hungary and the Czech Republic. Based on the results of the comparative analysis according to the relevant criteria, a conclusion was made about the greater financial convergence of Ukraine with the CIS countries. Scientist A.T. Spitsyn (2019) presents a theoretical analysis of global trends and contradictions in world economic development at the beginning of the XXI century. The author examines the importance of national economies on the example of the CIS and the effectiveness of their development based on addressing global and regional issues of integration. And the scientist B.A. Heifetz (2021) considers a wide range of issues regarding the development of integration processes through the expansion of mutual trade, production, scientific and technical cooperation and the development of economic relations, which produces a synergistic effect. The researcher proposed to focus on the aspect of integration from the strategic perspective on the basis of investment cooperation between countries.

Many scientists are interested in the applied aspect of economic and mathematical modeling of world economic and integration processes (shaikh et al 2020). Thus, in (Babenko et al, 2019, 2020; Perevozova et al, 2019) the study of measuring the characteristics of objects in the economy and data analysis using multidimensional statistical methods. The topic of forecasting the results of integration processes is devoted at the publications of O. Yu. Michurina (2019). Problems of development, analysis and selection of integration scenarios are revealed in the works of O.M. Anisimov, O.O. Shirov (2020) and I.N. Burganov (2015). Scientist A. Matsumura studied the problems of regional integration based on trade in environmental goods (Khudyakova, Shmidt, 2016), the authors E. Latoszek, I. E. Kotowska, A.Z. Nowak, A. Stepniak (2019) analyzes the European process of integration in the new regional and global conditions. Scientist P. Robson conducted a detailed study of the economic component of international integration (Gilpin, 2001), and scientist R. Gilpin considers the issue of global political economy in terms of understanding the international economic order (BRICS, 2017).

However, some aspects related to the specifics of the integration processes in the global system of international trade and Ukraine remain insufficiently disclosed and substantiated (Uddin et al 2021). First of all, the factors that regulate the global system of international trade at the global and regional levels need further study. In addition, the issues of trends in the development of integration processes in the global system of international trade remain insufficiently developed (Bhatti et al 2018). This also applies to assessing the effectiveness of international trade relations within world integration groups. Therefore, studying the prospects for the development of integration processes and Ukraine in the global system of international trade is important in both theoretical and practical aspects.

3. Data and methodology

To solve the above scientific problems, the following scientific methods were used: methods of analysis and synthesis - to assess the effectiveness of integration processes in the global system of international trade and current trends in integration processes in the global system of international trade. Ward's method of cluster analysis of integration groups and Ukraine in the global system of international trade for graphical interpretation of the positions of integration associations and Ukraine. Method of discriminant analysis to find differences between the studied groups of countries.

4. Results

To analyze the development of integration processes taking place in Ukraine, it is necessary to determine the differences between the integration associations of the world on the system of indicators that affect trade and economic relations in the world economy. But a preliminary classification should be performed using cluster analysis using the Ward method.

To determine the position of Ukraine in relation to integration associations in the global system of international trade, the following system of indicators is proposed, which is formed on the basis of the statistical data structure of the official information resource UNCTADstat (2020): exports within the association; total exports of the association; intra-union import total imports of the association; foreign direct investment: internal and external flows and stocks (annual); gross domestic product (GDP); total trade (annual); balance of payments, current accounts less (annual); trade growth rates (annual).

In this case, each integration association acts as an object characterized by certain values of the listed 9 indicators. Accordingly, they can be represented as points in 9-dimensional space. This space is usually called the property space of the studied objects (integration associations). Comparing the distance between these points will reflect the degree of closeness of the considered associations, their similarity with each other. The socio-economic meaning of such an understanding of similarity means that integration associations are considered to be all the more similar the smaller the differences between the indicators of the same name by which they are described.

Data for cluster analysis were used from statistical collections and official Internet resources (GCR, 2017; Babenko et al, 2019). According to these features, the homogeneity of countries in their entirety

was established by the Ward method using a package of applications for statistical calculations Statgraphics Centurion. In the first picture shows the dendrogram of the groups of the studied integration associations and Ukraine. It was obtained using the procedure of cluster analysis using the Ward method.

Figure 1. Dendrogram of integration associations and Ukraine in the global system of international trade

Sourese: developed by the authors

Visual analysis of the obtained dendrogram shows that the proposed system of features should be considered three clusters of groups of integration associations in the global system of international trade.

The first table shows the composition of each cluster, which includes the studied international integration associations. Thus, the first cluster includes 25 integration associations, and it is the most numerous. The second group contains 10 integration associations. Third cluster - 16. Ukraine was included in the first group together with the union of Africa, the Caribbean and the Pacific, ALBA, APEC, ASEAN, the Common Market of Central America, the West African Economic and Monetary Union, the Gulf Cooperation Council, NAFTA, the Organization for Economic Cooperation, etc.

For a detailed review of the state of integration processes in each of the three clusters, we calculate the average values of 9 indicators provided by the official Internet resource of statistical data UNCTADstad (2020), which are signs of trade and economic status of the studied integration associations and Ukraine intra-union exports (million dollars); x2 - total exports of the association (million dollars); x3 - intra-union imports (million dollars); x4 - total imports of the association (million dollars); x5 - foreign direct investment: domestic and foreign flows and stocks, annual (million dollars); x6 - GDP (million dollars); x7 - total trade, annual (million dollars); x8 - balance of payments, current accounts minus annual payments (million dollars); x9 - trade growth rate, annual (%). Let's define statistical characteristics of the used 9 indicators by means of a software package of statistical data processing Statgraphics Centurion.

Table 1. The composition of clusters of homogeneous integration associations and Ukraine in the global system of international trade

Rating number	Abbreviated name of the association	Integration association	Cluster	Abbreviated name of the association	Rating number	Integration association	Cluster
1.	ACP	African, Caribbean and Pacific (ACP) countries	1	FTAA	27.	Free Trade Area of North and South America	1
2.	ALBA-TCP	ALBA (Bolivarian Alliance for the Peoples of Our America)	1	G20	28.	Group of 20	1
3.	AMU	Arab Maghreb Union	2	G7	29.	Group of 7	1
4.	APEC	Asia-Pacific Economic Cooperation (APEC)	1	G-77	30.	Group of 77	1
5.	APTA	Asia-Pacific Trade Agreement (APTU)	2	G8	31.	Group of 8	2
6.	ASEAN	Association of Southeast Asian Nations (ASEAN)	1	GCC	32.	Gulf Cooperation Council	1
7.	ASEAN+CJK	ASEAN + China, Japan, Republic of Korea	2	GSTP	33.	Global system of trade preferences between developing countries	3
8.	CACM	Central American Common market	1	IGAD	34.	Intergovernmental authority on development	1
9.	CAN	Comunidad Andina	3	LAIA	35.	Latin American Integration Association	2
10.	CARICOM	Caribbean community	3	LAS	36.	League of Arab States	3
11.	CEFTA	Central European Free Trade Association	3	MERCOSUR	37.	MERCOSUR	3
12.	CEMAC	Economic and Monetary Community of Central Africa	3	MRU	38.	Mano River Union	3
13.	CEN-SAD	Community of the Sahel-Saharan states	3	MSG	39.	Melanesian Spearhead Group	1
14.	CEPGL	Economic Community of the Great Lakes	3	NAFTA	40.	NAFTA	1
15.	CIS	CIS	2	OAS	41.	Organization of American States	1
16.	COMESA	Common market of East and South Africa	3	OECD	42.	Organization of economic cooperation and development	3
17.	EAC	East African community	3	OECS	43.	Organization of Eastern Caribbean States	1
18.	ECCAS	Economic Community of Central Africa	3	OIC	44.	Organization of Islamic cooperation	2
19.	ECO	Organization of economic cooperation	1	OPEC	45.	OPEC	3
20.	ECOWAS	Economic Community of West African States (ECOWAS)	1	SAARC	46.	South Asian Association for Regional Cooperation	1
21.	EFTA	European Free Trade Association	2	SACU	47.	Southern Africa Customs Union	1
22.	EU15	European Union of 15 countries	2	SADC	48.	South African Development Community	1
23.	EU25	European Union of 25 countries	1	TPP	49.	Trans-Pacific Partnership	3
24.	EU27	European Union of 27 countries	1	UNASUR	50.	Union of South American Nations	1
25.	EU28	European Union	2	WAEMU	51.	West African Economic and Monetary Union	1
26.	Euroarea	Euroarea	2		52.	Ukraine	1

Source: developed by the authors according to the calculations of cluster analysis

The second table shows the average values and the overall average of the indicators that characterize the position of each integration association in the structure of the global system of international trade in 2019.

Table 2. Average values of clusters of integration associations and their general averages in the global international trade system in 2019

Sign	Cluster 1	Cluster 2	Cluster 3	General average
x_1	1801300,00	846862,00	15188,80	1068180,00
x_2	3486070,00	2413940,00	132182,00	2247920,00
x_3	1776260,00	829445,00	15459,20	1052400,00
x_4	3634450,00	2125670,00	154609,00	2273580,00
x_5	216847,00	101808,00	24861,40	135652,00
x_6	16903300,00	7660430,00	881094,00	10195900,00
x_7	3063550,00	2058180,00	100857,00	1958610,00
x_8	-66997,20	142632,00	-20378,40	-12339,70
x_9	1440,92	-22,57	-19,77	710,04

Source: calculated by the authors according to cluster analysis

It should be noted that the average values of the indicators have quite significant differences for each cluster of homogeneous groups of integration associations, which indicates a significant heterogeneity of the studied international associations. However, the analysis of the average values of indicators for each cluster does not give an unambiguous assessment of the level of trade and economic status of integration associations of each cluster, which indicates the need for additional study of causal relationships between indicators affecting trade and economic relations.

The third table shows the standard deviations in each group of integration associations according to the system of defined indicators. These values allow to estimate the variance of the values of indicators for each cluster and provide an opportunity to determine the differences between the average values of indicators for the analysis of trade and economic development of the relevant international associations by groups.

Table 3. The standard deviations of the values of indicators by clusters of integration associations in the global system of international trade in 2019

Sign	Cluster 1	Cluster 2	Cluster 3
x_1	2190870,00	1306420,00	28872,30
x_2	3460580,00	2165130,00	180491,00
x_3	2221850,00	1217990,00	29366,90
x_4	3563960,00	2165460,00	199292,00
x_5	202346,00	102125,00	33193,70
x_6	17293300,00	7467120,00	1360810,00
x_7	3097530,00	2023750,00	141660,00
x_8	206562,00	149814,00	26863,10
x_9	7427,91	13,61	12,48

Source: compiled by the authors based on the results of cluster analysis

The economic interpretation of the standard deviations of the studied clusters explains the "crowding" of the associations of the third group and the rather large "scatter" of the values of the indicators of the integration associations of the first cluster.

One of the main tasks of the analysis of international economic relations is to determine in which direction the processes of international integration will develop in the future. From the point of view of statistics, this task is to select indicators and determine their values, on the basis of which it would be possible to divide the future state of development of integration processes in the international

integration space. One way to decide which indicators and which values best distinguish these categories is discriminant analysis. For calculations we use the software statistical package Statgraphics Centurion.

For a detailed consideration of the state of integration processes in each of the three formed clusters, we perform a discriminant analysis. Discriminant will be understood as an analysis that allows to study the differences between two or more groups of objects on several variables (indicators) simultaneously (Babenko et al, 2017; Dovgal, 2019). To analyze the differences in the development of integration associations, it is necessary to identify discriminant functions. These functions are useful for determining the differentiation of development and the impact of the international trade system on the formation of the cluster. Also to obtain stable relationships of indicators that determine the relevant processes.

To determine the main directions of development of international integration, it is necessary to analyze the discriminant functions in standardized variables. Thus, according to the calculations performed using the software statistical package Statgraphics Centurion, the model of differences in the level of development of integration processes includes two discriminant functions with standardized variables. Using the algorithm for calculating this method, they are arranged sequentially according to the values of generalized eigenvalues. This sequence coincides with the eigenvalues as a percentage of their total. When raising the correlation relations to the square, it is possible to obtain determination indices, which also confirm the importance of discriminant functions. Statistics based on Wilkes' test show the relative contribution of the obstacle to the overall variability, taking into account all functions and excluding each subsequent one. Pearson's criterion was used to assess the significance of Wilkes' statistics (Vasylykivskyi et al, 2020; Bondarenko et al, 2018).

Thus, the equation of differentiation of the development of integration processes in 2019 has the form of the first discriminant function in standardized variables:

$$f(x) = 8,67098 x_1 + 6,36273 x_2 - 9,60139 x_3 - 21,273 x_4 + 1,50212 x_5 + 5,68611 x_6 + 11,567 x_7 \quad (1) \\ + 0,450606 x_8 - 0,167332 x_9$$

These calculations shown that the first discriminant function explains 95% of the differences in the distribution of integration associations into clusters according to the criterion of their development in the global system of international trade. So it is decisive.

The calculated discriminant function allows to establish a rating of influence of indicators of trade and economic development on differentiation of integration associations. The weights for each variable in (1) were distributed as follows:

$$x_4 > x_7 > x_3 > x_1 > x_2 > x_6 > x_5 > x_8 > x_9.$$

The analysis of weights for variables in the calculated function (1) allows us to make the following inferences. The differences in the development of integration in the world are in the following ranking of elements of international trade: total imports of the union (x_4); total trade (annual) (x_7); intra-union import (x_3); intra-union export (x_1); total exports of the association (x_2); GDP (x_6); foreign direct investment: internal and external flows and stocks (annual) (x_5); balance of payments, current accounts less (annual) (x_8); trade growth rates (annual) (x_9).

Thus, the use of methods of discriminant analysis allowed to select the most informative coefficients of the obtained functional dependence of the differentiation of the modern development of integration in the global system of international trade.

7. SWOT-analysis of research results

Strong points. The analysis allows to obtain an objective structure of international integration and to determine the current position of Ukraine in the world integration space. Analyzing the resulting clusters, we can conclude that most integration associations differ in the main indicators of trade and economic status. This indicates the uneven development of external integration in different regions of the world. Thus, according to the established signs of trade and economic development as of the end

of 2019 - beginning of 2020, Ukraine is closer to the first cluster of integration associations in the world. This result can provide recommendations for Ukraine's cooperation with integration associations of this group (Table 1).

Weak points. The obtained results can only provide recommendations for strengthening Ukraine's foreign economic strategy to enter international trade markets. But in order to achieve the set tasks it is necessary to envisage the implementation of effective measures of its state policy in the aspect of international integration. Which is primarily based on the creation of a modern mechanism and tools to stimulate the country's export activities.

The obtained results have prospects for further research. As the analysis shows, these factors are a significant reserve for the development of trade and economic relations of Ukraine in the international world economic space. As this will reduce foreign imports and increase exports of Ukrainian goods and services, increase total trade. And also to "raise" the level of GDP and other macroeconomic indicators in order to improve the living standards of the population and economic stability of Ukraine.

5. Conclusion

Based on the theoretical and logical analysis of the works of well-known experts in the field of international integration, methodological recommendations of the Institute of Economic Forecasting of the NAS of Ukraine and the domestic legal framework, the content and list of trade and economic indicators are substantiated. This forms the basis for assessing the future development of integration processes in the global system of international trade. They are the criteria for clustering international integration processes. They form the basis for comparative and further detailed economic analysis for the integration of Ukraine's foreign economic policy in the global system of international trade.

According to the identified trade and economic characteristics, the homogeneity of the studied set of integration associations of the world according to the UNCTAD classification has been established. Thus, clusters of homogeneous groups of integration associations have been established according to the criterion of their trade and economic development, which is characterized by 9 indicators. The levels of the proposed indicators are an analytical basis for the clustering of international integration associations. They provide for further economic analysis to strengthen the intensification of integration foreign economic policy and determine the strategic prospects for the development of Ukraine's integration processes in the global system of international trade. Further detailed analysis of indicators allows for an in-depth assessment of each of the indicators of trade and economic development.

The discriminant analysis revealed a causal relationship in the form of a functional relationship between the indicators that characterize the development of international integration in the global system of international trade. The most informative of them are identified. Quantitative analysis of weights for indicators (their significant difference between them) shows a large uneven impact of certain factors on the level of trade and economic development of integration associations in the system of international trade in the regions of the world.

Based on the performed quantitative analysis, it can be concluded that the development of Ukraine's international integration processes in the global trade system is due primarily to a decrease in total imports; to a lesser extent (twice less impact) - an increase in total trade for the year; with almost the same effect - a decrease in imports and an increase in exports within the union, as well as the total exports of the union and GDP. To a small extent, the development of international integration processes is influenced by foreign direct investment: annual internal and external flows and reserves; balance of payments (annual current accounts) and growth rates of trade.

The degree of influence of certain features can be used for further analysis of problems and prospects for the development of integration in terms of foreign economic policy of Ukraine.

References

1. UNCTAD: Trade and development report, 2020, <http://unctad.org/en>.
2. Timoshenkov, I., Babenko, V., Nashchekina, O., Makovoz, O. (2020). Institutional foundations of Ukraine's transition to the green economy. *Research in World Economy*, Vol 11, No 4, pp. 16-22. <https://doi.org/10.5430/rwe.v11n4p16>.
3. Kozmenko, S., Savchenko, T., Kazarinov, D. (2012). Assessment of financial convergence of Ukraine with the CIS countries and the European Union, *Banks and bank systems*, No. 4, pp. 5–17.
4. Bondarenko, S., Laburtseva, O., Sadchenko, O., Lebedieva, V., Haidukova, O. & Kharchenko T. (2019). Modern Lead Generation in Internet Marketing for the Development of Enterprise Potential. *International Journal of Innovative Technology and Exploring Engineering*, 8 (12), 3066-3071.
5. Bhatti, S. K., Lali, M. I. U., Shahzad, B., Javid, F., Mangla, F. U., & Ramzan, M. (2018). Leveraging the big data produced by the network to take intelligent decisions on flow management. *IEEE Access*, 6, 12197-12205.
6. Bondarenko, S., Halachenko, O., Shmorgun, L., Volokhova, I., Khomutenko, A. & Krainov, V. (2021). The Effectiveness of Network Systems in Providing Project Maturity of Public Management. *TEM Journal*, 10(1), 358-367.
7. Babenko, V., Pasmor, M., Pankova, Ju., Sidorov, M. (2017). The place and perspectives of Ukraine in international integration space. *Problems and Perspectives in Management*, Vol. 15, Issue 1, pp. 80-92. [http://dx.doi.org/10.21511/ppm.15\(1\).2017.08](http://dx.doi.org/10.21511/ppm.15(1).2017.08)
8. Babenko, V., Sidorov, V., Koniaieva, Y., Kysliuk, L. (2019). Features in scientific and technical cooperation in the field of non-conventional renewable energy. *Global Journal of Environmental Science and Management*, 5 (Special issue), pp. 105-112. doi: <http://dx.doi.org/10.22034/gjesm.2019.05.SI.12>
9. Perevozova, Babenko, V., I., Mandych, O., Kvyatko, T., Maliy, O., Mykolenko, I., (2019). World informatization in conditions of international globalization: Factors of influence. *Global Journal of Environmental Science and Management*, 5 (Special issue), pp. 172-179. <http://dx.doi.org/10.22034/gjesm.2019.05.SI.19>
10. Babenko, D., Zaitseva, A., & Velychko, K. (2020). Development of integration processes in the globalization conditions: Ukraine and EU-countries. *The Journal of V. N. Karazin Kharkiv National University. Series: International Relations. Economics. Country Studies. Tourism*, (11), 8-14. <https://doi.org/10.26565/2310-9513-2020-11-01>
11. Shuba, M., Derid, I., Khanova, O., & Makarchuk, K. (2020). Application of the EU experience of the financial systems' transformation in the context of the debt crisis for Ukraine. *The Journal of V. N. Karazin Kharkiv National University. Series: International Relations. Economics. Country Studies. Tourism*, (11), 23-34. <https://doi.org/10.26565/2310-9513-2020-11-03>
12. Skrypnyk A., Nehrey M. (2015). The formation of the deposit portfolio in macroeconomic instability, *ICTERI 2015: 11th International Conference on ICT in Education, Research, and Industrial Applications* http://ceur-ws.org/Vol-1356/paper_103.pdf.
13. Khudyakova, T.A.; Schmidt, A.V. An algorithm for assessment and forecasting of industrial enterprise economic stability with probabilistic and statistical methods // *Proceedings of the 27th International Business Information Management Association Conference*, 2016. – P. 2209–2214.
14. Robson, P. (1998). *The economics of international integration*, London and New York: Routledge, 333 p.
15. Gilpin, R. (2001). *Global political economy: understanding the international economic order*, Princeton: Princeton University Press, 436 p.
16. BRICS joint statistical publication: 2017; Brazil, Russia, India, China, South Africa (2017), *Statistics of Russia*, Moscow, 235 p.
17. *The Global Competitiveness Report 2016–2017* (2017). Ed. by K. Schwab, X. Sala-i-Martin, World Economic Forum, Geneva, 565 p.

18. Babenko V., Kulczyk Z., Perevosova I., Syniavska O. and Davydova O. (2019). Factors of the development of international e-commerce under the conditions of globalization. SHS Web of Conferences, 65, pp. 10-16. <https://doi.org/10.1051/shsconf/20196504016>
19. Babenko, V. O., Petukhova, V. O., Perepelitsia, A. S. (2017). Forming of informatization strategic prospects for Ukraine in conditions of world economy globalization, Scientific bulletin of Polissia, No. 2 (10), Vol. 1, pp. 24–34.
20. Dovgal, E. (2019). Innovative development of the EU: strategic priorities of technological leader. The Journal of V. N. Karazin Kharkiv National University. Series: International Relations. Economics. Country Studies. Tourism, (8), 26-32. <https://doi.org/10.26565/2310-9513-2018-8-03>
21. Vasylykivskyi, D., Matiukh, S., Matviiets, O., Lapshyn, I., Babenko, V. (2020). The Consequences of the Military Conflict in Eastern Ukraine, Its Impact on International Investment Attractiveness, Economic and Demographic Development in Ukraine. Research in World Economy, Vol 11, No 4, pp. 16-22. <https://doi.org/10.5430/rwe.v11n4p81>
22. Bondarenko, S., Liganenko, I., Kalaman, O. & Niekrasova, L. (2018). Comparison of Methods For Determining The Competitiveness of Enterprises To Determine Market Strategy. International Journal of Civil Engineering and Technology, 9(13), 890–898.
23. Danylyshyn, B., Bondarenko, S., Niziaieva, V., Veres, K., Rekun, N. & Kovalenko, L. (2020). Branding a Tourist Destination in the Region's Development. International Journal of Advanced Research in Engineering and Technology, 11(4), 312-323.
24. Kaminskyi, A. B., Nehrey, M. V., & Zomchak, L. M. (2021). COVID-19: crisis or new opportunities time for the agricultural sector of Ukraine. In IOP Conference Series: Earth and Environmental Science (Vol. 628, No. 1, p. 012031). IOP Publishing.
25. Skrypnyk A., Nehrey M. (2015). The formation of the deposit portfolio in macroeconomic instability. ICTERI 2015: 11th International Conference on ICT in Education, Research, and Industrial Applications http://ceur-ws.org/Vol-1356/paper_103.pdf.
26. Shaikh, A., Rajab k, and Alghamdi, A. (2020) Inderscience Guest Editorial: Trends and Applications. of Data Science and Big Knowledge. International Journal of Data Science, Vol. 5, No. 2 (2020), pp.111-115,
27. Vasylieva, N. (2018). Ukrainian Agricultural Contribution to the World Food Security:
28. Economic Problems and Prospects. Montenegrin Journal of Economics, 14(4), 215-224
29. Davydenko N.M. Modern paradigm of agrarian units" financial security assessment. Ekonomichnyy chasopys XXI. – 2015. – №5 – 6. – S. 90 – 93. URL: <http://soskin.info/userfiles/file/2015/Davydenko.pdf>.
30. Uddin, M., Hamdi, M., Alghamdi, A., Alrizq, M., Memon, M. S., Abdelhaq, M., & Alsaqour, R. (2021). Server consolidation: A technique to enhance cloud data center power efficiency and overall cost of ownership. *International Journal of Distributed Sensor Networks*, 17(3), 1550147721997218.