

DOI: <https://doi.org/10.63332/joph.v5i1.556>

## Collaboration Between Economic Regions: Ukraine-Poland and other EU states

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### Abstract

*The relevance of the problem of interregional economic cooperation between Ukraine and the European Union (EU) lies in its importance for strengthening interconnections between regions and, in general, between different countries. Therefore, it is essential to implement new mechanisms of interregional interaction and improve the legal regulation of relationships, the economic situation of individual regions, and the tools for ensuring a stable environmental condition of the regions. This scientific article aims to systematise and analyse relevant data to understand the impact of the development of Euroregional cooperation on the interaction between Ukraine and the EU border countries. The expert analysis method was used during the research to assess the negative factors' impact on Euroregional cooperation's effectiveness. Based on data obtained from a survey of legal (8 individuals) and economic (7 individuals) scholars-experts, a correlation analysis was conducted between the factors hindering the development of cooperation and its opportunities. The assessment of factors hindering the development of Euroregional cooperation in Ukraine found that all experts rated the significance of identified negative factors highly. According to the results of the correlation analysis, economists identified insufficient financial support (0.8) as the most critical problem, while legal scholars pointed to the lack of a unified legal framework (0.99). In summary, the study confirms the positive attitude of experts towards development opportunities but indicates unjustified attention to areas such as energy efficiency (1.5) and financial support (2.4). The analysis results reveal that financial support ( $r=0.77$ ) has a high degree of correlation with the problem of insufficient regional development.*

**Keywords:** Interregional Cooperation, Economic Cooperation, Euroregions, Regional Inequality, Territorial Development, NUTS

### Introduction

Interregional economic cooperation in the context of integration and activation of relations between Ukraine and the European Union reflects globalisation trends and the nature of international relations. It is one of the main tools to promote economic development in certain territories, enhance their competitiveness, and ensure regional stability. The development of interregional cooperation between Ukraine and EU countries is based on mutually beneficial conditions and common interests that support economic, social, and cultural exchange between

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the interacting parties. Scientific research in this field aims to analyse and evaluate the effectiveness of integration processes, identify cooperation prospects, and determine strategic directions for further development. In particular, an important aspect is the study of the legal framework, institutional mechanisms, and implementation of cooperation programmes that determine the opportunities and obstacles to achieving the common goals of interregional interaction.

The scientific article aims to systematise and analyse current data to identify the impact of various factors of Euroregional cooperation development on the substantiated understanding of the problem of interregional interaction between Ukraine and the border countries of the EU. In this context, the research reveals the essence and impact of important social and economic aspects on interregional cooperation between Ukraine and EU countries, including developing the legal framework, economic growth, increased employment, improved infrastructure, environmental quality preservation, and historical and cultural heritage conservation.

## **Materials and Methods**

Interregional economic cooperation, in the context of globalisation and the rapid growth of integration processes at the present stage, Prikhodko and Bobryk (2021) define as a mechanism for equalising the living standards of the population in different territories. Currently, for identifying such territories, as noted in the work of Storonińska et al. (2021), methodologies are used that differ in the indicators that define rural or urban territory and in the levels of territorial units according to the NUTS nomenclature, which includes three regional levels (NUTS) and two local levels (LAU). Bila et al. (2011) state that interregional economic cooperation activates innovation processes. It attracts investments to implement highly efficient projects that form new economic development centres and growth zones through resource consolidation.

Antonescu & Florescu (2023) saw a unique role for European economic integration in the overall economic growth of European regions, noting that integration processes contribute to the overall increase in GDP and the equalisation of economic disparities between EU regions. They emphasise that less developed regions can attract investments, improve infrastructure, and develop innovative sectors by effectively implementing convergence policies and structural support. Moreover, in the work of Mikula and Tolkovanov (2011), it is noted that EU border areas are less developed compared to central ones, making regional convergence policies particularly relevant. In this context, the authors concluded that cooperation within Euroregions promotes integration processes in cultural, educational, economic, communicative, and other areas, creating opportunities for accelerating the adaptation of European legislation and reducing disparities in border areas.

According to Shcherba (2008a), the most significant problems for interregional cooperation are legislative inconsistency, a low level of involvement of entrepreneurial structures, non-governmental institutions and public organisations, as well as the insufficient authority of regional authorities, which hinders the effective management and implementation of joint projects and initiatives. As Shcherba (2008b) notes, insufficient personnel training in cross-border cooperation significantly limits the possibilities for the effective implementation of joint projects, reduces the quality of management and coordination, and complicates the establishment of partnerships between different regions. Hornostai and Mykhalchenkova (2023) see the full-scale war of the Russian Federation against Ukraine, which began in February 2022, as the most

severe threat to interregional cooperation, leading to the cessation of the functioning of most Euroregions and the indefinite postponement of further cooperation prospects. In turn, Vnukova et al. (2011) notes that the low level of financial support for Euroregional projects, which hinders their development, is due to the insufficient implementation of the financial resources market. Meanwhile, Miklovda et al. (2018) note that the insufficient institutional base and the inefficiency of tools to support Euroregional cooperation complicate and slow the exchange of information and relevant documentation, reducing its effectiveness and further development.

Among the promising ways to develop interregional cooperation between Ukraine and the European Union (EU), Bila et al. (2011) point out the importance of digital transformation and innovative solutions in the structure of the economy, the development of science and technology, particularly for the substitution of imported goods and ensuring energy efficiency. They also highlight the necessity of strengthening communication links between government bodies, enterprises, scientific institutions, and the public to address the current socio-economic problems of regional development. Melnuk (2018) identified similar directions. The author emphasises the importance of focusing efforts on solving environmental and social problems, scientific and technical cooperation and technology transfer, the development of transport routes of national and international significance, as well as the formation of infrastructure for specific markets, mainly the agricultural products market. Additionally, it is essential to ensure the effectiveness of foreign economic activity of regions within the framework of Euroregional cooperation because, as Pavlikha et al. (2023) note, the activation of this process will contribute to the growth of the region's economic competitiveness, the creation of innovative and high-tech industries, and the improvement of energy efficiency.

## **Applied Methods**

In the course of the study, literature analysis, statistical data analysis, and the method of systematisation were applied to identify the key factors slowing down the development of Euroregional cooperation and promising directions for their resolution. The expert evaluation method was used to determine the correlation between the factors hindering the development of Euroregional cooperation and development opportunities. Data were grouped based on selected indicators using the expert analysis method, and the degree of influence of negative factors on the effectiveness of Euroregional cooperation was determined. The integral method allowed for calculating the weighted average (WA) indicator of this influence and assessing its significance. Correlation analysis between the identified factors was conducted using the “Excel” program.

## **Research Results**

Scientific research on interregional cooperation and its impact on the development of Ukrainian regions and European integration highlights that the Nomenclature of Territorial Units for Statistics (NUTS) system plays a vital role in this process. In particular, NUTS is used as the primary tool for collecting, analysing, and comparing regional statistical data within the European Union (EU). This approach ensures uniformity in data collection and comparison between regions, which helps solve regional problems and form regional policies.

The Nomenclature of Territorial Units for Statistics (NUTS) system is defined by three levels: NUTS 1, NUTS 2, and NUTS 3. At the first level (NUTS 1), regions are grouped into larger socio-economic zones, providing an analytical basis for studying broader integration and development trends. At the second level (NUTS 2), larger zones are divided into smaller administrative units for more detailed analysis and planning. At the third level (NUTS 3), more

detailed studies and analyses of specific territories are conducted.

The Brussels Conference on Regional Economics in 1961 recognised that NUTS 2 is the most appropriate level for applying regional policies in EU member states. This level provides a sufficiently detailed picture for analysis and planning without overloading the study with too much data (European Union, 2011).

Furthermore, the use of the NUTS system is crucial for the formation and subsequent implementation of EU regional policies. For example, the EU Cohesion Policy for 2021-2027 stipulates that support from structural funds is exclusively based on the classification of NUTS 2 regions. This classification creates a criteria system for allocating cooperation fund resources, which supports regional development and European integration (European Union, 2022). Thus, assessing regional inequality in NUTS 2 regions allows for analysing convergence and divergence processes between them, addressing questions regarding the territorial impact of European economic integration. GDP per capita data were used to analyse convergence rates, as shown in Figure 1.

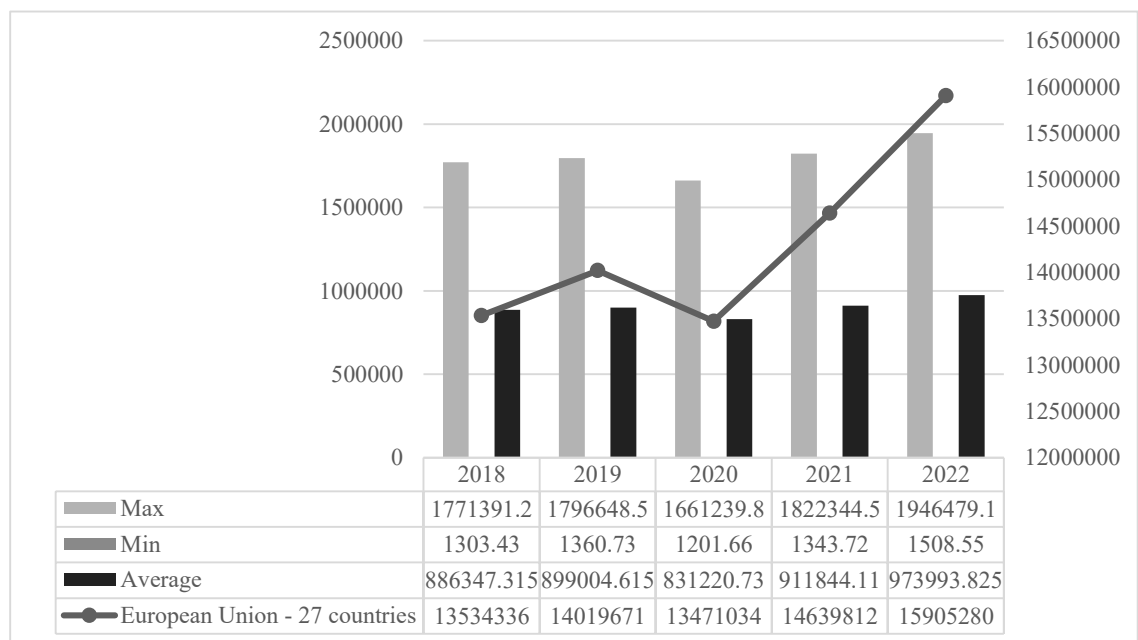


Figure 1. Evolution of Gross Domestic Product (GDP) at current market prices by NUTS 2 regions  
Source: Eurostat (2024)

The analysis of GDP dynamics by NUTS 2 regions in the EU demonstrates the significant impact of European economic integration on territorial development. During this period, GDP growth was observed in most regions, as reflected in the overall EU data. In this context, European economic integration promotes economic growth and supports regional convergence, reducing economic disparities. These changes optimise resource utilisation, increase competitiveness, and ensure a more even distribution of economic benefits among regions.

For countries with transition economies, interregional cooperation is an essential element of integration, expanding the opportunities of border regions to initiate and implement cross-border projects. For example, such cooperation enhances regional socio-economic development for Ukraine by establishing

mutually beneficial connections between economic entities and utilising the overall resource potential. The institutional and legal basis for the development of interregional cooperation in Ukraine is formed by international legal documents ratified by Ukraine, interstate agreements, national legislation, interregional agreements, and agreements between participants, including Euroregional formations related to cross-border cooperation (Petrenko, 2022).

The main regulatory act governing interregional cooperation is the Law of Ukraine “On Cross-Border Cooperation”, dated June 24, 2004, No. 1861-IV (Verkhovna Rada of Ukraine, 2018). This law establishes the legal, economic, and organisational principles of cross-border cooperation and defines the funding sources for projects and programmes in this area. Such cooperation aims to develop various connections between participants, including border countries of the EU (Poland, Romania, Hungary, Greece, etc.).

Interregional cooperation between EU states and neighbouring regions was initiated under the European Neighbourhood Policy and financed by the European Neighbourhood and Partnership Instrument (ENPI) in 2007–2013 to promote good neighbourly relations and economic integration. It is confirmed by the European Neighbourhood Instrument (ENI) for 2014–2020. However, in 2021–2027, cooperation is regulated by the EU Cohesion Policy, and the programmes are part of Interreg. The new programme is called “Interreg NEXT” and emphasises the external dimension of the cohesion policy, demonstrating the closeness of the EU and partner countries (EUR-Lex, 2021). However, cooperation between Ukraine and the EU began much earlier, as the first Euroregions were established in 1995 (“Bug”), 1998 (“Lower Danube”), and 2000 (“Carpathians”, “Upper Prut”). Subsequently, several other regions were formed, covering not only the west of the country but also other territories: “Dnieper”, “Slobozhanshchina”, “Yaroslavna”, “Black Sea Euroregion”, “Donbas”, and “Dniester” (Zakharova, 2022).

The document defining regional policy in cross-border cooperation is the “State Programme for the Development of Cross-Border Cooperation for 2021–2027” (Verkhovna Rada of Ukraine, 2023). This programme establishes critical strategic goals, including promoting the development of Euroregions, removing infrastructure and administrative barriers to activate cooperation in border areas, supporting small and medium-sized businesses, increasing the competitiveness of regions, and developing production and social infrastructure.

International cooperation, the creation of joint projects, and the exchange of experience between Ukraine and EU countries play an essential role in the economy, trade, environment, culture, and social development (Oldak, 2024). The role and impact of international organisations and joint projects on interregional economic cooperation are determined by factors encompassing the country's life's political, economic, and social aspects (Orel et al., 2023). In the context of the continuous development of relations between Ukraine and the EU, it is essential to consider the cooperation tools and organisations that form the basis of their interaction (see Table 1), as cooperation with the EU is currently one of the critical components of Ukraine's foreign policy, particularly interregional cooperation.

Instruments	Description
General EU programmes	ERASMUS+, HORIZON 2020, COSME, LIFE, Creative Europe, Digital Europe, Single Market Programme
Regional programmes	Interreg Europe, SMARTY, EU4Business, InnoHEI, PASSPARTOOL, INNO Industry, DIGITAL REGIONS
Projects in priority areas	Supporting reforms in various areas, including decentralisation, energy efficiency, public financial management, and the development of civil society

	and independent media, are key priorities supported by international organisations and programmes such as U-LEAD and the EU Advisory Mission.
Humanitarian aid (ECHO)	Supporting IDPs, promoting peaceful conflict resolution and restoring affected areas are important aspects of global cooperation
European financial institutions	European Investment Bank (EIB), European Bank for Reconstruction and Development (EBRD)

**Table 1.** International Instruments of Cooperation between Ukraine and the EU

Source: compiled by the author based on (Green Transformation of Ukraine, 2023; Delegation of the European Union to Ukraine, 2018; Industry4Ukraine, 2023).

The diverse set of projects involving Ukraine testifies to the deep and multifaceted nature of its cooperation with other countries, particularly with European countries. The identified tools cover many areas: education, science, technology, support for small and medium-sized businesses, energy, the environment, humanitarian aid, etc. These tools also define Ukraine's obligations to the international community and interaction with partners to address global problems and achieve common goals (Yakymenko et al., 2022).

Thus, Ukraine promotes interregional cooperation through comprehensive legal support and relevant initiatives, allowing the effective use of the potential of border regions for their socio-economic development. However, it is essential to identify several factors that hinder the development of Euroregional cooperation at the present stage:

Insufficient legislative harmonisation regarding Euroregional cooperation, which impedes sustainable development;

Inadequate institutional base to support Euroregional cooperation, slowing down its effectiveness and further development;

Full-scale armed aggression by Russia and political instability complicate dialogue and interaction between regions (Hornostai & Mykhalchenkova, 2023);

Insufficient interest from entrepreneurial structures, non-governmental institutions, and public organisations in Euroregional cooperation;

Lack of a systematic and forward-looking approach to organising and developing Euroregional cooperation;

Limited powers of regional authorities, complicating their capabilities and role in cooperation;

Low level of financial support for Euroregional projects, hindering their development (Vnukova et al., 2011);

A sufficient number of qualified personnel is needed to effectively organise and implement Euroregional initiatives (Shcherba, 2008b).

To assess the significance of the identified problems and challenges for the development of Euroregional cooperation in Ukraine, an evaluation was conducted based on determining the comprehensive impact of factors hindering the development of Euroregional cooperation using the expert evaluation method. This analysis is conducted on an assessment scale of 0 to 10 points. The assessment is distributed as follows: 0-3 points – low degree of factor impact; 4-7 points – medium degree of factor impact; 8-10 points – high degree of factor impact. Two groups of experts carried out the evaluation: Group 1 – scholars specialising in legislative and legal aspects in an international context

(8 individuals), including professors (5 individuals) aged 45 to 55 and associate professors (3 individuals) aged 35 to 45; and Group 2 – scholars with an economic focus (7 individuals), including professors aged 45 to 60. The results of the expert evaluation analysis of the factors influencing the development of Euroregional cooperation are presented in Table 2 and Figure 2.

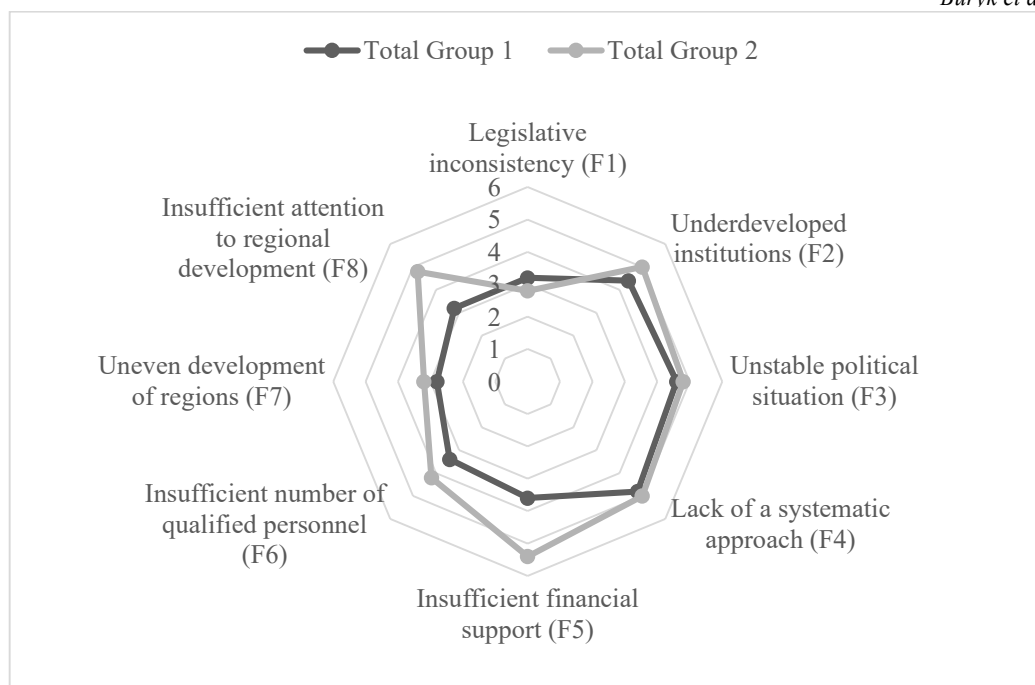
Factors	Assessment areas	Weighting factor	Group 1	Group 2	Total Group 1	Total Group 2	Total Group 1	Total Group 2
Legislative inconsistency (F1)	Lack of a unified legal framework	0,11	9	8	0,99	0,88	3,2	2,8
	Need for standardisation of legislation	0,09	7	6	0,63	0,54		
Underdeveloped institutions (F2)	Lack of specialised bodies	0,05	6	7	0,3	0,35	4,4	5
	Insufficient financial and technical base	0,07	8	9	0,56	0,63		
	Need for reforms and modernisation of institutions	0,08	8	9	0,64	0,72		
Unstable political situation (F3)	Political conflicts	0,1	6	7	0,6	0,7	4,6	4,8
	Low trust in political institutions	0,04	7	8	0,28	0,32		
	Impact of war on the internal coherence of political forces	0,06	10	9	0,6	0,54		
Lack of a systematic approach (F4)	Lack of a unified strategy	0,04	8	7	0,32	0,28	4,8	5
	Insufficient planning and coordination	0,12	7	9	0,84	1,08		
	Need to organise Euro-regional cooperation	0,04	9	9	0,36	0,36		
Insufficient financial support (F5)	Insufficient budgetary resources	0,08	7	10	0,56	0,8	3,6	5,4

	Lack of funding mechanisms	0,07	6	9	0,42	0,63		
	Need to find additional sources of funding	0,05	5	8	0,25	0,4		
Insufficient number of qualified personnel (F6)	Shortage of specialists	0,04	4	5	0,16	0,2	3,4	4,2
	Lack of human resources	0,06	6	8	0,36	0,48		
	Need to develop educational programmes and professional training	0,1	7	8	0,7	0,8		
Uneven development of regions (F7)	Different levels of regional development	0,07	8	7	0,56	0,49	2,8	3,2
	Different levels of resource availability	0,13	6	9	0,78	1,17		
Insufficient attention to regional development (F8)	Low priority in national and regional strategies	0,1	7	8	0,7	0,8	3,2	4,8
	Insufficient funding for regional projects	0,07	4	9	0,28	0,63		
	Need to engage the public and businesses in regional development	0,03	5	7	0,15	0,21		

**Table 2.** Expert Assessments of Factors Slowing Down the Development of Ukraine's Euroregional Cooperation

Source: compiled based on an expert survey.





**Figure 2.** Rating of Factors Slowing Down the Development of Ukraine's Euroregional Cooperation  
Source: compiled based on an expert survey

According to the results of the correlation analysis of the evaluation of factors that slow down the development of Euroregional cooperation in Ukraine, it was found that economists (Group 2) perceive current problems more critically. In particular, among the current problems, they identified the different levels of resource availability (1.17) and insufficient planning (1.08) as the most significant, as well as insufficient budget funds (0.8), the need for institutional reforms and modernisation (0.72), and an insufficient financial and technical base (0.63). Meanwhile, legal experts (Group 1) prioritise the lack of a unified legal framework (0.99), the need for legislative standardisation (0.63), low priority in national and regional strategies (0.7), and political conflicts (0.6) as the most critical issues.

$$WA = \sqrt{\frac{[F1]^2 + [F2]^2 + [F3]^2 + [F4]^2 + [F5]^2 + [F6]^2 + [F7]^2 + [F8]^2}{8}} \quad (1)$$

where WA is the weighted average assessment of the impact of factors that slow down the development of Euroregional cooperation;

Thus, the weighted average score by the expert group is as follows:

$$WA \text{ Group 1} = 10.78$$

$$WA \text{ Group 2} = 12.68$$

Therefore, it should be noted that all experts rate the degree of influence of the identified negative factors on the development of Euroregional cooperation in Ukraine at a reasonably high level. However, economists have a more critical view of current problems and challenges.

Based on the analysis of current scientific literature, it is crucial to identify the main directions for overcoming current problems in Euroregional cooperation and identify opportunities for further

development. Thus, the promising directions for the development of Euroregional cooperation in Ukraine are:

Development and support of key economic sectors to stimulate economic growth;

Attraction of investments for the modernisation of production and infrastructure;

Promotion of the business sector to stimulate innovation;

Implementation of energy-saving technologies and production methods;

Stimulation of the use of renewable energy sources and reduction of greenhouse gas emissions;

Modernisation of transport and communication infrastructure;

Improvement of public access to education, healthcare, and other social services;

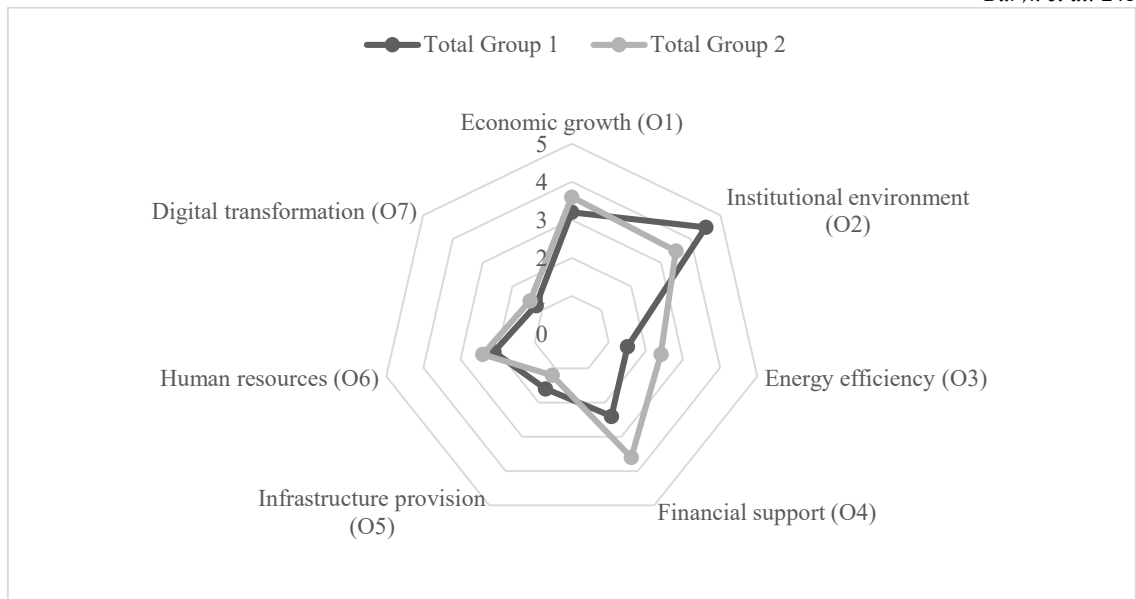
Implementation of innovative technologies and production methods (Pavlikha et al., 2023).

As a result of this analysis, the identified directions were grouped into Table 3 and Figure 3 for further calculations. For this purpose, the existing group of experts (Group 1 – eight scholars specialising in legislative and legal aspects in an international context and Group 2 – seven scholars with an economic focus) was surveyed regarding the effectiveness of these opportunities for solving current problems of Euroregional cooperation and its further development in Ukraine. The expert survey results were conducted using the following indicators: economic growth (O1), institutional environment (O2), energy efficiency (O3), financial support (O4), infrastructure provision (O5), human resources (O6), and digital transformation (O7).

Opportunities	Weighting factor	Group 1	Group 2	Total Group 1	Total Group 2
Economic growth (O1)	0,4	8	9	3,2	3,6
Institutional environment (O2)	0,5	9	7	4,5	3,5
Energy efficiency (O3)	0,3	5	8	1,5	2,4
Financial support (O4)	0,4	6	9	2,4	3,6
Infrastructure provision (O5)	0,2	8	6	1,6	1,2
Human resources (O6)	0,3	7	8	2,1	2,4
Digital transformation (O7)	0,2	6	7	1,2	1,4

**Table 3.** Expert Assessments of Prospective Directions for the Development of Ukraine's Euroregional Cooperation

Source: compiled based on an expert survey



**Figure 3.** Promising Areas for the Development of Euroregional Cooperation in Ukraine  
Source: compiled based on an expert survey

Overall, experts are optimistic and highly appraise the identified development opportunities. However, the ratings of legal experts (Group 1) are still lower, particularly regarding the prospects of energy efficiency (1.5), financial support (2.4), and digital transformation (1.2). These ratings are not so much due to the state's inability to realise these directions but rather the experts' belief that they are overestimated and require more resources than they can deliver in results. They see more excellent prospects in mechanisms and methods related to economic growth (3.2) and a stable institutional environment (4.5). On the other hand, economists (Group 2), while not denying the importance of economic growth (3.6) and a stable institutional environment (3.5), suggest reconsidering the advantages of financial support (3.6) and energy efficiency (2.4) as the economic and environmental challenges related to the military actions in Ukraine and global technological load can be addressed precisely by combining tools and methods related to these development directions.

Given certain discrepancies among legal experts (Group 1) and economists (Group 2), it is necessary to conduct a correlation analysis using the spreadsheet program “Excel”. During the analysis, based on the primary data from Appendix A, the “Analysis ToolPak” add-in is used, notably the “PEARSON” (“CORREL”) function, which calculates the correlations between two measured variables: problematic and prospective development directions of Euroregional cooperation in Ukraine. The complete Table 4 of correlation analysis results is presented in Appendix B.

	F1	F2	F3	F4	F5	F6	F7	F8
O1	-0,09314	0,171602	-0,04704	0,104889	0,571081	0,113656	0,029206	0,299673
O2	0,438818	-0,48367	-0,38974	0,076107	<b>-0,60747</b>	-0,21719	-0,03533	<b>-0,60489</b>
O3	-0,20484	0,107833	0,033469	0,23069	0,551943	0,545268	0,370806	0,734271
O4	-0,30248	0,591171	0,282411	-0,0383	<b>0,620668</b>	<b>0,654215</b>	0,259088	<b>0,77449</b>
O5	0,532372	-0,24386	-0,18382	0,019932	-0,36069	-0,21476	-0,0698	-0,38335
O6	-0,26172	0,282624	0,090687	-0,36628	0,494124	-0,26323	-0,25095	0,371728
O7	-0,15036	-0,10062	-0,12559	-0,2344	0,137471	-0,16164	-0,06795	0,248152

**Table 4.** Correlation between Problematic and Promising Areas of Development of Ukraine's Euroregional Cooperation

Source: compiled based on an expert survey

\*Notes: F1 – Legislative inconsistency; F2 – Underdeveloped institutions; F3 – Unstable political situation; F4 – Lack of systematic approach; F5 – Insufficient financial support; F6 – Insufficient number of qualified personnel; F7 – Uneven development of regions; F8 – Insufficient attention to regional development; O1 – Economic growth; O2 – Institutional environment; O3 – Energy efficiency; O4 – Financial support; O5 – Infrastructure provision; O6 – Human resources; O7 – Digital transformation.

The most significant degree of correlation is observed between insufficient financial support and the institutional environment ( $r=-0.61$  at  $p<0.05$ ) and financial support ( $r=0.62$  at  $p<0.05$ ). Additionally, the following factors also have a significant degree of correlation: insufficient number of qualified personnel and financial support ( $r=-0.65$  at  $p<0.05$ ); insufficient attention to regional development and the institutional environment ( $r=-0.6$  at  $p<0.05$ ) and financial support ( $r=0.77$  at  $p<0.05$ ).

Thus, the initial thesis of legal experts regarding the undue emphasis on digital transformation has proven to be valid. However, economists' observations regarding the effectiveness of financial support and energy efficiency in Euroregional cooperation have also been justified. Moreover, as noted at the beginning of the analysis, the formation of a stable institutional environment also significantly impacts the further development of Euroregional cooperation.

## Conclusion

According to the results of the correlation analysis, economists (Group 2) identified insufficient financial support (0.8) and inadequate planning (1.08) as the most critical problems, while legal experts (Group 1) highlighted the lack of a unified legal framework (0.99) and low priority in strategies (0.7). Overall, the study indicates a positive attitude of experts towards development opportunities. However, legal experts point out the undue attention to energy efficiency (1.5) and financial support (2.4), which was disproved by the results of the analysis, as financial support ( $r=0.77$ ) has a high degree of correlation with the problem of insufficient regional development.

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# **Appendix A.** Expert Assessments of Prospective Directions for the Development of Ukraine's Euroregional Cooperation

Experts	O1	O2	O3	O4	O5	O6	O7	
Group 1	1	10	8	3	8	10	9	5
	2	9	9	7	6	10	8	7
	3	6	9	4	4	9	9	5
	4	10	9	5	5	6	8	6
	5	6	10	5	7	6	4	7
	6	7	8	5	5	7	8	8
	7	9	10	6	6	9	7	6
	8	7	9	5	7	7	3	4
Group 2	1	8	9	8	8	8	9	6
	2	9	7	6	10	6	8	5
	3	9	6	9	9	4	9	9
	4	9	5	9	10	5	8	7
	5	10	6	7	8	5	6	6
	6	8	7	8	9	5	9	9
	7	10	9	9	9	9	7	7